# Methodologies in housing research

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# METHODOLOGIES IN HOUSING RESEARCH

Edited by Dick Urban Vestbro, Yonca Hürol, Nicholas Wilkinson

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Note: This book is a result of a conference organised by the Royal Institute of Technology (KTH) in collaboration with the International Association of People-Environment Studies (IAPS) and the European Network for Housing Research (ENHR) on the theme "Methodologies in Housing Research", held in Stockholm 22-24 September 2003. The conference was held under the umbrella of the IAPS Housing Network, coordinated by Prof. Roderick Lawrence, Geneva and Assoc Prof. Rolf Johansson, Stockholm.

METHODOLOGIES in housing research

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# Foreword

The present book is a result of a conference organised by the Royal Institute of Technology (KTH) in collaboration with the International Association of People-Environment Studies (IAPS) and the European Network for Housing Research (ENHR) on the theme "Methodologies in Housing Research", held in Stockholm 22-24 September 2003. The conference was held under the umbrella of the IAPS Housing Network, coordinated by Prof Roderick Lawrence, Geneva and Assoc Prof Rolf Johansson, Stockholm.

At the conference fifty five papers were presented. They were divided into four workshops. One focused on case study methods, one on quantitative methods, one on participation and other "odd" methods, and one on more theoretical issues and miscellaneous methods. The conference followed the "Swedish model", based on appointed critics for each paper, rather than authors using most of the time for presentations. To achieve this all papers were sent out in advance to participants in the respective workshop.

The initiative to the conference was taken by Dick Urban Vestbro together with Roderick Lawrence. At the IAPS conference in La Coruna, Spain in July 2002 we noted that the issue of research methods is often neglected in scientific conferences. The conventional conference format gives little time for discussions and the discussions usually focus on the problem formulation and the main results. When the issue of methods is reached the time is usually up. As a result of this assessment it was decided that the unit of Built Environment Analysis of the Division of Urban Studies at KTH should try to raise some funds for a conference only focusing on methods. This was successful, much thanks to Dr Inga-Britt Werner, who wrote the applications. The conference was sponsored by grants from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning and the Swedish Research Council (supporting cross-disciplinary research). One participant from Poland and one from Nigeria received support from the Swedish Institute.

The Scientific Committee of the conference had the following composition: Prof Dick Urban Vestbro (chair), Div of Urban Studies, The Royal Institute of Technology, Stockholm; Prof Roderick Lawrence, Centre for Human Ecology and Environmental Sciences, Geneva; Assoc. Prof. Maria Nordström, environmental psychologist at the Stockholm University; Assoc.Prof. Terry Hartig environmental psychologist at the Institute for Housing and Urban Research at the Uppsala University; Assoc. Prof. Rolf Johansson, Assoc. Prof. Örjan Svane, Dr Inga-Britt Werner all three architect researchers at the

Div of Urban Studies, the Royal Institute of Technology, Stockholm. During the conference these scholars served as workshop coordinators, supplemented by Dr Susanne de Laval and Dr Dorota Wlodarczyk. Nicholas Wilkinson served as a corresponding member of the Scientific Committee.

As keynote speakers four prominent scholars in various fields were invited. Roderick Lawrence was invited to speak because of his broad overview of housing research. Robert Marans was selected because of his long and extensive experience of building up statistical data bases in the Detroit region, for his sophisticated models of quantitative variable analysis, and for his use of pedagogical diagrams. Rolf Johansson was chosen because of his expertise in the field of case study methodology, which is perhaps the most frequently used approach in the analysis of design qualities in housing. With her dedication to participatory planning and feminist perspective in housing research Liisa Horelli became an excellent supplement to the other keynote speakers. After the conference the keynote speeches have been revised to fit the objectives of the present book. We think that they constitute important contributions to housing research.

The book is not a book of proceedings, but a result of a process of selection from conference contributions. The two coordinators of each workshop made the first selection of papers for the book. Thereafter the editors, in cooperation with others, reviewed the papers. One criteria for selection was to secure a variety of methods and to avoid overlaps. Ultimately twenty two papers were selected. Only a few had to be rejected.

A book of selected articles as such, combines some advantages in comparison to similar books in the same subject, especially if the subject is as large as housing research. Rather than presenting a research world in unity, it combines diverse approaches to research and creates a more ambiguous but more open ended and deep research understanding. For example, this book of selected articles covers the following subjects which are more difficult to cover in books with single authors.

1. Research about housing research, with Roderick Lawrence's critical review about methodologies in contemporary housing research.
2. Contribution to discourse of housing research through Liisa Horelli's perspective of "inquiry."
3. Depths of certain research methods and techniques, as in Rolf Johansson's very useful article about "case study methodology," Dick Urban Vestbro's "participant observation," and Wendelien Lans and Tim de Jonge's "use of paired comparison in housing research."
4. Use of multi-dimensional methodologies, by Susanne Iwarsson, Judith Sixsmith, Frank Oswald, Hans-Werner Wahl, Carita Nygren, Andrew Sixsmith, Zsuzsa Zseman, and Signe Tomsone's method "to explore home environment for elderly."
5. Research about local housing problems and characteristics, as in Annett Steinführer's "cross-national housing research," Natalie McGrath, Dora Marinova, and Martin Anda's research about "indigenous housing in Western Australia", Gini Lee and David Morris's "consultation methodologies" and Omar Khattab's "research about traditional Kuwaiti houses."
6. Methods of understanding children's spatial experiences by Sofia Cele.
7. Methods of visual analysis, such as Dorota Wlodarczyk's "analysis of space."
8. Research methods about in-between research subjects, such as Peter Kellett and Graham Tipple`s "income generation due to use of

domestic space", Joris Hoekstra's "welfare state regimes and dwelling types," and Sigrun Kabisch's "housing vacancy and urban shrinkage."

9. Developments of computer models for assessing environmental impacts is demonstrated in Mauritz Glaumann and Tove Malmqvist's article.

10. New medias of research, such as Inga Britt Werner's "use of computational simulations in housing research" and Martin Edge and Tony Craig's "internet based housing research."

11. Research about measuring change in housing areas in time, as shown in Maggie Davidson's article.

12. Integrated research methods and philosophical questioning are dealt with in Robert Maran's "objective and subjective measures" to research quality in housing, Örjan Svane's question about generalisations in housing research, and Henny Coolen's "less structured data."

The book follows the above order and reflects well the interdisciplinary nature of housing research. Many of the contributions incorporate methodologies from architectural and planning, as well as social and behavioural research. To some extent also methodologies in economic and political science research are covered.

The contributions to this book come from ten different countries, mainly from Western Europe. There are, however, also contributions from Poland, Australia and Kuwait. At least four contributions have a developmental or third world perspective. Of the authors fourteen are men and eleven women. This is a better gender balance than in most academic publications. Since housing is a field with close connections to people's everyday life and to life values rather than system values, it is natural that the subject attracts female researchers.

The book is intended for Masters and PhD students and their supervisors. We believe that it will be of good use as a source of learning and inspiration when working out research strategies. It is not a textbook that provides recommendations of what to do in various research situations. Since it is problem oriented it is expected to be useful as a source of reflection and for comparisons between different approaches.

We hope that you as a reader will find the book stimulating to read and useful as a good source on methods in housing research. Readers are not expected to read the whole book from start to end, but to select what is relevant to their own research situation. For this purpose the index will hopefully be of good use.

"Methodologies in Housing Research" adds to the growing list of titles from The Urban International Press. This book will hopefully find its place on the bookshelves of all those engaged in research into housing, environment, sustainability and also government agencies and NGO's working in the field of human settlement and people - environment studies.

Dick Urban Vestbro
Yonca Hürol
Nicholas Wilkinson

Royal Institute of Technology, Stockholm and
Eastern Mediterranean University, Gazimagusa,
March 2005.

# 1 Methodologies in contemporary housing research: A Critical Review

*Roderick J. LAWRENCE*

## Abstract

*This essay presents a review of housing research, published in English and French, with a particular focus on the methods used rather than the theoretical and empirical results of contributions. It notes that contributions from a number of disciplines and professions have adopted sets of concepts and methods without paying sufficient attention to the development of co-ordinated research projects involving several disciplinary contributions. Given that housing is multi-dimensional, it is necessary to ensure that cultural, social, economic, political and individual human factors are considered simultaneously at the three geographical scales of the housing unit, the residential building (with one or more housing units) and its site, and the residential neighbourhood. In order to achieve this goal there is an urgent need for the application of interdisciplinary approaches. These kinds of approaches are explained and illustrated.*

***Keywords:*** *Disciplinary, Context, Housing Research, Interdisciplinary, Methodology, Transdisciplinary*

## Introduction

Housing is meant to address basic human needs for shelter and security by providing protection against climatic conditions (excessive heat and cold) and unwanted intrusions from insects, rodents and environmental nuisances (such as noise) that may be harmful for health and well being. Housing contains household activities and possessions. TURNER (1976) made the important distinction between housing as a noun and housing as a verb. According to Turner, housing can be considered as a product (from an individual housing unit to the **housing stock** in a neighbourhood or city). He also suggested that housing can be considered as a process by referring to the provision and maintenance of all kinds of residential buildings either by public authorities or private initiatives. Turner's interpretation of housing enables researchers and practitioners to consider the multiple interrelations between housing conditions and human processes in precise localities (HAMDI, 1991).

The housing environment can be considered in terms of a wide range of architectural, economic, social and cultural factors (LAWRENCE, 1987). Collectively these factors the capacity of **residential environments** to nurture and sustain social and psychological processes (HALPERN, 1995). For example, the multiple dimensions of residential environments that circumscribe the resident's capacity to use her/his domestic setting for the realisation of short and longer term goals across the life-span. In addition, there is little doubt that the physical condition of housing units should be examined with respect to forms of housing tenure, household composition and income, the availability and cost of building materials, infrastructure and services, the levels of education, and the employment status of residents. HARTIG, LAWRENCE (2003) have used the term "the residential context of health" to refer to all these dimensions that define the interrelated nature of housing, health and well-being.

Figure 1 can be used as a conceptual reference model for **interdisciplinary** contributions about housing. It shows that cultural, social, economic, political and individual human factors should be considered simultaneously at the geographical scale of the

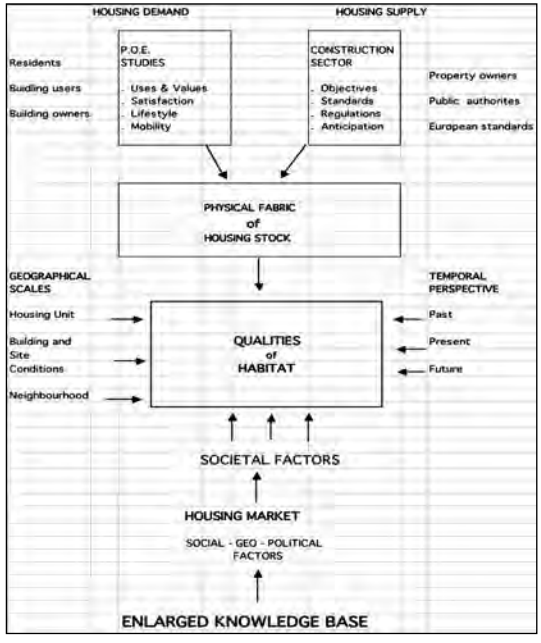


**Figure 1**
The housing market is a complex structure and set of processes that is defined by sets of supply and demand factors at the scale of the housing unit, the residential building and the local neighbourhood. Therefore it is not feasible to consider supply factors in isolation from demand factors.

housing unit, the residential building (with one or more housing units) and its site and conditions in the local neighbourhood.

The preceding paragraphs indicate that if housing and the built environment are considered too narrowly then the interrelations between the multiple constituents of residential environments may not seem important. This article suggests that there is a growing recognition of a need for innovative approaches in the field of housing research, and for problem-solving. It is argued that current shortcomings are not simply the result of a lack of resources, or viable solutions, or political commitment. These shortcomings are above all the result of the narrow vision of academics, professionals and policy makers who only address the treatment of symptoms rather than the fundamental issues at stake. This article also suggests that interdisciplinary contributions can highlight the difference between a discipline-based interpretation of housing and one that combines the interpretation of architectural, cultural, economic, political, psychological and social factors in a new way. Finally, it concludes with some suggestions for future contributions that are pertinent not only for theoretical development but also for policy definition and implementation.

## Methodological Principles

Until the 1970s, housing was not a priority subject of study for researchers in the social sciences, or for professional planners and architects. However, since the 1980s, housing studies and research on the meaning and use of domestic space have grown rapidly in scope and volume (ARIAS, 1993; ASCHER, 1995; BENJAMIN, 1995; DANERMARK, ELANDER, 1994; DESPRES 1991; ELEB, CHATELET, MANDOUL, 1988; KENT, 1990; LAWRENCE, 1987; SEGAUD, BONVALET, BRUN, 1998; SOMMERVILLE, 1997; VAN VLIET, 1998). During the last two decades, many theoretical perspectives, concepts and research methods have been used by authors from a wide range of academic disciplines and professions. Housing research has been completed by authors in a wide range of disciplines including architecture, anthropology, demography, economics, geography, interior design, social and urban history, sociology, psychology and political science.

Many of the contributions during the last two decades have been presented at international conferences under the auspices of the International Association for People-Environment Studies (IAPS), the European Network for Housing Research (ENHR), the Environmental Design Research Association (EDRA) and similar organisations in all regions of the world. Given the increasing attention attributed to housing research since the 1980s, some of these organisations founded thematic networks or working groups which have focused on housing or other topics. In the case of IAPS, for example, there are ten thematic networks, the oldest being the Housing Network. In 1989, this IAPS Network co-organised a symposium

on the "Meaning and use of home and neighbourhood" with the former National Swedish Institute for Building Research. This symposium brought together 88 delegates from 20 countries, and after the event many contributions were published in scientific periodicals.

Since the 1980s, there have been some developments in housing research that highlight methodological questions that were addressed by ZEISEL (1981). For example, a small yet an increasing number of practitioners are engaged in action research and the application of the findings of housing studies (HAMDI, 1991; HART, 1997). Some of these approaches involve partnerships that identify key subjects of research with the inhabitants and/or the end users of research such as the property owners or housing managers. These approaches raise interesting questions about the pertinence of housing research, as well as the applicability of the results (LEAVITT, SEAGERT, 1990). These questions have rarely been debated in detail.

Another development in the 1990s has been an increase in empirical housing studies, especially those that apply large-scale **household surveys**, which require quantifiable analysis of the collected data and information (DESPRES, PICHE, 1995). These surveys usually apply a quantitative approach which can be contrasted with those contributions of a qualitative nature, such as interviews with a few residents. In these cases, qualitative methods are pertinent whereas quantitative interpretation is inappropriate. The ways in which quantitative and qualitative methods could be used in a complementary way has not been widely debated, but BECHTEL, MARANS, MICHELSON (1987) include a set of contributions elated to this subject.

Today, it is also appropriate to consider how research methods can evolve in tandem with the available information and new analytical tools. The interpretation of information and data whether at the scale of the housing unit, the residential building or the neighbourhood raises methodological questions that need to be addressed. For example, Co-ordinated Information Systems (CIS) have rarely been used in housing research because co-ordinated sets of information and data at different geographical scales have rarely been formulated. Similarly, given the recent developments in uses of **Geographical Information Systems** (GIS), their appropriate use in housing research should be considered in more detail because they enable different sets of data and information to be represented and then compared at one or more geographical scales.

## Review and Critique

The following paragraphs are based on several reviews of housing research in English and French by authors in different disciplines including ALTMAN, WERNER (1985), ARIAS (1993), BALCHIN 1996, BENJAMIN (1995), DESPRES (1991), HAUMONT and SEGAUD (1989), LAWRENCE (1987), SEGAUD, BONVALET and BRUN (1998), SOMMERVILLE

(1997) and VAN VLIET (1998). These publications provide a broad account of the vast field of housing studies. The author of this article does not claim that these contributions provide an exhaustive review of the whole field. A synthesis of these publications enables the formulation of two broad classes of methodological contributions:

First, historical, sociological and policy studies concerned with urban and housing policies, institutions, markets and especially those factors related to the construction ("housing supply") and requirements ("housing demand") of housing.

Second, a wide range of architectural, psychological and sociological contributions about people and their surroundings at the geographical scales of housing units, residential buildings and neighbourhoods. These two classes of studies will be reviewed in the following paragraphs.

## Class 1: Urban and housing politics and sociology

During recent decades, a large volume of housing studies has examined the interrelations between broad societal dimensions and the provision, regulation and use of residential neighbourhoods and housing units (BALCHIN, 1996). Subjects of study in this class of contributions include housing economics, national and local housing policies and legislation, housing construction methods and domestic technology have been examined. In general, these contributions have examined societal dimensions related to mechanisms of "housing supply and demand" and/or the living conditions of specific categories of people in precise cities and towns (e.g. the size of households and housing units, landlord-tenant relations, and official housing and land-use policies and practices). Many authors have adopted an economic interpretation that considers housing primarily as a form of financial investment. As DAUNTON (1983) noted this interpretation suggests that supply and demand are related to 'macro'-economic parameters, whereas little concern is given to household income and how residents use their resources. Exceptions to this approach are included in COLOOS (1997) and FLAMAND (1989). Another interpretation examines housing standards and legislation, especially about construction materials and methods, the number and size of rooms, and the provision of gas, water and sanitary facilities (BURNETT, 1978; DREYFUS, 1990; GUERRAND, 1967). There are very few studies that explicitly include a study of morphological or spatial dimensions, but BARBEY (1981; 1990), CASTEX, et.al. (1977) and LAWRENCE (1986) are some exceptions. SWENARTON (1983) maintains that housing historians have dealt with the economics, politics and society while ignoring housing design, whereas architectural historians have discarded everything except the built form of housing. This leads SWENARTON (1983:3) to argue that "both these approaches imply that design and society are not involved in a single process but are separate and distinct". This means that it is impossible to identify changes in the design and use of housing units over time,

and relate these changes to broad societal trends including evolving life styles, social values and government housing policy.

There has been a limited amount of **demographic research** concerning the structure and composition of households and families, which have undergone significant changes in many industrialised and developing countries during this century. For example there has been a significant increase in the share of one-person households, in the decline in household size and in the increase in one-parent families (VAN VLIET, HUTTMAN, FAVA, 1985). In general, many studies in this category of housing research give scant attention to the changing nature of the design and composition of the housing stock, or the values of residents concerning the meaning and use of domestic space and facilities. Some exceptions to this custom are presented by HAUMONT, SEGAUD (1989). This oversight illustrates a more general shortcoming of this category of research: in general, the interrelations between cultural and societal dimensions and processes have rarely been associated or examined in conjunction with personal ideas and values, as well as household customs, either at one point in time, or over an extended period despite the seminal contributions of CHOMBART DE LAUWE (1959-1960), HAUMONT, et.al. (1966) and RAPOPORT (1969).

### Class 2: Studies of people and their surroundings

This second class of housing research includes contributions from ergonomics, environmental psychology, architecture, geography and housing sociology, which have commonly examined the point-of-view of the individual, usually the tenants, owner-occupiers or the property managers using either:

1. Psychological and socio-psychological concepts such as identity, place-identity, appropriation, self and social-self in order to interpret how people perceive, use and value residential environments (COOPER MARCUS, 1995; CSIKSZENTMIHALYI, ROCHBERG-HALTON, 1981; LUGASSY, 1989). Often these interpretations analyse housing in terms of individual needs for identity, control, privacy, security, intimacy and social status (refer to DESPRES (1991) and SOMMERVILLE (1997) for an overview). Many **housing surveys** have focused on **residential satisfaction** of the residents, and/or the appreciation of specific rooms with the aim of formulating guidelines for professionals from the geographical scale of specific rooms in housing units to urban neighbourhoods (refer to LAWRENCE, 1987 for an overview). Another set of contributions apply phenomenological approaches and symbolism to interpret how mental representations, rituals and values are implicated in the personal attachment to and the appropriation of houses and domestic objects (BARBEY, 1990; CLAVEL 1982; FILIOD, 2003). Human action (where it be the use of a house, or a room in the house or a specific domestic object)

is defined by sets of social cultural and individual human factors that are explicitly interrelated to each other, to the physical fabric of the built environment, to the locality in which they occur as well as the temporal context (CLAVEL, 1982; ELEB, CHATELET, MANDOUL, 1988). Unlike many contributions borrowed from phenomenological philosophy that consider only the individual at the expense of the social fabric, cultural traits and time. LAWRENCE (1987) discusses how an integrated perspective is required to implement a research agenda that can promote a better understanding of the multiple uses of residential buildings including a temporal perspective.

2. Architectural and sociological interpretations stemming from either large-scale (at the national or regional level) or small-scale (at the neighbourhood level) household surveys, including interpretations of housing aspirations and "needs" and lifestyles (BERNARD, et.al. 1987; BERNARD, 1992; COPER MARCUS, SARKISSIAN, 1986; LEGER, 1990). Some **housing surveys** identify how the age, gender, education, household composition, socio-economic class and residential mobility of the studied population can be interpreted (INSTITUT DE SOCIOLOGIE URBAINE 1966; HAUMONT, SEGAUD, 1989; VERRET, 1979). There are also architectural surveys of the composition of the housing stock at one point in time and other contributions that analyse how the design and use of houses change in specific localities over time (DEVILLERS, HUET, 1981; LAWRENCE 1986; MOUDON, 1986). A number of researchers, especially doctoral students, have applied the space syntax methodology to analyse pubic and/or private spaces in residential areas. These contributions have rarely challenged the method proposed (HILLIER, HANSON, 1984), whereas LAWRENCE (1987) includes a critique.

The preceding contributions have enabled differences between residents in the same and different localities to be identified and interpreted in terms of cultural, demographic and socio-economic variables (HAUMONT, SEGAUD, 1989; SEGAUD, BONVALET, BRUN, 1998). In general, comparative research is rare and there are only a few cross-cultural studies such as LAWRENCE (1980; 1987). It is noteworthy that, apart from Post-Occupancy Studies in a few Anglo-saxon countries, there are few detailed surveys of the use of internal or external domestic space using budget-time studies or other methods. In this respect, MICHELSON (1975) is an exception.

The majority of the contributions in this category have examined human dimensions without explicitly accounting for the broader societal context in which the studied population resided. This means that ideologies concerning housing, in general, and housing policies, economics, and domestic life, in particular, are not integrated into these studies. (It is

noteworthy that DUNLEAVY (1981) does not follow this custom because he explicitly addressed this context). Moreover, research of this kind has frequently adopted a selective bias by focusing on the so-called "typical" or "average" house type or household, while rarely examining representative samples of resident populations (e.g. single-parent households or the unemployed), as well as representative samples of the housing stock (e.g. studying single-family houses or recurrent apartment buildings at the expense of other types of residential accommodation). Indeed there has been very little concern for identifying and studying differences in housing conditions or households in western societies (FRANCK, AHRENTZEN, 1989). However, there has been a growing interest in the housing requirements of specific, often minority groups of citizens including children, immigrants, homeless persons, the elderly, physically and handicapped persons, and the unemployed (VAN VLIET, CHOLDIN, MICHELSON, POPENOE, 1987). These contributions have shown that it is important to combine quantitative and qualitative approaches in order to identify and understand the specific requirements of an increasingly heterogeneous population in many local housing markets around the world (OECD, 1986). Unfortunately, it has not been common for local, regional or national authorities to monitor social trends, and housing researchers could assume a larger role in overcoming this shortcoming.

The preceding paragraphs imply that the design, meaning and use of housing are complex. In addition residential environments are constructed in order to meet a wide range of requirements including:

1. The lifestyle and preferences of the inhabitants, which vary between individuals and groups at one point in time as well as during the life-span. This means that local housing markets should be monitored continuously in order to identify what characteristics of housing aspirations and preferences change and why they evolve.

2. The availability and affordability of different kinds of housing to meet the economic, social and specific requirements of diverse households which are increasing in diversity. This objective is difficult to achieve given the physical fabric of the housing stock is not easily changeable.

3. The ecological and geographical dimensions of urban and environmental characteristics of residential neighbourhoods including levels of air pollution and noise, which have grown in many cities since the 1980s.

In this respect, the presence of inadequate housing conditions should not be considered only as an architectural or a technical problem but also as an economic, an environmental, a social and a political one (DANERMARK, ELANDER, 1994). The means and measures to define and measure housing availability and affordability vary between societies and countries, and they may also vary in a specific city or neighbourhood over time. Therefore, it

is essential to identify and understand the societal context of a residential environments in future research and practice.

## Synthesis

The demolition and replacement of the housing stock in urban neighbourhoods were important topics for housing policy and construction programmes in the 1950s and 1960s. The key questions at that time focused on demolishing old residential buildings in inner city neighbourhoods as part of slum clearance programmes and the construction of model housing for the working classes often on large-scale housing estates owned by local authorities (LAWRENCE, 1987). These subjects were redefined in the late 1970s in terms of the conservation and restoration of architectural, cultural and urban heritage. This more recent approach has lead to housing research and practice in the 1990s concerning the maintenance and upgrading of existing residential buildings and neighbourhoods. Sometimes these approaches are part of larger scale urban regeneration projects that have been funded by either the private or public sector, or as partnerships between these sectors (LEAVITT, SEAGERT, 1990). These recent projects require detailed analysis of the architectural, economic, social and technical factors but in-depth studies of all these have rarely preceded the implementation of many projects.

During the 1990s, the widely shared interest in **sustainable development** has not been well reflected in a large number of contributions in the field of housing studies. The applications of the principles of sustainable development at the geographical scale of residential environments provides the opportunity to apply an integrated approach that considers the interrelations between the architectural, ecological, economic, social and geographical dimensions of housing (LAWRENCE, 2000). However this kind of contribution has not been common.

Since the 1980s there has been an increase in studies of **vernacular buildings**, in general, and houses in particular (OLIVER, 1997). These empirical contributions, often based on fieldwork, have been completed by theoretical and methodological contributions covering a wide range of subjects. Last, but not least, and in contrast to the first category of studies, this kind of research has rarely adopted a temporal perspective, or accounted for changes to the societal context.

The preceding paragraphs suggest that during the last three decades there has been little concern for housing and **health** even though the study of **housing quality** has been on the research agenda (LAWRENCE, 2002). During the 1990s, a number of projects and publications have begun to correct this (BURRIDGE, ORMANDY, 1993). In 1998, the ENHR constituted a working group on housing and health which has organised workshops at recent ENHR international conferences that have resulted in scientific publications (HARTIG, LAWRENCE, 2003). The European office of the

World Health Organization constituted a taskforce on housing and health in 2001. This has led to a large-scale household survey of housing and health in 8 European cities that began in 2003 and will be completed in 2004.

The preceding sections of this article show that it has been common practice in housing studies to use terminology that reflects whether central government, local government, an institution, an employer or an individual provides housing. In general, a clear distinction has been made between public and private housing, and whether that housing is rented or owner-occupied. However, the means of housing provision and types of housing tenure are not necessarily synonymous (HAMDI, 1991). An integrated, historical approach can be used to re-examine common uses of terminology in order to clarify the definition of classes of housing, including social, public and private rented housing, which have increased in number and kind during this century in several European countries. For example, reference can be made to housing associations and co-operatives. Using this kind of approach it is possible to study the distinction between public-private, and social-market forms of housing in terms of context specific conditions related to the institutional, ideological and structural characteristics of societies. It is also possible to identify the number and kinds of parties (including landlord, leaseholder, caretaker, tenant) as well as the division of responsibilities between the parties (e.g. individual, collective, public) and the definition of rules and conventions between the parties (e.g. administrative, mandatory, formal, conventional, informal, or optional) (LAWRENCE, 1986). Collectively, these characteristics define the claims and responsibilities of individuals, groups and institutions in diverse housing sectors across different scales or levels of society.

## Key Questions

During the 1990s, the vast majority of housing research has presented the results of empirical studies. Too many contributions have generally given little attention to methodological questions. This means that the comparison of one empirical study with others is problematic, that co-ordination between researchers is difficult, and that the validation of the results is impossible. When methodology is given a higher profile, then a number of interesting questions can be addressed. For example:

1. What is the pertinent unit of analysis? Typically, the researcher has defined the unit of analysis according to criteria that she/he consider appropriate. During the 1990s, this expert approach has been contested by those who have applied participatory approaches in which either the subjects or the end users of the research are involved in defining the terms of reference.

2. How can housing researchers effectively combine quantitative and qualitative research methods in order to improve our

understanding of complex housing issues? Robert Marans addresses this question in another chapter in this book. In general, housing research has been dominated by contributions that apply only one kind of method. What are the obstacles to applying more co-ordinated and integrated approaches, and how can these obstacles be best overcome?

3. How can a **temporal perspective** be incorporated into housing research to overcome the static interpretation common to the majority of empirical studies. A temporal perspective is necessary in order to identify and explain change in the meaning and use of housing units, and household life. What is the appropriate time-frame for monitoring change?

4. What are the strengths and limitations of case studies in housing research ? How can generalisations from one case to another be made in terms of their typicality? How can one interpret results from different case studies? Do different results indicate subtle variations between cases, or is the methodology inappropriate in different localities? These key questions are addressed by Rolf Johansson in his contribution in this book.

5. What methods are necessary to identify and interpret the logical, structural relations between cultural, social and psychological variables related to the design, meaning and use of housing, rather than limiting empirical studies of explicit cause-effect relations between these variables?

Each of these questions raises fundamental issues that have not been well considered by mainstream contributions in the field of housing research. These complex questions need to be dealt with by interdisciplinary collaboration. This kind of collaboration will be explained in the following paragraphs.

## Interdisciplinarity and Transdiciplinarity: A way forward

In this article, **disciplinarity** refers to the specialisation of academic disciplines that became strong during the 19th century (LAWRENCE, DESPRES, 2004). **Multidisciplinary** refers to research in which each specialist remains within her/his discipline and contributes using disciplinary concepts and methods. **Interdisciplinary** contributions can be interpreted as the bringing together of disciplines which retain their own concepts and methods that are applied to a mutually agreed subject. In these studies one contributor will usually co-ordinate the research process and seek integration. Interdisciplinarity can be considered as the mixing together of disciplines. In contrast, transdisciplinarity implies a fusion of disciplinary knowledge together with the know-how of lay-people that creates a new hybrid which is different from any specific constituent part. This interpretation means that

transdiciplinarity is not an automated process that stems from the bringing together of people from different disciplines or professions. In addition, it requires an ingredient that some have called "transcendence". This implies the giving up of sovereignty over knowledge, the generation of new insight and knowledge by collaboration, and the capacity to consider the know-how of professionals and lay-people. Collectively, transdiciplinary contributions enable the cross-fertilisation of ideas and knowledge from different contributors that leads to an enlarged vision of a subject, as well as new explanatory theories (SOMERVILLE, RAPPORT, 2000). Transdisciplinarity is a way of achieving innovative goals, enriched understanding and a synergy of new methods. All these are essential if our current understanding of the interrelations between health and residential environments is to be improved.

Multidisciplinarity, interdisciplinarity and transdisciplinarity are complementary rather than being mutually exclusive. It is important to stress this complementarity because without specialised disciplinary studies there would be no in-depth knowledge and data. The interrelations between these approaches ought to be more systematic than they have been in people-environment studies, in general, and in housing research, in particular. The review presented in this essay confirms that disciplinary contributions have dominated housing research, and that there still are too few interdisciplinary contributions.

Transdisciplinary research and practice require a common conceptual framework and analytical methods based on shared terminology, mental images and common goals. Once these have been formulated, then the next requirement is to develop a research agenda based conceptually and pragmatically on diverse sources of data and information that can be organised in ways to help understand, interpret and deal with housing topics (LAWRENCE, DESPRES, 2004). There are several ways of promoting transdisciplinary contributions. The problem-solving approach, for example, can be used. It is typically small-scale, locality specific, and it is therefore appropriate for the study of the interrelations between the diverse characteristics of housing in precise localities. This kind of approach can identify and explain what factors are pertinent in order to analyse and deal with questions that are frequently complex.

## Conclusion

This essay has briefly reviewed the underlying conceptual and methodological frameworks that have guided research in two main classes of housing studies. It also suggests that disciplinary and professional boundaries should be transgressed before integrated and co-ordinated research in the field of housing can be widely accepted. Until then, the interrelations between the vast number of dimensions that define and are mutually defined by the design, meaning and use of housing will not be studied in detail.

Today we know that most housing subjects are not structured within traditional disciplinary and professional boundaries. For example, the relation between housing and health involves much more than the direct effects of specific physical and chemical factors in residential environments on the inhabitants. This is the main reason to propose a shift from disciplinary to interdisciplinary contributions in housing research which can provide the foundation for transdisciplinary professional practice.

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# 2 INQUIRY BY PARTICIPATORY PLANNING WITHIN HOUSING

*Liisa HORELLI*

## Abstract

*Although the contextual structures of housing have not become more supportive of people´s daily lives,* ***user participation*** *in the planning and development of housing areas has, however, increased in many western countries during the past decades. My argument is that the methodology of* ***participatory planning*** *within housing can also contribute to an increased insight into the planning and dwelling processes as well as to their multidimensional impact. The later is reflected on the intrapersonal (the dwelling as the construction of self), inter-personal (interdependences between the network members and neighbours), structural (new organisational forms of dwelling), procedural (application of consensus building methods), and cultural or symbolic dimensions (social and political capital). Inquiry by* ***participatory planning*** *is a combination of environmental psychology and the* ***network approach*** *to collaborative planning integrated with action research. The aim of the chapter is, besides describing this specific type of inquiry within housing, to focus on its framework, concepts and methods, and to give some examples of application.*

***Keywords:*** *Housing, Participatory Planning, Enabling Methods, Action Research, Evaluation*

## In Search of the Collective Creation of Supportive Structures in Housing

Some twenty years ago a transdisciplinary group of Nordic women researchers to which the author belonged, wrote several critical publications concerning the dispersed structures of dwelling, work and care (FORSKARGRUPPEN, 1991). The group also envisioned a more harmonious future, and created a model of action in which *the collective creation of a supportive* ***infrastructure of everyday-life*** would play a greater role. Co-housing provided pilot arenas for the new everyday-life, where the integration of work and care could take place. Presently, cohousing is a viable, although more or less marginal option in Denmark, Sweden and Norway. In addition, a few hundred of new experiments in communal living seem to have emerged in Europe and even in the US during the past years (TORRES, et.al., 2003). Unfortunately, the problems of housing that were taken up by this group two decades ago, have not disappeared. In fact, they are even more acute than before.

The positive side of this personal history is that participation in planning and development by a variety of stakeholders has greatly increased. Collaborative or communicative planning has become a fashion or a new paradigm among many planners (HEALEY, 1997). The **network approach** to **participatory planning** seems to be a particularly promising way to create **supportive structures** in housing too (BOOHER, INNES, 2002).

The title of this chapter has been inspired by the book ´Inquiry by design` that John ZEISEL (1981) wrote in the early eighties. My aim is to describe what inquiry by participatory planning within housing is, to focus on its framework, concepts and methods, and to give some examples of application. My argument is that this type of methodology contributes not only to increased insight into the planning and dwelling processes but also to their multidimensional impact.

I will first define the scope of housing research and then proceed to the integrative framework of my approach. The focus of the presentation will be on the varying phases of collaborative planning and networking with methodological examples.

## The Scope of Housing and Housing Research

According to the German philosopher Martin HEIDEGGER (1971:145), "housing is dwelling and being in the world". On the other hand, Amos RAPOPORT (1977:35) claims that "housing is a system of activities ranging from the dwelling to the community". Both statements are correct, depending on the perspective. They are also important in the sense that housing research should simultaneously examine both the emic and etic, the experiential and systemic aspects of housing. In addition, these statements underpin the dual concept of housing as something that deals not only with the product

i.e. the dwelling, the community or the residential area but also with housing processes that allow to transcend the spatial, temporal and spiritual borders (see LAWRENCE, 1987). The scope of this presentation is also connected to community design and planning which is an inherent part of the housing processes themselves.

## Integrating Environmental Psychology with Collaborative Planning and Action Research

No consensus on the definition and scope of environmental psychology (EP) seems to exist, whether EP is a subdiscipline within psychology or social psychology (BONNES, SECCHIAROLI, 1995) or part of a field of study involving people from a variety of disciplines and professions (SOMMER, 2000; SIME, 1999). I am in favour of an interdisciplinary approach to the field, the foci of which are the psycho-social and behavioural processes of different individuals and groups of people in diverse settings in the varying phases of the cycle of research, policy planning, design, implementation, and evaluation (MOORE, 1987:1385-1386). Thus, the approach is close to that of environment-behaviour-design research but with a special focus on the environment-behaviour transactions that are interpreted from the perspective of individual, communal, and societal regulation (HORELLI, 1999:4). Communal regulation means the opportunity of a group or local collective to influence environmental issues, for instance, through participatory planning. Societal regulation might take place as housing policy, zoning laws and building permits. Individual regulation can be seen as the subjective appropriation of the housing environment and the processing of this experience in which the setting and its cues are used as a means of psychic self-regulation (HORELLI, 1993, 1995; KORPELA, 1995). The latter comprises the construction and maintenance of self through psychic work (mental operations with images, intentions, thoughts, dreams), use of the body, and through behaviour or activities in the social and the built environment as well as in nature. Environmental transactions can be examined both as verbal and non-verbal communication (RAPOPORT, 1982). They also involve a form of internal communication in which the participant processes meaningful emotions, cognitions and symbols, such as in the dialogue that the inhabitant conducts with her or his dwelling (NOSCHIS, 1988). This approach is in fact an expansion of the transactional perspective to environmental psychology (ALTMAN, ROGOFF, 1987), but it lays more emphasis on both the psychological interpretations and the societally mediated nature of environmental transactions (BRONFENBRENNER, 1993; HORELLI, 1999).

As dwelling and also housing environments themselves undergo constant change, environmental psychology has to be complemented by a discipline that systematically deals with intentional change, such as *participatory or collaborative planning*. Citizen groups tend to see participatory

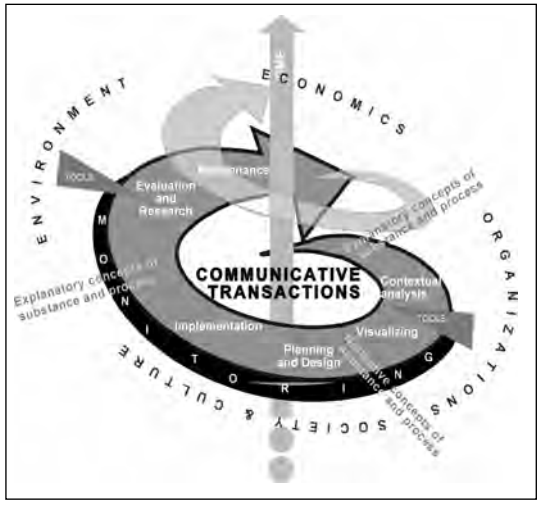


Figure 1
A schema of the methodological approach to **participatory planning** in which co-operative learning and capacity building take place through an on-going monitoring and self-evaluation system, careful organisation and action research.

planning and development as a form of empowerment, if it is connected to real opportunities to having an impact on the decision making. Participatory planning is defined here as "a social, ethical, and political practice in which women and men, children, young and elderly people take part in varying degrees, in the overlapping phases of the planning and decision-making cycle that may bring forth outcomes congruent with the participants´ interests and intentions" (HORELLI, 2002:611).

Figure 1 presents the methodological schema of participatory planning, at the centre of which lie the communicative transactions of participants in a specific environmental, organisational, economic, cultural, and temporal context. The transactions are supported by appropriate tools and methods during the overlapping phases of the planning process - initiation, planning, design, implementation, evaluation, and maintenance.

Participatory planning and also **action research** initiate the planning process with a preliminary analysis of and reflection on the context, after which the dialectical and hermeneutic spiral of action research runs more rapidly. The latter is integrated with the phases of planning through continuous self-monitoring and evaluation. Monitoring provides the participants with feedback on the quality of the change process and its results as well as on the advances in collaborative learning leading to knowledge creation. Evaluation might take the form of research in which the impact of participation can be examined in depth. Research is then conducted from a chosen theoretical perspective in accordance with the problem in question.

**Action research** provides an ideal methodological approach to **participatory planning** as both of them share the iterative and spiral-like flow of evolvement in which perception, reflection, and new orientation (planning) unfold throughout the process (HORELLI, 2002:611-612). **Action research** (AR) also recognises the creation of both change and knowledge. It is a fairly loose methodological orientation and strategy, and it can be applied from various theoretical perspectives (psychological, social, critical, feminist) since it is not tied to one specific theory. The shared characteristics of different types of action research include the involvement of many participants in a change process and in the knowledge production (WHYTE, 1991).

The differences and similarities of varying

knowledges produced during participatory planning and design, such as place knowledge (material and physical), local knowledge (residents´ individual interpretations), and situational knowledge (partial contextual visions), require continuous negotiation of meaning and position (SCHNEECLOTH, SIBLEY, 1995). Also the externalization of tacit knowledge into explicit knowledge requires special techniques. All these, consensus-building tools included, can be regarded as knowledge-making technologies that assist in determining, what constitutes legitimate knowledge and how the knowledge will or should be used.

BOOHER and INNES (2000) have pointed out that as long as participation takes place within the hierarchic or the co-optive political model, only minor changes can take place. Therefore a co-evolving ***collaborative network approach*** to participatory initiatives is a necessity. This means that all the participants are actors in a network of collaboration and learning, which consists of residents or citizens, public agencies, as well as varying interest-based entities. The dynamics and power of these networks lie in the careful nurturing of the self-organisation and interdependences of the actors and the emerging individual, social and political capital. This shift in paradigm has been paralleled by researchers on policy and governance, who claim that most policies, housing policy included, are being implemented through policy networks (KICKERT, et.al., 1997; HORELLI, 2003).

## Application of Enabling Tools and Tratidional Research Methods

The application of enabling tools and methods for the promotion of action and knowledge creation, plays a significant role in this methodological approach. SABO (1999:75) argues that participation becomes a transformative, relational activity, if the methods grow out of group activity. Young participants and women especially seem to profit from the creation of their own enabling tools (HORELLI, et.al., 2000). There are, however, certain conditions that should be taken into consideration in the choice and appropriation of tools for **participatory planning** and design in practice.

A great variety of techniques, methods and tools exist within participatory endeavours, but awareness and use of them is not widespread (SHARPE, 1999). ***Enabling tools****, which can be classified into diagnostic, expressive, conceptual, organisational and political instruments, refer to any techniques, even traditional research methods that enhance the transactions and knowledge creation of the stakeholders during the phases of* ***participatory planning***. Tools can also be created by the participants themselves.

The opportunities to participate and the role of the participants tend to vary according to the scale of the project, motivation, and objectives but also to the level and phase of participation. The latter tend to influence the relevant choice of enabling and other research tools. Table 1 provides a matrix of the level and phase of participation with examples of

| Overlapping Phases of The Cycle of Participatory Planning | | | | | |
|---|---|---|---|---|---|
| Indicative levels of participation | Initiation | Planning and design | Implementation | Evaluation/ Research | Maintenance |
| Community control | Paper and pencil tests, Topoanalysis, Envisioning | Modelling, Games, Trade offs, Role playing | Contracted and self-building | Internal and external evaluation | Contracted or self-mainte-nance |
| Partnership | Future work-shops, Mapping, Stakeholder analysis | Planning workshops, Consensus building, On-going monitoring and self-evaluation | Contracted and self-build-ing, Training Workshops Network management | Self-evaluation portfolios Resident panels Network analysis | Collaborative maintenance and management |
| Consultation | Planning walks Surveys, Meetings Campaigns, Demonstrations | Communication and information techniques (ICT) | Displays | POE | Surveys, ICT |
| Information | Leaflets, lobbying | Media | Videos | Traditional research methods | Traditional research methods |

**Table 1**
A matrix of level and phase of participation with examples of appropriate enabling tools and research methods. The upper rows include the tools and techniques presented in the rows beneath.

appropriate enabling tools and research methods. Inhabitants can be involved in all the phases and levels. WATES (2000) and HAMDI and GOETHERT (1997) argue that the minimum criterion for real participation lies at the partnership level of the planning phase.

Table 1 provides a matrix that can be used to analyse and even to outline participatory projects around housing areas or communities, local agendas etc. As neighbourhood rehabilitation often includes a set of different "projects" or sub-elements, each of them requires a matrix of its own.

Planning and development, place-making included, imply cyclical processes that can be classified for analytic purposes into phases or stages. The latter are not separate from one another in practice but overlapping and iterative (Figure 1). *Initiation* refers here to the beginning of the process in which the preliminary clarification of the context, the mapping of the participants (stakeholder

analysis), the choice of the level of participation, and the preliminary selection of tools are made. It is here that research can bring in a deeper analysis of the historical, socio-economic and cultural context. *Planning comprises* the programming or briefing of the project in which the visions, objectives and specific activities are defined. It also implies the choice of strategies for implementation, such as the construction of an on-going monitoring and self-evaluation system (KUKKONEN, 1984; HORELLI, 2003:51). *Design* involves technical expertise that develops the details of the plans. *Implementation* means the execution of the project through constructing the buildings, installing the infrastructure, putting up some training or social programs, or nurturing and managing the network and the operations within it. *Evaluation* (and research) consists of the analysis and assessment of the monitored data, gathered throughout the project. Maintenance means the transference of results and nurturing them in a long-term perspective.

The level of involvement is connected to the goals of participation. The latter are not, however, the same as the goals of the project or programme although they might be associated with one another. Inherent in the goals of participatory planning is the power of the residents to have an impact on decision making. In spite of the criticism and defects in the ARNSTEIN´S (1969) ladder of participation, it is important to be able to indicate what level of control the users or residents have in specific projects. Therefore, a five-level scale of participation has been adopted here. The levels, which are only indicative, since the borders of the levels cannot be exactly defined, included (HAMDI, GOETHERT, 1997; WATES, 2000):

- ***non participation*** - no involvement of users or the community; authorities or owners are in charge of the housing project.
- ***information*** - authorities are still in charge but one-way flow of information exists either as informing or retrieving data from the residents, for instance, through surveys. The community or the residents are treated in the abstract.
- ***consultation*** - authorities are in charge of the project, but they ask opinions about the presented options (in North America, consultation may sometimes mean almost partnership). The role of the community is that of an interest group.
- ***partnership*** - shared working and decision making with different actors, the authorities included. The role of the community or residents is that of stakeholders who have a stake in the project.
- ***community control*** - the community (users and residents) decides and the experts or practitioners are used as resources.

The varying phases of participatory planning tend to require different types of **enabling tools** and research methods. In fact, the choice of tools and methods for participation depends both on the phase of the planning cycle and on the adopted level of participation in a specific

context. Diagnostic tools dominate the initiation phase, whereas the planning phase abounds with expressive and organisational tools. Implementation, which is quite seldom dealt with in the case studies of traditional **participatory planning,** lacks **enabling tools.** Implementation within the former hierarchic paradigm consists of the organising of concrete actions, whereas **the network approach** implies the additional dealing with the careful creation and nurturing of networks The **summative evaluation** phase comprises again mainly analytic tools and traditional research methods.

The different levels of participation imply not only varying degrees of influence and control by the stakeholders but also different amounts of personal and collective involvement. Therefore, *the higher the level of participation, the larger the spectrum of tools and methods that can be applied or created is* (see Table 1). Examples of community control or partnership, such as the **participatory planning** of a cohousing community or a residential area (HORELLI, 1993; 2002; SANOFF, 1999) display the application of a wide set of tools. They might include modelling and simulation (KUKKONEN, 1984; LAWRENCE, 1987), games and trade-offs (SANOFF, 1999), and a great variety of consensus building techniques (SUSSKIND, et.al., 1999). This is the level where all kinds of planning and design workshops lasting from one to several days, are appropriate (HAMDI, GOETHERT, 1997). However, if the level of participation is only about information or consultation the involvement of residents with deeply mobilizing enabling tools, such as workshops, may give false expectations about the eventual impact of the results on decision-making.

The chosen level of participation has political consequences. CHURCHMAN´S study (1990) indicates that although government-initiated housing projects do not necessarily lead to cooption, they seldom result in radical change. Nevertheless, if the public is not content with the granted minor level of participation, it might start applying political tools that are outside the consensus-building spirit (SUSSKIND, et.al., 1999). Here lies again the great contribution of the **network approach**, since it allows the activists to transcend the different levels and hierarchies and thus initiate new links and initiatives that are not possible in a hierarchically organised pattern (HORELLI, 2003).

## Multidimensional Outcomes

But, what kind of results can be obtained through the inquiry by **participatory planning** in housing? Traditional **evaluation criteria** and indicators are hardly appropriate, especially when **networked approaches** are applied (INNES, BOOHER, 1999). The potential outcomes are complex and multidimensional depending on the objectives of the project and the research. They might include economic and even societal results and impact, although little research has been conducted on these themes within the participatory approaches. Thus, the outcomes comprise, in addition to material

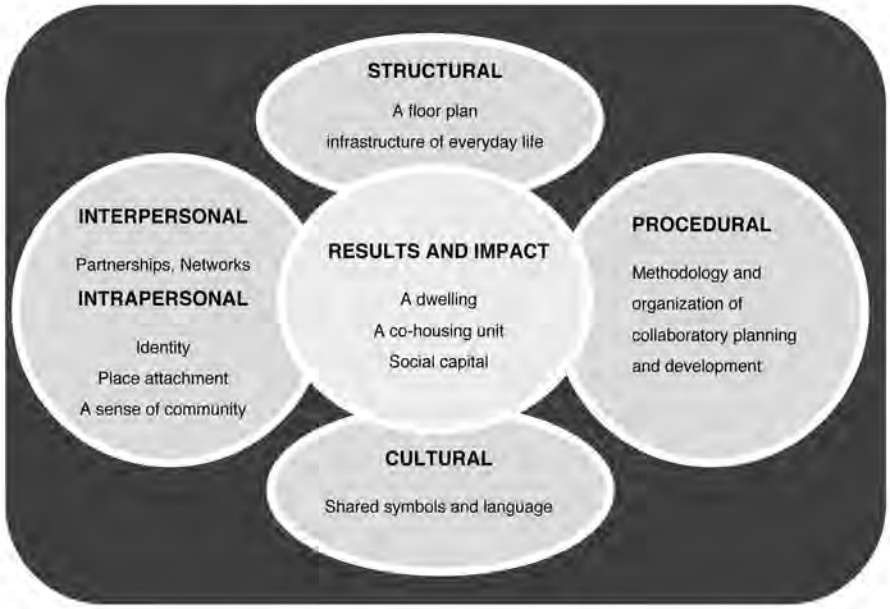


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**Figure 2**
Evaluation criteria for the assessment of results and impact in the network approach to participatory planning within housing.

concrete results, intrapersonal (the dwelling as the construction of self; place attachment), inter-personal (interdependences between the members of the network, social relations, new partnerships), structural (new organisational forms of dwelling, rules and regulations, change in practices), procedural (application of consensus building methods, capacity building), and cultural or symbolic dimensions (image, language, social and political capital; see Figure 2). This list means the simultaneous application of criteria drawn both from the system (material and economic solutions and structures) and the life-world (the experiences of the residents).

The impact of the residents´ appropriation of the infrastructure of and active networking in the neighbourhood can often be measured as an increase in the residents´ sense of community (PREZZA, 2004:50) and **social capital**. The latter is a currently fashionable term within the economic and political discourse. It refers to resources or assets, embedded in networked social relations that can be accessed and mobilised, when needed (LIN, 2001). As **social capital** is increasingly regarded as the necessary ingredient of innovative milieus that in turn lead to competitiveness (KOSTIAINEN, 2002), the emerging **social capital** within residential areas may be critical in making people more sympathetic to the value of participatory methods. On the other hand, this kind of argumentation might increase the reification of dwelling and even imply a risk of

cooption by the system (HEIDEGGER, 1971; HABERMAS, 1984).

As participatory structures are an inherent part of human-friendly environments for groups of people that are dependent on their localities, such as children, their parents, elderly people and people with disabilities, **evaluation** of the impact of participation within housing becomes closely connected to the quality of life-studies (see. MARANS, in this book; HORELLI,2004).

## Conclusions

Inquiry by **participatory planning** within housing, as presented here, is a combination of environmental psychology and the **network approach** to **collaborative planning** integrated with **action research**. Both **enabling** and traditional research methods are applied, depending on the phase of the planning cycle and the desired level of involvement. The methods are mostly qualitative but nothing prevents quantitative methods being used , especially statistics in the contextual mapping or network analysis in the evaluation of the impact. This type of inquiry implies the construction of an on-going monitoring and self-evaluation system connected to **action research**, which allows the residents to get involved in the assessment of the process and evolving results (HORELLI, 2003). The methods themselves become knowledge creation and management tools only in connection with the application of the monitoring system and research, and the careful organisation of the process. As the borderline between **evaluation** and research is fuzzy, it is difficult to say to which extent the residents are also involved in research.

Inquiry by participatory planning is quite strenuous, because it requires the researcher *"to wear different hats"* and to master varying kinds of skills and knowledges - analytic and synthetic, explanatory and normative, procedural and substantive. It provides, however, significant insight into the process, content and impact of housing.

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# 3 ON CASE STUDY METHODOLOGY

*Rolf JOHANSSON*

## Abstract

*A case study is expected to capture the complexity of a single case, which should be a functioning unit, be investigated in its natural context with a multitude of methods, and be contemporary. A case study and, normally, history focus on one case, but simultaneously take account of the context, and so encompass many variables and qualities. When a physical artefact is the case the gap between case study and history tends to diminish and case studies often become more or less historical case studies. Case study methodology also bridges the gap between quantitative and qualitative methods in the social sciences. Still the different concepts of validation in quantitative and qualitative research sometimes create confusion when they are combined, as they often are in case studies.*

*The case might be studied with an intrinsic interest in the case as such, or with an interest in generalising. When a generalisation is based on the deductive principle, the procedure of testing hypothesis is used. A second mode of generalisation is inductive theory-generation, or conceptualisation. The third mode depends on the principle of abduction. Abduction is the process of facing an unexpected fact, applying some rule and, as a result, positing a case that may be. But there are two kinds of abduction: One is when a case is created from a few facts; for instance, historical data or clues. The other is operative when generalisations are made from known cases and applied to an actual problem situation by making appropriate comparisons. This is also called naturalistic generalisation. In a case study, the different modes of generalisation are often combined.*

*The conclusion is that case studies has the potential for further development through the mastery of the combination on different levels of techniques, methodologies, strategies, or theories, like; the combination of case study and history, which is important when the case is an artefact; the combination of differing quality standards in qualitative and quantitative research, which are difficult to codify; and the combination of different modes of generalisation.*

***Keywords:*** *Case, Case Study, Case Study Methodology, Generalisation*

A case study is expected to capture the complexity of a single case, and the methodology which enables this has developed within the social sciences. Such methodology is applied not only in the social sciences, such as psychology, sociology, anthropology, and economics, but also in practice-oriented fields such as architecture, planning, environmental studies, social work, education, and business studies. As we can see from the papers presented at the IAPS-housing conference "Methodologies in Housing Research" in Stockholm 2003, case studies are very well represented. At least a third of the papers discuss some aspect of case study methodology.

In this paper I will try to capture the essence of case study methodology: firstly, by discussing the notions of 'case study' and 'case'; secondly, by tracing its history; and finally, by making explicit its most characteristic features.

## The Notions of 'Case Study' and 'Case'

There are different ideas about what a case study is. If I try to find a common denominator that case study researchers (YIN 1994; MERRIAM, 1994; STAKE, 1995; 1998; MILES, HUBERMAN, 1994; GILLHAM, 2001) might agree on, it would be something along the following lines:

The case study should have a 'case' which is the object of study. The case should

- be a complex functioning unit,
- be investigated in its natural context with a multitude of methods, and
- be contemporary.

Nevertheless, the case study researchers mentioned above emphasise different features. Robert STAKE (1998) points out that crucial to case study research are not the methods of investigation, but that the object of study is a case: "As a form of research, case study is defined by interest in individual cases, not by the methods of inquiry used". Other researchers, such as Robert YIN (1994), place more emphasis on the methodology that constitutes a case study.

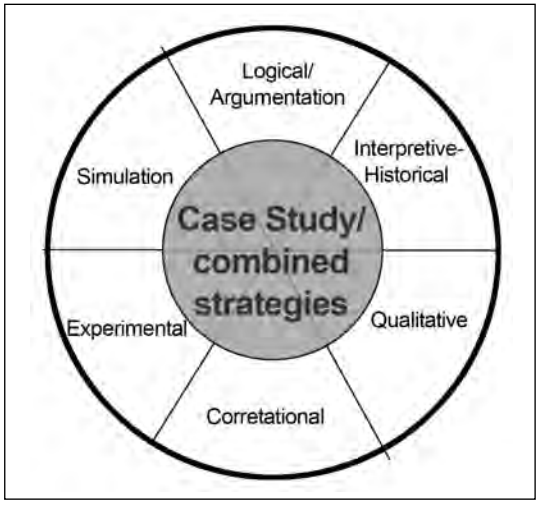
I will use Stake´s more inclusive definition: "case study is defined by interest in individual cases".

The concept of 'case study' introduces the first issue that I will discuss: how is the case study related to other research methods? One major feature of case study methodology is that different methods are combined with the purpose of illuminating a case from different angles: to triangulate by combining methodologies. In a recently published book, Architectural Research Methods by Linda GROAT and David WANG (2002), the relation between different research methodologies in the field of architecture is illustrated as in figure 1. Groat & Wang explain the relations between methodologies, as shown in their diagram, by arguing that those close to each other have more similarities than those that are further apart. Qualitative and interpretive research have in common a holistic approach to the research subject, but with differing time

perspectives. Correlational research, on the other hand, shares with qualitative research a focus on naturally occurring circumstances, but is dependent on quantitative data. Experimentation is also dependent on quantitative data, but with the requirement that the researcher must be able to manipulate isolated variables. Likewise, simulation requires control and manipulation. Logical argumentation - which includes, for instance, **space syntax analysis** - shares with simulation an emphasis on abstraction. And interpretive-historical research is dependent on a constructed logic of interpretation. This completes the circle.

Case studies combine other research strategies. In that respect the case study could be said to be a meta-method. The purpose of Groat & Wang's positioning of the case study in the middle of the diagram is not to argue that it is in any respect more important than other methodologies. I argue, though, that in practice-oriented fields of research, such as architecture and planning, the case study has a special importance. The ability to act within professional practice is based on knowledge of a repertoire of cases. These cases are based either on personal experience or are model cases established within the profession. Case studies contribute to the building of a professional repertoire. A designer's work is based on comparisons between known cases from the repertoire and the actual design situation (SCHÖN, 1991).

I use another conceptual framework for research methodologies, focusing on the different strategies that can be applied to reduce data in order to make the empirical world amenable to investigation. The number of **variables (qualities)** that are considered, or the number of cases **(units of analysis)**, or both, can be reduced.

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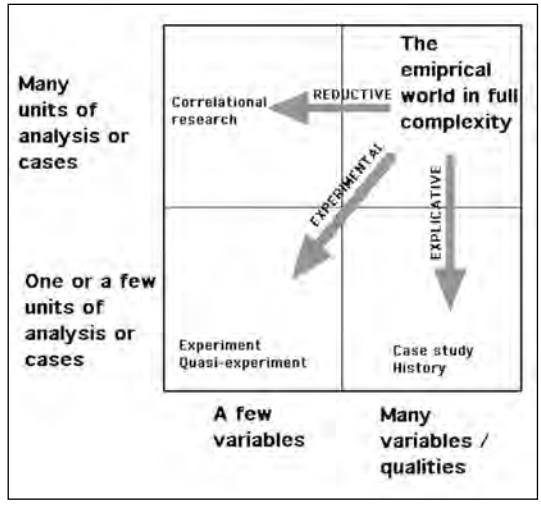


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**Figure 1**
A conceptual framework for research methods. After GROAT and WANG (2002), the diagram is simplified by the author.

**Figure 2**
Three strategies to focus empirical research by reducing the units of analysis (cases), the number of variables (qualities), or both. The three strategies imply different methodologies. Case studies are a form of explicative strategy.

A case study and, normally, history focus on one case, but simultaneously take account of the context, and so encompass many variables and qualities. I have labelled this strategy 'explicative' as opposed to 'experimental' (one unit of analysis and a few isolated variables) and 'reductive' (many units of analysis and a few variables) (JOHANSSON, 2002).

The relation between case study and history requires special attention. Case study methodology is developed within the social sciences. A prerequisite of the development of case study methodology was the focus on contemporary events characteristic of the social sciences. Within research in the field of architecture and planning, an artefact often serves as a focus of attention. When a physical artefact is the case (houses or housing areas, for instance, instead of an individual or a social group) the gap between case study and history tends to diminish. An artefact is a carrier of its history. This is what the philosopher and archaeologist Robin George COLLINGWOOD calls his "first principle of a philosophy of history: that the past which an historian studies is not a dead past, but a past which in some sense is still living in the present" (1978:97). The context of design and the context of use may be separated in time, but are often equally important to the understanding of the case of an artefact. In architectural research, when the case is a physical artefact, case studies often become more or less historical case studies (JOHANSSON, 2000.a).

I will now discuss the notion of 'case'. What is a case? The concept of case is not well defined and remains a subject of debate. The case may be a relatively bounded object or a process; it may be theoretical, empirical, or both (RAGIN, BECKER, 1992). At a minimum, a case is a phenomenon specific to time and space.

The notion of **'case'** is complicated in another respect. The kind of case on which a case study focuses may change over time. It may change both in the hands of the researcher and in the hands of the researcher's audiences (RAGIN, BECKER, 1992:8). It is characteristic of case study methodology that the boundaries, and often even the focus of the case, change through the research process. Also, a case study focusing on a particular phenomenon might be read as an investigation of a different phenomenon. The classic study Street Corner Society by William Foot WHYTE (1993), for instance, can be read as it was originally intended by the author: as a multiple-case study of boys' gangs. It can also be read - which is probably more common today - as a case of participant observation.

## The History of Case Study Methodology

A first generation of case studies appeared around 1900, initially within the discipline of anthropology. From early accounts of journeys, systematic investigations of other cultures in the form of field studies emerged, with participant observation as the predominant method of data

collection. Another source of case study methodology has been provided by descriptions of individuals within medicine, social work and psychology, often called "case work" or "case history". The first generation of case studies culminated in the **Chicago school of sociology**, in which the anthropologist's field study method was practised on contemporary society in the university surroundings (PLATT, 1992; VAN MAANEN, 1988).

After the Second World War **logical positivism** dominated the philosophy of science, and the social sciences favoured positivism and quantitative methods. Surveys, statistical methods, opinion polls, experiments, and quasi-experiments were considered scientific, and qualitative case studies were criticised for being non-scientific. During this period differing methodologies led to a distinction within the social sciences between two cultures: positivistic and anti-positivistic. Thus the social sciences were characterised by a methodological division. This reflected the birth and development of the social sciences within the context of existing tensions between the natural sciences and the humanities.

Around 1950 logical positivism dissolved, but within the social sciences the methodology of the natural sciences was still emulated. During its emergence, housing research, which was based on the model of the social sciences, was very much dependent on positivistic methods. This was a consequence of a fear of not being scientifically acceptable. Philosophers of science, such as Peter WINCH (1994) and Georg Henrik VON WRIGHT (1971), criticised the methodological influence of the natural sciences on the social sciences. In the late 1960s a second generation of case study methodology began to emerge: one which bridged the gap between positivism and hermeneutics as a philosophical foundation of the social sciences.

The first type of methodology within the second generation of case studies was **Grounded Theory**. This methodology merged qualitative field study methods from the Chicago school of sociology with quantitative methods of data analysis (GLASER, STRAUSS, 1967). The result was an inductive methodology that was based on using detailed procedures to analyse data. Robert YIN (1994) took the next step. He transferred experimental logic into the field of naturalistic inquiry and combined it with qualitative methods. Since then, much has been written on case study methodology. Case study methodology has developed in the direction of eclecticism and pragmatism. This development has been advocated by, among others, Michael Quinn PATTON (1990:39): "Rather than believing that one must choose to align with one paradigm or the other, I advocate a paradigm of choices. A paradigm of choices rejects methodological orthodoxy in favour of methodological appropriateness as the primary criterion for judging methodological quality". Case study methodology now bridges the methodological gap in the social sciences.

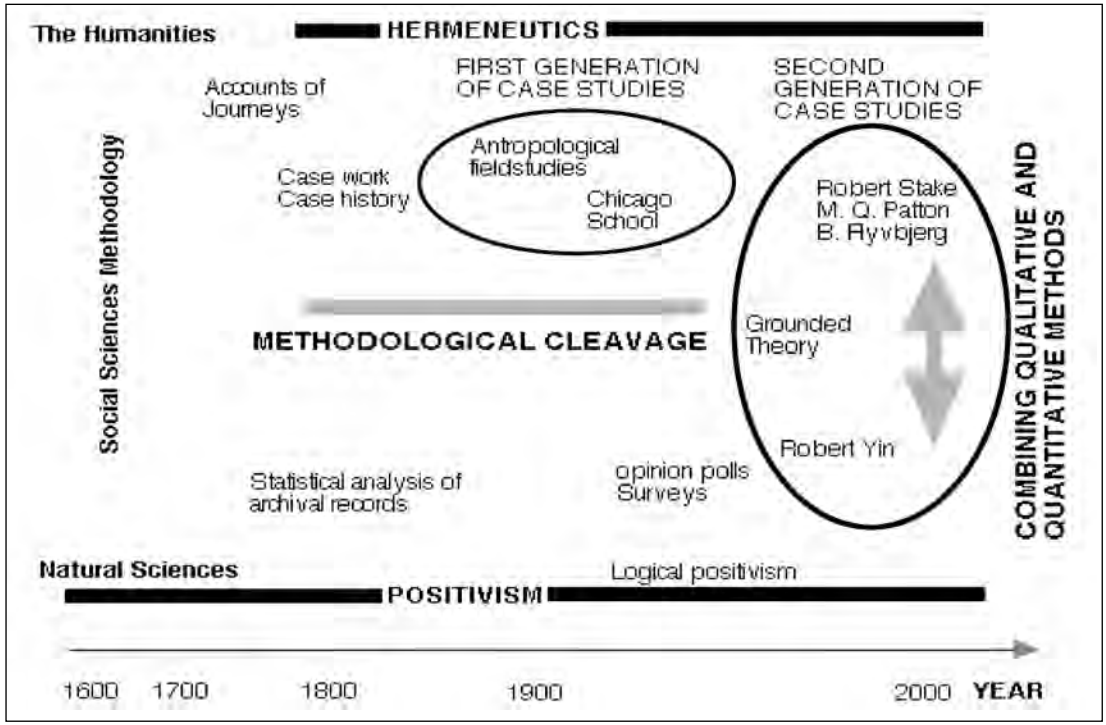


**Figure 3**
The history of case study methodology. The first generation of case studies was an isolated island within the development of methodology in the social sciences. After the Second World War it received heavy criticism from the logical positivists. Over the last few decades case study methodology has made a comeback: methodology has become explicit and inclusive.

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## The Characteristic Features of Case Study Methodology

Unlike the first generation of case study research, the aim of the second generation has been to make methods explicit. Different important aspects of case study methodology are exhaustively discussed: How are findings validated? How is a case for study selected? And, how are generalisations made from a single case?

*Triangulation* provides an important way of ensuring the validity of case study research. Normally, data collection methods are triangulated (many methods are combined), but in addition to this, data sources, theory, or investigators might also be triangulated (DENZIN, 1978). I have noticed that different concepts of validation in quantitative and qualitative research sometimes create confusion when they are combined, as they often are in case studies.

How is a case for study selected? The case might be given and studied with an intrinsic interest in the case as such. In such a case the researcher has no interest in generalising his or her findings. The researcher focuses on understanding the case. If the

findings are generalised, it is done by audiences through **"naturalistic generalisation"**. I will soon elaborate on this.

The alternative to an intrinsic case study is a purposefully or analytically selected case. A case may be purposefully selected in virtue of being, for instance, information-rich, critical, revelatory, unique, or extreme (as opposed to cases selected within a representational sample strategy used in correlational research) (STAKE, 1995; PATTON, 1990). If a case is purposefully selected, then there is an interest in generalising the findings.

I will now investigate the issue of generalisation, since this is the issue over which case study methodology has been most questioned. How are generalisations made from a single case? Generalisations from cases are not statistical, they are analytical. They are based on reasoning. There are three principles of reasoning: deductive, inductive and abductive. Generalisations can be made from a case using one or a combination of these principles.

When a generalisation is based on the **deductive** principle, the procedure is similar to an experiment: a hypothesis is formulated, and testable consequences are derived by deduction. By comparing the expected findings, which are deduced from a theory and a case, with the empirical findings, it is possible to verify or falsify the theory. As a result it is possible to define the domain within which the theory is valid more exactly. Cases that are pivotal to the theory are selected. The testing of the theory is comprised of the emulation of experimental method in a naturalistic setting. From a theory and the facts of a case, generalisations are drawn concerning the domain of the theory. This model of the way in which generalisations are drawn from a case is developed by Robert YIN (1994).

A second mode of generalisation is achieved through induction. In case studies this is done through inductive theory-generation, or conceptualisation, which is based on data from within a case. The result is a theory normally consisting of a set of related concepts. According to **Grounded Theory**, this is the way in which generalisations are made (GLASER, STRAUSS 1967).

The third type of generalisation depends on the principle of **abduction. Deduction** and **induction** are familiar to everyone, but possibly not abduction. According to the principle of deduction a conclusion is necessarily true from a case and a rule. If the premises are true, the conclusion is also true. Deduction proves that something must be true. By induction we can conclude from facts in a case a rule that actually is operative, and probably is operative, in similar cases. Abduction is the process of facing an unexpected fact, applying some rule (known already or created for the occasion), and, as a result, positing a case that may be. The concept of abduction was coined by the pragmatist philosopher Charles Sanders Peirce: "The surprising fact, C, is observed; But if A were true, C would be a matter of course, Hence, there is reason to suspect that A is true" (PEIRCE, 1992, V.5:189). But Peirce also indicates that there are two kinds of abduction:

> [Abduction] is where we find some very curious circumstance, which would be explained by the supposition that it was a case of a certain general rule, and thereupon adopt that supposition. Or where we find that in certain respects two objects have strong resemblance, and that they resemble one another strongly in other respects. (PEIRCE, 1992,V.2:624)

Now, returning to the topic of generalising from a case, these two kinds of abduction indicate two more possible types of generalisation. One is when a case is created (reconstructed) by a process of abductive reasoning from a few facts; for instance, historical data or clues. Within the humanities, the historian Carlo Ginzburg refers to these kinds of generalisation as occuring within the "evidential paradigm", an epistemological model developed towards the end of the nineteenth century (GINZBURG, 1989).

The other kind of **generalisation**, based on **abduction**, is operative when generalisations are made from known cases and applied to an actual problem situation by making appropriate comparisons. This is also called **naturalistic generalisation** (STAKE, 1995). Designers practise **naturalistic generalisation** when they

**Figure 4**
Modes of generalisation and reasoning within case study methodology.

| Procedure | Mode of reasoning | Result | Generalisation |
|---|---|---|---|
| HYPOTHESIS TESTING<br>A theory (hypothesis) is tested in a case, and verified or falsified | Deductive | The establishment of the domain of the theory | From a hypothesis and facts to the verification of a *theory* |
| THEORY GENERATING<br>A principle (theory) is generated from facts in the case | Inductive | A theory (Conceptualisation) | From facts in a case to *theory* |
| NATURALISTIC GENERALISATION<br>An actual problem situation is compared with known cases | Abductive | Ability to act based on the conception of a case (or cases) | From cases to a *case* |
| SYNTHESISING A CASE<br>A case in synthesised from facts in the case and a principle (theory) | Abductive | The (re)construction of a case | From facts and a theory to a *case* |

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refer to their repertoire of familiar cases in implementing new designs.

In a case study, the different modes of generalisation are often combined. When case study methodology is presented in textbooks, on the other hand, it is most often modelled on one mode of generalisation. The book Sociological Practice by Derek LAYDER (1998) is an exception. Layder argues that theory testing and theory generating are combined in practice. He names this combined approach "adaptive theory approach".

## Conclusion

I will conclude by summarizing the reflections on case study methodology that I have made in this paper.

The essence of case study methodology is triangulation, the combination on different levels of techniques, methods, strategies, or theories. I believe case studies develop through the mastery of such combinations.

The division between history and **case** study is often uncalled for when the **case** is an artefact. Case studies with a stronger methodological influence from historical research will probably develop: historical case studies in which case study methodology and **history** combine.

The combination of qualitative and quantitative approaches is well established in case studies, but nonetheless, the differing quality standards - regarding truth, applicability, consistency, and neutrality - in qualitative and quantitative research are difficult to codify.

Finally, the principal issue of the debate: how we may generalise from a case. Maybe we will see case studies where the different modes of generalisation are explicitly combined.

These are all aspects of case study methodology, which has the potential for further development.

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# 4 PARTICIPANT OBSERVATION - A METHOD FOR INSIDE VIEWS

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## Abstract

*In this paper the pros and cons of participant observation are analysed, especially with reference to its usefulness in housing research. At the end of the 1960s the author lived in an African low-income district of Dar es Salaam as part of his research on the relationship between spatial organisation of houses and social aspects such as use of space, neighbourly relations, feeling of safety and attitudes to overcrowding. The experience of living in a low-income housing area is utilised for a discussion of the participant observation method in the light of theoretical literature on the subject. During his fieldwork the researcher experienced a conflict between his role as participant and his role as observer, linked to differences in social status. He finds such conflicts natural and discusses this aspect of the method in detail. One of the conclusions is that the participant observation method is superior for getting inside views, i.e. to understand how residents perceive of themselves, their community and the world outside. Another conclusion is that the method can be fruitfully used within housing research and that it should be made explicit also when the researcher is only using her/his own experience of housing for defining the research problem. The paper ends with recommendations to researchers intending to use participant observation.*

***Keywords:*** *Research Methods, Participant Observation, Low-Income Housing, Spatial Organisation, Tanzania.*

## Introduction

Participant observation may be defined as a method where the researcher is observing while playing an established participant role in the scene studied (ATKINSON, HAMMERSLEY, 1998: 111). It is a method mainly used by social scientists, especially anthropologists. It is considered particularly suitable for the study of a phenomenon that is not well known to the researcher, or as a procedure to explore the nature of the research issues when preparing for studies that use more conventional methods as the main instruments of investigation.

In his book *"Participant Observation - A Methodology for Human Studies"* (1989) Danny Jorgensen points out that participant observation is appropriate also for descriptive studies and studies aimed at generating theoretical interpretations. He describes it as a unique method and finds it appropriate for the study of almost every aspect of human existence, but most suitable for the study of daily life, and when insider views are very different from outsider views. The role of the participant observer may range from very little to more or less complete participation (JORGENSEN, 1989).

The famous anthropologist Bronislaw Malinowski is considered to be the one who discovered participant observation as the main principle of **anthropological fieldwork**. Previous anthropological research had been based on the use of native assistants and interpreters. In his studies of the Trobrianders of the Western Pacific during the First World War Malinowski lived with the people, learned their language and shared their daily life. He took part in the ongoing flow of events instead of focusing on specific questions. He recorded carefully everything he observed, also trivial facts. By living with the people formal interviews and interpreters could be skipped (ERIKSEN & NIELSEN, 2001).

Although anthropology was originally defined as the study of non-industrialised societies, the discipline widened its scope to comprise modern, urban contexts. In this process anthropology started to study **social change**. After the Second World War participant observation was used also by sociologists, for instance by representatives of the **Chicago school**, who in the 1950s introduced studies of integration of immigrants in the "American melting pot". In the 1970s ethnographic studies of modern people became common. Participant observation has been used for the study of religious sects, street gangs, hockey players, mountaineers, poker players, alcoholics, battered women in shelters, and other specific groups. The method is often supplemented by other methods (ERIKSEN & NIELSEN, 2001). Nowadays participant observation is used in many studies. No discipline can lay unique claim to a rationale for this method (ATKINSON, HAMMERSLEY, 1998).

Participant observation has been less used in housing research. It may be argued, however, that many housing studies originate in the researcher's own experience of a housing situation, where some interesting problems have been discovered. Often it constitutes an

important part of the formulatory stage of a major study. In this chapter it will be explored how participant observation may be used in housing research. The concept of "housing" mainly refers to functional, spatial and other design aspects, including user experience and evaluation of various house types, while aspects such as housing policies, finance and planning are left aside.

## Living in an African Low-Income Area

In 1968 the author was given a research grant to carry out a study of housing in Dar es Salaam. The main aim was to compare the spatial organisation of three house types and relate this to experience of overcrowding, co-operation between neighbours, feeling of safety, and use of space. One of the house types - the urban **Swahili house**[1] - had six to eight rooms, the majority of which were for renting. Usually one household was accommodated in each room. A veranda, a central corridor, a pit latrine, and a backyard with kitchen and wash-place were shared spaces. The collective organisation and the limited private space for each household contributed to the Swahili house being a rare example of a planned house type that was accessible to low-income residents. One objective of the study was to find out whether or not the disadvantages of **overcrowding** and shared spaces would outweigh the advantages of the low costs (VESTBRO, 1975).

When designing the study the researcher was strongly influenced by the **positivist** orientation of Swedish housing research of the 1960s. At the rapidly growing Swedish Building Research Institute large surveys were carried out, based on structured interviews and/or detailed observations of use of space. Data were often compiled without much theorising on how they would be used. Swedish housing research at the time had a heavy inclination towards **social engineering**, expressed in articulate demands from government authorities for research results that could be utilised when building the Swedish welfare state (KRANTZ, 1990; VESTBRO, 1998).

Because of this background the study in Dar es Salaam was planned to include a random sample of the three selected house types, each of which would be covered with a) interviews to be carried out by sociology students, and b) observations of use of space through the use of **employed observers**. The

**Figure 1**
Street with Swahili type houses in Dar es Salaam.

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researcher felt, however, that living in one of the areas to be studied would be useful for understanding the housing situation in Dar es Salaam better. It was decided to carry out participant observation as a **formulatory study**. The main idea was to live in an urban Swahili type house, but not necessarily to achieve a high degree of participation (VESTBRO, 1975).

After some initial difficulties I managed to get a room in an urban Swahili house. It was situated in an unplanned area that was subject to **upgrading**. The area, called Magomeni Makuti[2], had an unusual high proportion of urban Swahili type houses. The owner had acquired the plot in 1949 and built himself a mud-and-wattle house. In 1968 it was selected for upgrading. This was made by replacing mud-and-wattle houses one by one with buildings of concrete blocks and corrugated iron sheets. The process was administrated by the state-owned National Housing Corporation (NHC), founded to provide housing for low-income people according to the modernist **provider model** dominating global housing policies at the time (HAMDI, 1991; VESBTRO, 2001). A special feature of NHC upgrading was that the collective character of the urban Swahili type house was maintained instead of replacing it with small one-family units (a policy which was reversed later).

When I moved in, my house had just been **upgraded**. It had a concrete slab foundation, walls of sand-cement (a simple form of concrete blocks), a roof of corrugated metal sheets on sawn timber, ceilings of cardboard, and industrially manufactured doors and windows (without glass). The rooms were 14-16 sqm. As in other **Swahili houses** the veranda, the corridor, the kitchen, the backyard and the pit latrine were shared with other residents. There was no electricity and no tap water in the house. I lived eight months in the room, which also served as my workplace during the fieldwork. For the room I paid 30 Tanzanian shillings a month ($ 4 at the time). On top of that I paid about 3 shillings a month for water, bought from **water vendors** passing frequently outside the house.[3] Because of the trouble to get water one had to save on it. I learnt to manage with only five litres for a "shower", using a bucket and a scoop in the latrine-cum-washroom. For drinking I boiled water and kept it in a clay jar for cooling.

I was the first to move into the new house. Next was a young family with a baby. Later came a young male student (relative of the owner), a pregnant woman (whose other three children arrived much later), an elderly man (whose family also came later) and finally the owner himself with his wife and five children. At the end of my stay the house accommodated 22 people (VESTBRO, 1975).

## Degree of Participation

In order to be accepted as a normal tenant I wanted to follow the existing rules of **neighbourly co-operation**. This was not an easy task, since it was considered very strange for a white man to live among poor Africans. The rumour spread rapidly that a white man lived in

**Figure 2**
The researcher in a rented room in Magomeni 1969.

Magomeni Makuti. At the beginning adults stopped to stare at me when I walked in the street, while children shouted "mzungu" (white man). In my diary from the observation study I have noted that women in the neighbourhood came to our house just to stare at me. This happened especially when it became known that I cooked my own breakfast and washed my own clothes. After a while nobody in the neighbourhood raised an eyebrow about my presence, however.

As indicated above I wanted to observe daily life without trying to achieve a high degree of participation. However, it so happened that I was more or less adopted into a young family of the house. I was invited to have my meals with the family, which resulted in me eating both lunch and dinner with the three of them throughout my eight months in the house. The lunch usually consisted of *ugali* (maize porridge) and the dinner of rice cooked in coconut milk. Both dishes were combined with cooked vegetables. **Meals** were eaten in the traditional way from a common plate placed on the floor, using our washed hands. When the family could afford it (normally only a few days a month) the staple food was supplemented with fish, chicken or meat. At an early stage I decided to make these ingredients my contribution, which meant that the **living standard** of the family was considerably raised. I also started to contribute to the purchase of

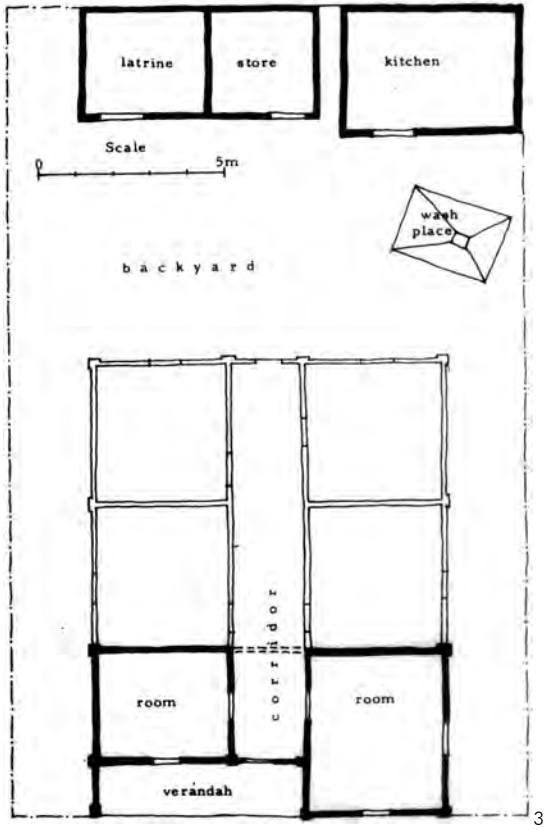


**Figure 3**
Plan of a typical urban Swahili type house (Source: VESTBRO, 1975).

charcoal, maize and rice. I often went shopping and drove the family to the hospital or to relatives. In exchange the family made errands for me such as taking my laundry and cleaning my dishes.

The man in the family, called Mohamed in my thesis, had been an enumerator in the 1967 population census. This meant that he knew all corners of Dar es Salaam. I decided to use Mohamed's knowledge by asking him to guide me around the city as much as possible. In this way I was able to see housing areas that were not easily accessible by normal transport, including **informal settlements** without proper roads or other infrastructure services.

At an early stage of our acquaintance Mohamed decided to build a house of his own in an informal settlement a few kilometres from Magomeni. A plot was acquired through customary procedures and the construction was started without a building permit. This informal **self-help housing** was of great interest for my research project. The construction of the house was made incrementally in that Mohamed bought a limited amount of building materials every time he had a surplus of his monthly salary. The surplus would increase proportionally with the share of daily living costs he could persuade me to cover. Compared to Swedish standards my living costs were quite low, even if I covered all the family's living expenses.[4]

Soon after learning to know him I was given **confidences** by Mohamed. He entrusted me with his worries and went to the extent of telling me things that he did not even tell his wife, including the fact that he had secret affairs with other women, and about his wife getting a veneral disease from an affair that *she* had. He also told me things that I was asked not tell his brother. I felt that I had really been well integrated in the Magomeni area. With the others in the house I had good contacts, but nothing that could be compared to that with Mohamed and his family.

Originally my intention was to learn ***Kiswahili*** well enough to be able to carry out simple conversations. I never got further than 500-600 words, however. This helped me to use the many ways of greeting people and to do my daily shopping, but it was not sufficient to make **informal interviews** as part of my participant observation study. With the men in the house I could communicate in English, while none of the women spoke English. Since I used my room as a study I was at home in daytime. This meant that I could study the **daily routines** of women and children. But because of the **language barrier** I had to make do with my kitchen *Kiswahili* and body language.

My observations from living in Magomeni were noted in **a diary**. I was careful to write down my observations every evening. The diary included observed facts as well as reflections about life in Magomeni and details of my daily activities.

## Which Aspects of Housing Could Be Observed?

One of the assumptions in my research was that

house-related activities were performed outdoors, which in turn would mean that the consequences of small **indoor spaces** were not as detrimental as otherwise would have been the case. In the participant observation study I could easily note that **outdoor spaces** were used frequently for **cooking, washing** dishes and clothes, childcare and socialising. Since I learnt to know some households well enough to be invited into their rooms, and since one could peep into the rooms from the Swahili house corridor, I also got a rather good picture of indoor **use of space**. It was unclear, however, to what extent my observations of a few houses in the street could be **generalised** to Magomeni as a whole or to other low-income areas in Dar es Salaam. I found the participant observation study very valuable for designing a larger survey of space use, but considered that it could not replace such a survey.

Another part of my research was the degree of **overcrowding** (measured in number of persons per room) and people's attitude to crowding situations. By living in an urban Swahili house, and by visiting other houses in the area, I got a good picture of the number of persons sharing a room, as well as examples of **sleeping arrangements** reflecting how households coped with crowding situations. Sometimes up to seven persons were sharing a room of 14 sqm. I came across cases when teenagers were made to sleep in the room of neighbours in order to relieve the crowding situation. I was also told about young couples that slept in shifts in a small room in order to get opportunity for **intimacies**. In case of households with more than one room (a small minority) it was more difficult to know about sleeping arrangements, since furnishing in daytime was often different from arrangements during the night. To know about attitudes to parents and children sharing sleeping rooms, and other aspects of overcrowding, I would have to put detailed questions to my neighbours, which I hesitated to do. I considered it better to save such questions to formal interviewing. My living in an urban Swahili house strongly influenced the **questionnaire** worked out for the interview study (VESTBRO, 1975).

Another factor that could be observed was the degree of **dependency** between residents. I could rather easily note the extent of closeness between the co-occupants in the house. We knew each other's daily rhythms. We knew when neighbours had their **meals**. We could hear each other going to the latrine or the bathroom. In my **diary** I have noted that one could talk to the ones sitting in the backyard while taking one's shower. The house next door (not yet upgraded) had such a poor latrine building that one could observe the defecating person through the walls.

**Interdependence** was also manifested through **disturbance by noise**. Some co-occupants put on the radio when they woke up early in the morning. Others sat on the veranda chatting loudly until late. Drunk men were disturbing neighbours frequently. There were also frequent cases when a resident came home late and had to wake someone up to have the front door unlocked. It was obvious that the

spatial organisation of the Swahili house imposed a high degree of interdependence between co-occupants. Walls between rooms were solid enough not to transmit sound well, but doors and ceilings were thin enough to make the noise situation a problem. The mud-and-wattle houses usually had no ceilings, which made the noise situation worse.

After sunset (at 6.30-7 p.m. every day of the year) it became completely dark, except when the moon was full. Small oil lamps gave a bit **of light**, but the darkness nevertheless made it possible to achieve a high degree of **anonymity.** It was possible, for instance, to bring a partner into the room without being seen by co-occupants. In my **diary** I have noted several such suspected cases of secret visitors. Usually residents respected the **private life** of each other, but there were also cases when a wife asked another woman to spy on her husband when she was away.

The pregnant woman and the student in our house did not reveal much about themselves until several months of co-residence. It turned out that the pregnant woman had several children upcountry. The co-residents had not been curious enough to ask about her family situation, and did not find the fact interesting enough to inform me. Another example of **respect for private life** was an incident in a neighbouring house. One day I overheard a violent **quarrel** from that house. It turned out that one of the men had been living with a woman during four months without telling her that he was already married. The co-occupants knew that his wife was in her home village, but they had not informed the new woman about this. The quarrel occurred when the wife returned unexpectedly and found the second woman. I was told that the others had kept quiet because the affair was regarded as the man's private business.

Did the Swahili house promote co-operation between co-occupants? In the participant observation study I could easily note that residents *had* to co-operate in matters such as locking the entrance door and use of the kitchen, shower room, latrine, wash place and the corridor. There was also a high degree of **voluntary co-operation**. Co-occupants often went shopping for each other and water was bought for those who were away all day. Those who were at home assisted visitors of those who were absent. One of the women swept the corridor for all of us and women often took care of each other's children. It was obvious both that the **Swahili house** necessitated a high degree of co-operation between residents and that local customs was based on a tradition of good **neighbourly co-operation**.

It also became clear that the **Swahili** type house provided for **social security**. I noted a high degree of neighbourly loyalty with respect to guarding personal belongings of each other. Because of the large number of residents in the Swahili house there was virtually always someone at home to protect it against **burglaries**. My co-occupants often revealed their fear of theft. They were careful to close the window shutters, to take their belongings inside at sunset, to lock the front door when at the other side of the house, etc. They warned me for

getting my car burglarised. I could not establish to what extent this fear was actually based on personal experience. In our house I heard of only one case of theft (a stove taken from the backyard) and one case of attempted theft (hooking out clothes through the window).

Residents in my street constituted a mixture of Muslims and Christians, people from different tribes, single men and women as well as young and older families, and also residents of different income levels. Despite this I noticed virtually no case of quarrel or **conflict in the house** (except within households). I observed no controversies over cleaning or the **use of common spaces.** This does not mean that conflicts did not exist. It could just as well mean that people were disciplined enough to conceal conflicts or that I did not notice conflicts that occurred. It is also possible that my presence had a dampening effect on the conflict level.

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## Problems in the Participant Observation Study

A few weeks after moving into my room I was called to the ***ten-cell leader***, the party representative in charge of the local ward (*mtaa*), usually comprising ten Swahili houses (150-300 people).[5] A ten-cell leader (nowadays ***mtaa leader)*** has the responsibility to take care of problems within his/her ward, issues such as land ownership, removal of solid waste, contacts with authorities, rent disputes and other **conflicts between residents**. At the time of moving in I did not know of this important part

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**Figure 4**
Backyard of an urban Swahili house.
(Left)

**Figure 5**
Front with veranda of a Swahili house built by the National Housing Corporation.
(Left)

of Tanzanian society. As a new resident I was supposed to report to the ten-cell leader. As a researcher studying his area it was even more important to inform him about my work. He was insulted that I had not paid him a visit straight away. Mohamed and the house owner had forgotten to inform me about these procedures. The mistake was corrected when I went to inform the ten-cell leader about myself and my research. Mohamed acted as my **interpreter**, obviously in a quite convincing way. I learnt the lesson and later took great care to inform all ten-cell leaders affected by the research project (a total of 91 houses, located in approximately 20 different wards).

In participant observation responses may be influenced by the way the researcher is introduced. Jorgensen distinguishes between overt and covert **entrée strategies** when planning participant observation. In housing research there is seldom a need for the researcher to be anonymous. Therefore **overt strategies** can be used. This does not mean that everything has to be explained about the research project. My experience supports the one of Jorgensen when he states that one usually does not have to explain much. It is important, however, to explain that **people's co-operation** is voluntary, and that the information they provide will be treated as confidential. This refers mainly to questions that may be considered sensitive. Jorgensen recommends that the researcher cultivates skills to read **social interaction**, e.g. to note when subject is uncomfortable talking. Trust may be withdrawn at any time (JORGENSEN, 1989:70, 86).

Did my participation distort the normal situation in the area so as to **bias** my findings? As indicated above my presence in Magomeni caused a certain degree of sensation and curiosity, probably also suspicion. I tried in no way to conceal that I made a study on the housing situation in the area. I explained that I was living in a Swahili type house as part of my research and gave details of the study to anyone that was interested. Nobody seemed to remain suspicious after having had the purpose of the study explained. The backing I got from Mohamed and the house owner accounted a great deal for my being readily accepted in Magomeni Makuti. There is no reason to assume that the way the study was introduced actually **distorted the results**.

Concerning the **use of space** I assess that my presence did not influence daily life, except in trivial matters such as the trips Mohamed and I made around Dar es Salaam and the fact that the common meals were taken in my room. It is a well-known fact that people's **spatial behaviour** changes slowly. It is unlikely that my presence influenced the use of space in any respect of importance for the study. Some other aspects of daily life were influenced, however. I helped Mohamed's wife to get **contraceptives**, something they had never heard of until I informed them. They also adopted my procedure to boil water for drinking, and to spray against cockroaches. There was a definite interest in **modernisation**, which in an indirect way probably also influenced spatial behaviour in the long run.

One may ask whether my special status

prevented me from getting correct information from my co-occupants when *talking* to them. I did not have an agenda for informal interviews with my neighbours, but I nevertheless spent ample time talking about small and big issues. My co-occupants did not seem to express **attitudes** they thought would please me. They seemed to think that it was natural that I had opinions different from theirs. Possibly my co-occupants did not touch upon subjects that they thought I would not understand, such as traditional beliefs. As shown above some of the residents gave me personal **confidences**. I consider that the unequal status between me and the others in the house did not **distort the information** passed on. Since they could talk to me as an outsider it is even possible that the **social distance** between us facilitated expressions of confidence.

My informal discussions were carried out almost exclusively with men. This was due to the fact that they were the ones who spoke English, but also because of **gender differences**. Such differences were seen in the fact that the women of the house at the beginning often went away when I entered the space where they were. When present they kept silent and showed submissiveness in other ways. A British female social scientist doing participant observation in another part of Magomeni, told me that men were very rarely seen in backyards of Swahili houses, and when they entered such a space they changed **women's** normal **behaviour** considerably. In my house I frequently used the backyard and carried out **"female duties"** such as washing clothes and dishes. Soon my presence in the common spaces upset nobody. As the only man at home in daytime I often shared my breakfast with the women. Occasionally I also took care of children and went shopping for the women. It is nevertheless probable that my information about women's life was restricted by the **gender barrier**.

The **gender bias** was at least partly compensated by my co-operation with a British female social scientist working in the same area as me. She lived in a Swahili house together with several married couples. Speaking fluent ***Kiswahili*** and doing the normal **housework** together with the other women she had good opportunities to learn to know the life of the women in her house. She told me that tension and **suspicion** were frequent, and that the women trusted their relatives more than their husbands. My contact with this female participant observer was quite valuable for overcoming the limitations in my own study. Her experience was also of importance for understanding the nature of the conflict I felt between my role as participant and my role as observer.

## Conflict Between Participation and Observation

The British social scientist was generously welcomed into the **female community** of her house. She was overwhelmed by the warmth of the friendship and started to feel as one of the group. The closeness prevented her from taking notes about her co-occupants. She felt that it

would be a betrayal to their friendship. After a period of struggle with her conscience she gave up her research project altogether because of the conflict between her role as participant and that as observer.

In my study I experienced a similar conflict. As indicated above I took over a large part of the living costs of Mohamed's family. He and his wife also **borrowed money**, which they were reluctant to pay back. After a couple of months Mohamed spent his whole salary on the construction of the new house, leaving the rest for me to pay. There was no agreement about such cost sharing. Mohamed just took for granted that I would pay his living costs. He furthermore bought an expensive watch and a kerosene-driven refrigerator on hire-purchase, which considerably reduced his chances to pay back his loans and to cover his own living costs. After a couple of months I found that he had **cheated** me about small sums of money when doing shopping and delivering my laundry. This discovery created a definite distance between us. When I one day refused to pay his sack of charcoal he expressed great disappointment and stopped to give me **confidences**. It became clear that our friendship rested on a false spirit of **equality**.

Although I participated in many activities in the house, my co-occupants knew that I lived *temporarily* under poor conditions, out of *free choice*, as an *experiment* only. They knew that I had much more money than they would ever be able to get and that I had friends of high status at the university. My co-occupants also knew that I needed their co-operation for my research project. Mohamed knew that I depended on him to be introduced to new environments and new people, for **interpretation**, and for getting information on a number of issues. Because of these factors I found it logical for my co-occupants to regard me as a wealthy foreigner whose status could be exploited for their benefit.

I realised that the friendship I experienced with my co-occupants was conditional. Even if it did not prevent my active participation, it reduced **confidence** and caused **friction**. A positive consequence was, however, that it was easier to accept my role as observer. The incidents of **dishonesty** reminded me of my status as a wealthy outsider. I could write down my observations without the inhibiting feelings of closeness.

## Comparisons with Other Participant Observation Studies

One of the classical participant observation studies is William Foote Whyte's *Street Corner Society*, published 1943. In this first edition he did not elaborate about his methods, but in later editions he added an appendix called *On the evolution of Street Corner Society* with detailed discussions about the problems of participant observation. For the fourth edition (1993) he extended the appendix into almost 100 pages, including a discussion of the critique directed against his book.

From the beginning Whyte wanted to study the economics of slum housing. Coming from the middle class he knew nothing about

the slums, Whyte explains. As part of a term project in sociology he made home visits in the area, but felt ill at ease and experienced *"a sense of embarrassment… as a tourist in the district"* (WHYTE, 1993:281). For his main research project he decided to observe people in action, instead of doing interviews. He began as a *"non-participating observer"* and later became almost a *"non-observing participant"* (WHYTE, 1993:321).

Whyte decided to live with an Italian family. In order to be accepted as a tenant he had to explain in detail the aim of his study. The family was suspicious that he might *"criticise our people"*. When he married he moved to an apartment of his own in the slum area. At that time many poor immigrant Italians did not speak English. Whyte learnt Italian, but found that it was not really necessary for research purposes, since the young people he studied spoke English. His skills in Italian helped to eradicate suspicion, however (WHYTE, 1993:296). This conclusion complies well with my experience from Magomeni. My ability to greet people in ***Kiswahili*** contributed considerably to being accepted as a person with friendly intentions.

In his methodological account Whyte states that it would have been impossible to carry out the study if he did not have a home from which he could go out and to which he could return. Of great importance was the fact that he became a friend of one of the **leaders** of a street **gang**. Whyte states that he gained the **confidence** of the street boys by being a good listener and by showing his genuine interest in their situation. His key **informant** looked for interesting points of observation, introduced Whyte to other key persons and traced useful pieces of information at his own initiative. He also assisted in making **interpretations** of events observed. Whyte even considers his key informant, Doc, to be a collaborator in his research. In my Magomeni study Mohamed played an important role as a key informant and as an icebreaker when trying to get the confidence of others, but he did not become a collaborator in the research project, of which he did not understand much.

Whyte writes elaborately about the relationship to his study objects. His key informant advised him not to be too free with money and added: *"you don't want to buy your way in"* (WHYTE, 1993:292). Whyte gives examples of favours he did to others, but states that such favours should be avoided since they *"cause a strain in relationships"*. Concerning **paying informants** he concludes:

> *"For the researcher to promise money for informant interviews seems to me to inject a mutually calculating element into a relationship, which works best when both parties agree voluntary to collaborate. - - - I guided my involvement with Doc in terms of the principle of interpersonal reciprocity. When we were working together, I tried to be helpful to him, and Doc seemed satisfied with the relationship. He may later have come to the conclusion that I exploited him…" (WHYTE, 1993:363)*

Whyte explains elaborately the conflict between his role as participant and that as an observer. Among other things he concludes that *"If… the researcher is living for an extended period in the community he is studying, his personal life is inextricably mixed with his research"* (WHYTE, 1993:279). He writes about his pain of conscience for participating in an election fraud and discusses openly the many times he was uncertain how to proceed with his study. Whyte's frank account is the more admirable knowing that it was not considered proper to speak of doubts, mistakes, or fortuitous circumstances in participant observation (ERIKSEN & NIELSEN, 2001:123).

Whyte's open discussion on methods gives strong credibility to his study. When I wrote my own thesis I did not have access to his methodological appendix. In retrospect I assess that my study could have benefited from his discussion. Knowing what I now know I would have been restrictive with money-lending and made clear from the start what share of Mohamed's living costs I would pay. I find support for such a conclusion also in Jorgensen's textbook. Concerning **payment for information** Jorgensen states: *"in some situations, money may be an appropriate form of exchange, but… it defines the relationship as a business and on this basis influences what is being exchanged"*. He finds that small gifts are acceptable, but considers rewards in the form of sincere interest in people's way of life to be *"more powerful than money in cementing co-operative and trusting relationships*". Jorgensen suggests that the researcher may give details about him/herself in order to make people reciprocate with their own **confidences**. He finds that self-revelation may be effective for rapport, and that secrets may be easier to reveal to a complete stranger. On the basis of a comprehensive literature review he concludes that **conflicts** are normal in participant observation. He even suggests that lack of co-operation can be turned into an advantage, since this can be used as an opportunity for a conversation about people's hostile reaction (JORGENSEN, 1989:71).

## Conclusions

On the basis of the analysis above it may be concluded that participant observation is an excellent method for the study of factors such as experience of overcrowded living conditions, disturbance by noise from neighbours, and co-operation around communal facilities. Such factors are difficult to understand thoroughly through the use of **questionnaire** and employed observers. Co-operation around the use of common spaces and noise problems can be assumed to be inherent parts of Swahili house living. For other factors it is more difficult to assess how far the findings in the participant observation study can be generalised to other urban Swahili houses.

Participant observation was carried out in only one of the three house types to be investigated. This was due to the fact that the urban Swahili type house was in the main focus. It would have been more difficult to acquire a

room in the other two house types, but not impossible. Shorter sessions of participant observation in other house types could fruitfully have complemented the one I did in Magomeni. Such sessions would, however, have been more of observation and less of participation.

How long time of participant observation is necessary? I spent eight months in Magomeni. This long time was not determined by research requirements. I stayed in the Swahili house because I found the room useful as a study. I note that my **diary** starts to be repetitive after two months. After this time there are notes only from occasional days of the week. On the other hand the interesting conflicts appeared only after the third month. I estimate that four months were more than sufficient for the purpose of the study. At the same time it can be concluded that one month's participant observation would have had a sound influence on the quality of the survey carried out later. After such a short time the conflict between participant and observer would not have made itself known, however. In such a case my description would have been more idyllic and my role as an observer may have been weaker.

Elements of participant observation exist in many housing studies in the sense that researchers rely on their own housing experiences when they work out their problem formulations. This **foreknowledge** is seldom described, however. Elements of participant observation in housing research should be made explicit, even if it is of relevance only for the **formulatory** part of the **study**. Many **research** projects are **exploratory** in nature, and in such cases participant observation is particularly useful. Participant observation is an under-utilised method within housing research.

Since participant observation is much used by anthropologists, studying "foreign" cultures, it is often assumed that this method is less useful when studying phenomena in one's own country. Such a statement overlooks the fact that most countries are strongly stratified societies, and that researchers often have limited experience from other living conditions than their own. The **spatial segregation**, existing in both industrialised and non-industrialised countries, is a good reason for researchers to go and live for a while in the kind of housing they wish to study.

Jorgensen maintains that participant observation is superior when an **insider view** or a user perspective is desired (JORGENSEN, 1989:12, 28). This is perhaps the strongest argument for using participant observation in housing research. Conventional research is often biased in favour of middle class **male perspectives**. Research based on such views also influences housing policies more than other views. Participant observation in housing areas dominated by immigrants, low-income groups and female-headed households may supplement conventional research and provide new, unexpected perspectives. **Feminists** such as Sandra Harding has emphasised that research about these groups is a way to improve scientific quality (HARDING, 2001).

My participant observation study in Dar es Salaam would have benefited from planning

the study better. I find Jorgensen's book to be very valuable to avoid the most common pitfalls. He recommends, for instance, that the researcher should try to decide in advance the level of participation and advises the researcher to start with unfocused observations. Then one may proceed to unobtrusive casual questioning. When doing this one should demonstrate eagerness to listen to what people have to say and avoid why questions, those that may put the respondent on the defensive (JORGENSEN, 1989: 82). These recommendations comply well with my experience from the Magomeni study.

Jorgensen recommends participant observers to **take notes** from the start, because *"**the human memory**, even one expanded and disciplined by practice in the field, is undependable"* (JORGENSEN, 1989:96). I found my **diary** from 1969 to be of great value for writing this paper. It helped me remember aspects that I had forgotten. It turned out to include facts of good use when applying new perspectives stimulated from reading recently published books on participant observation.

When participating the researcher become part of the phenomenon he/she is to observe. Jorgensen notes that *"in everyday life, there is a fine line between who we pretend to be and who we are"*, which in turn means that *"the research may be contaminated by **'subjectivity'** and personal feelings; and that the scientific identity of the researcher may be spoiled"* (JORGENSEN, 1989: 62). **Post-modernists** may consider such procedures unavoidable, but that is not the position in this paper. Here it is maintained that tendencies towards subjectivity should be counteracted by specifying one's theoretical assumptions, and by making a careful research design for one's participant observation study, whether it is planned as a formulatory study or one of the main research methods. Details about the methods should be specified so that others can use the same procedures to verify or reject the conclusions drawn.

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## Notes:

[1] The word 'Swahili' means coast, i.e. the East African coast. The **urban Swahili house** is considered to have its origin in the rural house of the Zaramos, living along the Indian Ocean in Tanzania. The house type exists not only in Tanzanian coastal towns, but also in Mombasa and other Kenyan towns (VESTBRO, 1975).

[2] The Kiswahili word Makuti means palm tree branches, which was frequently used as **roofing material**. Since the 1960s most makuti roofs in Dar es Salaam have been replaced by corrugated iron sheets as part of a spontaneous modernisation process (NGULUMA, 2003).

[3] Normally the **water vendor** brought water in debes, plastic drums of four gallons (18 litres). The price of one debe was 15 Tanzanian cents, equivalent to 2 US cents. The water itself was free of charge, the price being for having the water carried to one's doorstep.

[4] My salary at the time was SEK 3000 a month (equivalent to $ 550) as compared to the salary of Mohamed, which was 300 Tanzanian shillings ($ 43), i.e. 13 times lower. My monthly costs for rent, water, food and kerosene was about 400 shillings ($ 60), including my contribution to Mohamed's living costs and the meals I took at a restaurant almost every 2nd day. This sum may be compared to equivalent costs in Sweden, which I estimate to SEK 1500 ($ 300) for a student room and food in 1969.

[5] Up to the introduction of the structural adjustment reforms in the 1980s, when a multi-party system was introduced, Tanzania had a one-party system. This means that the ten-cell leader was a representative of both the party and the state. These leaders were elected by inhabitants in the local ward. The residence of the ten-cell leader was indicated by a green flag on the house where he/she lived. After the introduction of the multi-party system the function was renamed into ***mtaa leader.*** The tasks are the same as before, however.

# 5 EVALUATING HOUSING PROJECTS BY PAIRED COMPARISON IN MULTI-METHOD CASE STUDIES

*Wendelien LANS & Tim de JONGE*

## Abstract

*In housing research, **evaluation** of existing projects, is an important tool to acquire knowledge concerning **user's satisfaction** in relation to specific **design solutions**. Projects however, do not differ from another with respect to only one or two aspects, but rather simultaneously multiple aspects. A **design** can be considered as a complex over-all solution for a combination of many, and also many different, requirements, constraints and points of initiation. In order to learn from evaluation, it seems necessary to investigate a series of housing projects in which at least some aspects (**design solutions**) are maintained equal. However, it is a big problem to find such series of projects. In practice, many evaluations are restricted to an investigation of a single project, in which the list of requirements is evaluated through measuring **user's satisfaction**. Due to complexity of aspects involved it is frequently not obvious which particular **design** (sub)-solution is responsible for the level of satisfaction or dissatisfaction. A procedure, which is used to achieve results concerning the effectiveness of certain **design solutions** that can be generalized, is there namely to focus on this limited number of solutions. To solve the 'ceteris paribus' problem, research can be executed through **paired comparison** of projects; simultaneously to attain validity, different methods can be applied to assess the quality of housing.*

*The approach that will be described and discussed is to be seen as a general method that should be applicable in several situations of housing **evaluation**. The method has been applied in an investigation concerning **high-density building**; this research will be referred to.*

***Keywords:** Evaluation, Paired Comparison, User's Appreciation, Functional Analysis, Cost Analysis*

## 1. Aim of Evaluation Research: The Problem

In housing evaluation research, user's appreciation of the housing situation is considered to be vital information. Effects on user's appreciation will be forthcoming from two main factors namely: **housing quality**[1] and the costs involved for the resident (rent or purchase price)[2]. Generally, the aim of **evaluation** research is to find out which **design solutions** should be repeated and which should be omitted due to **user's (non) appreciation**.

The scope of **design solutions** to be evaluated can differ. The larger scope **evaluation** research is aimed to achieve general statements about categories of solutions, for instance, dwelling types, different forms of compact building, decisions between **renovation** or **demolition** (followed by **redevelopment**). Research can also have a smaller scope, for instance focusing on the effects of an open or separate kitchen, the ratio of space in the living room and the sleeping rooms. This exposition focuses on the more general topics. The executed research project has been dealing with **high-density building** and different dwelling types. Other topics of research of similar scale could be the effects of different types of **renovation**, **renovation** as compared to **demolition** and **redevelopment**, different solutions for housing the same target-group, house building on (existing) urban locations as a contrast to building on new extensions.

## 2. Objects to be Investigated

Ideally a research project should refer to a sample of dwellings or dwelling projects that only differ from one another with respect to a limited number of- experimental - variables, while other aspects remain equal. However, dwellings and projects differ from one another with respect to many aspects simultaneously. As stated, a **design** is an over-all solution for a combination of numerous and diverse requirements, constraints and points of initiation. The weighing of objectives and constraints also differs from **design** to **design**. The input of the **design** process is different each time, just as is diverse the range of solutions and combinations of solutions proposed by the architect. The only way **evaluation** can take place, is through **case studies**.

Investigation of a single project can give an answer to the question, whether the objectives have been reached, as well as to the question, whether **residents** appreciate the solutions - unique to the project. For research findings to be more general applicable it is necessary to have projects that are in some way '**comparable**', i.e. equal. An approach to achieve this 'comparability' could be through **paired comparison** investigation of projects in a set of two that on one hand have clear well defined similarities and are equal and on the other hand have clear differences. The independent variables should differ, while differences in dependent variables should be investigated. In the **design** of this research, each pair of projects of the **paired comparison** is

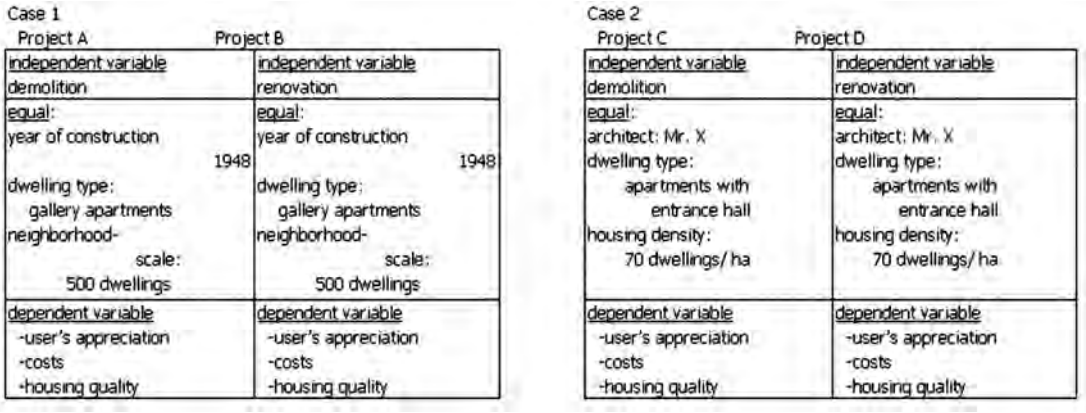


**Figure 1** Comparable projects within one case; cases are **comparable** concerning problem definition: effects of **demolition** (and **redevelopment**) or **renovation**.

considered to be one case.

The following research efforts are aiming at the same general problem (for instance, solutions for **high-density building**), and they can be applicable to other pairs of projects that are **comparable** among themselves, but not necessarily **comparable** with the pair of projects in the previous case. Shown in figure 1 is the case of comparison of **renovation** in relation to **demolition** and **redevelopment**.

The hypothesis in this example could have been: "**renovation** is possible (in the sense that **residents** are satisfied concerning quality), while costs are the same as or less than the costs of **demolition** and **redevelopment**". Both cases of figure 1 could be used to test the hypothesis and to confirm the outcomes.

In the executed research project, the research was directed towards the comparison of stacked housing versus single-family housing in a high-density neighbourhood. Given this, the **housing density** should be equal for the two housing types. In order to use an adequate measure, different ways of measuring **housing density** were considered and one of these was chosen to control for similarity (in section 5, the reasoning is substantiated).

Research which compares **renovation** of dwellings with **demolition** and **redevelopment** could follow the method given in the example of fig.1.

The idea of **paired comparison** could be useful if many conditions differ in several housing situations. Differences may concern physical factors, economic factors, as well as socio-cultural factors. In the long term, after research has been done under many different conditions in several cases, some factors might reveal to structurally influence the relation between the intervention under investigation and **user's appreciation** which could lead to the reformulation of the hypothesis.

The method of paired-comparison opens opportunities to investigate cases (pairs of projects) that do differ in many respects:

physical, economic and also socio-cultural. This includes some problems of **international research**, such as differences with respect to culture, living style, governmental rules, and specific construction methods and costs.

The proposed research **design** exceeds the sole research effort. It offers facilities to combine several independent investigations, without the necessity to execute more than one investigation at a time.

## 3. Measurement

A fruitful way of evaluating housing projects is to look at **users' appreciation** as formulated by **residents** themselves. In housing **evaluation** research, as in all consumer tests, the costs should also be investigated and related to the quality.

It also seems worthwhile to measure **housing quality** in a more objective manner through **functional analysis**. In the next section these three **evaluation** methods will be described.

### 3.1. User's Appreciation According to Consumers: Interviews

In a research project that evaluates users' appreciation in relationship to two different building concepts, **residents** should be questioned, in particular concerning items that reflect the differences of the concepts (independent variables) of the two buildings.

In the executed **case study**, these items have been inferred from two sources. The first source is a study by Van Egmond, who describes existing high-density projects with the characteristics of single-family houses. In this study, **design solutions** are for instance private entrances at ground level (via exterior stairs), or back-to-back houses and zigzag houses. In this last solution, not the entire dwellings are stacked, but instead separate rooms, while each dwelling has rooms on ground level and on higher levels (VAN EGMOND, 1999). The second source is an interview with the architect (Wiek Röling) of the investigated case, about his starting points. These starting points refer to the intended dwelling size including space for different **activities**, the relations between the **activities** 'living' and 'sleeping', the spacious private outdoor area, the relation with the surroundings, the interaction with the neighbours and the level of privacy, and the use of common spaces (entrance hall).

The interview approach to evaluate **user's appreciation** consisted of two components. The first one is concerned with the functional aspects, for example having sufficient amount of space for **activities** and the appreciation for the relationship between these **activities** (for example a door, or a direct connection). The other component was concerned with social-psychological aspects like territory, privacy and identification.

The interviews yielded the following results: most **residents** (both living in apartments and single-family houses) were satisfied with

their dwelling as a whole. The apartment **residents** appreciated the existing large terraces because of the space they provide for playing, having a barbecue or doing little jobs. Respondents of the single-family houses complained about the tiny dimensions of the gardens and the lack of privacy, especially in the gardens. In the apartments, on the contrary, **residents** were enthusiastic about privacy, especially on the terraces.

In research that compares **renovation** of dwellings with **demolition** and **redevelopment**, attention could be paid to topics like changes in satisfaction, neighbourhood quality, mix of income groups and cultural groups, or welfare benefits.

If comparisons are made in an early stage of **evaluation** research - that means: if little or no knowledge is available about the aspects involved - **open** (extended) **interviews** are designated to collect information for the development of hypotheses about factors that determine **user's satisfaction** (DE GROOT, 1969: 223). At the time that hypotheses have been formulated, more data could be accumulated by means of questionnaires from a large number of respondents[3].

In the **case study**, the researchers personally interviewed **residents** (taking about two hours for each interview). Along with this, some **group interviews** were held to complement the individual ones. Interviewing a group has the advantage that respondents can discuss ideas that are brought forward; this leads to an enrichment of the investigator's ideas.

If research focuses on **renovation** compared to **demolition** and **redevelopment**, the phase of theory development should steer the method of questioning.

## 3.2. Functional Analysis: Desk Research

In this research approach, floor plans of the dwellings are analysed regarding possibilities of use. First the so-called capacity of the dwelling is assessed: the number of people (members of a family) that can live in the dwelling. This number can be defined as being equal to the number of rooms in the dwelling[4]. Other more complicated and perhaps more valid operational definitions have been proposed (LANS, 1996: 41-46), but for the **paired comparison**, a simple measurement technique would meet the requirements for testing **equality**.

Next, the **functional analysis** starts with analysing **residents'** behaviour as expressed by characteristic **activities** such as "cooking", "having a meal", "sleeping", "taking a shower". A series of **activities** that take place in most households are listed, and for each activity the necessary **attributes** (furniture and apparatuses) are determined. This is done according to a 'standard' guideline defining household life (in the Netherlands). For "cooking" (storing food and dish washing included) **residents** use, among other things, a cooker, a refrigerator, cupboards and a kitchen worktop. For "sleeping", a bed, a wardrobe and a dressing

table are judged as standard **attributes** etc. These **attributes** take up space (length and width) in a floor plan. **Residents** should be able to use these **attributes**; this also takes up space. The area needed for **activities** is called 'user's area'. For instance, for the "cooking" activity, the user's area is the space needed for standing at the cooker, moving to the refrigerator and opening a cupboard or the dish washing machine. For the "sleeping" activity, there should be space to get into bed, to make a bed, to dress oneself etc. For "having a meal", among other things, extra space for some guests should be available. Fig. 2 gives examples of the **activities** 'sitting' and 'sleeping'.

In earlier studies, a minimum floor space has been determined for each activity (including space for **attributes** as well as area required for their use), in order to set standards for functional quality. Such a minimum floor space is called a "**mat**". By verifying if a set of "**mats**" fits in the dwelling under research, one can more or less objectively assess the functional living quality of that dwelling in terms of possible **activities** (BERGMAN, et.al., 1974; FREY, 1974:35-50 and B1-B173; LANS, 1975; VROEGOP, GIELE, 1986: 225-289). Apart from these standard **activities**, other **activities** can be introduced, depending upon the objectives of the investigation.

While the research was directed towards the comparison of stacked housing versus single-family housing (with gardens), **activities** that take place in the gardens of single-family houses have been taken into account.

In research comparing **renovation** with **demolition** and **redevelopment**, this kind of objective comparison between the old housing situation (before the building intervention) and the new one (after the intervention) could be useful. Often, the number of rooms of renovated dwellings will be smaller than before; this means that the capacity of the dwellings should be taken into account.

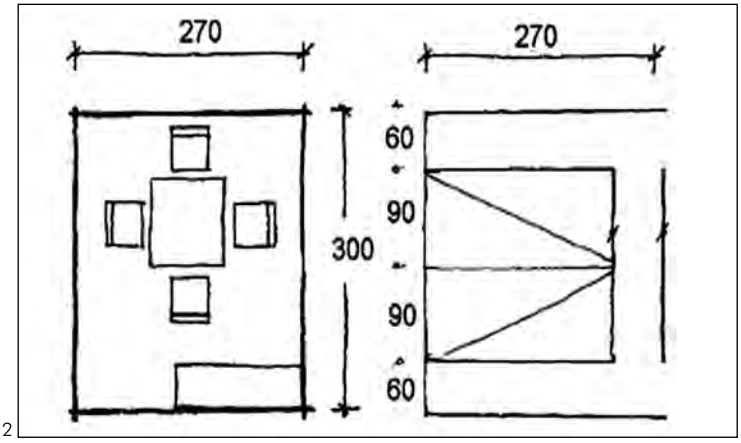


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**Figure 2** **'mat'** for the **activities** 'sitting' and 'sleeping'.

The method to determine functional quality (as defined by the standard proportions, available for common **activities**) can be used to assess a minimum quality, and to check if projects that are to be compared are equal with regard to the minimum quality. Besides this, more can be done.

The '**mats**' can be regarded as hypothesis concerning consumer's appreciation. The minimum standards should guarantee a minimum requirement level of consumer's satisfaction. A by-product of every research project could be a test of this hypothesis; data which conforms with the hypothesis can be a

basis for defining dwelling quality in terms of the applied '**mats**' with defined standards, to predict **user's satisfaction** for new building plans (**evaluation ex ante**).

Another possible application is to measure the spaciousness of a room in relation to extra **activities** that can take place besides the common ones. For instance a spacious living room could be large enough for the (common) **mats** 'sitting' and 'having a meal' and for the extra **mat** 'playing the grand piano'. It should be noted that not only square meters, but also proportions, setting of windows and doors are important to give room for more **activities**. In this way, a qualitative measurement of extra space could be fulfilled.

In the executed research project, **functional analysis** only served as a check for **equality** of the projects.

## 3.3. Costs: Desk Research

In a comparative **case study** costs should be considered from different points of view. Houses with different building forms can be seen as objects that require different spaces in a **land allocation** scheme. So, one cost aspect of housing projects is concerned with **land development** costs.

In the **case study** a survey has been executed of the cost effects of having different patterns of parceling that are connected with the compared dwelling types. The most affected party in this matter is the ***municipality*** with its role as a provider of land and as an authority responsible for public space.

The research, which compares **renovation** of dwellings with **demolition** and **redevelopment**, requires a slightly different approach concerning **land costs**. The costs of refurbishing the existing landscape in the **renovation** project should be compared to the costs of an over all site **redevelopment** in a replacement project.

Houses can also be seen as investment properties to be operated by a landlord, an example of this is a ***housing association***.

In the **case study** research has been focused on the effects that the different dwelling types have on **investment costs** and **operating expenses**. The price of land is one of the cost components in this part of the study. This price can be affected by the above-mentioned costs involved with parceling.

In the case of comparing **renovation** to **redevelopment**, one of the cost factors to be included in both projects is the value of the dwelling, as it was before intervention. In the **redevelopment** project, also **demolition** costs of the obsolete dwellings are part of the investment.

Finally, houses can be seen as products that provide **residential services**. The costs of these services are charged to the ***residents*** in the form of rent and service charges. The level of these costs will be affected by the **investment costs** and **operating expenses**.

So there are four levels of costs and revenues related to each other: **land development, housing investment, housing operation and residential services**. There are

three (groups of) main stakeholders: the **municipality**, the **housing association** and the **residents**. The **housing association** is a stakeholder that plays two different roles: in the building phase it acts as a developer, in the operation phase it acts as a landlord.

On each level of costs and revenues, one can discern cost aspects that are related to market factors and cost aspects that are related to plan characteristics. For instance the acquisition price of a piece of land is related to market factors, while the size of the acquired piece of land is related to plan characteristics. The price level of a window frame, which affects building costs, is in general related to market factors, but also to the required size and quality, which are related to plan characteristics.

It seems advisable not to use the cost data of the projects themselves, but to recalculate costs and revenues on the discerned levels. In this way it is possible to separate market factors (by definition varying general price levels) from plan characteristics (required quantities and qualities). In our **case study**, **land development** estimates have been based on Wigmans's method of cost estimation (WIGMANS, 2002); building and operation cost have been estimated by using a project- and element-analysis based costing method (DE JONGE, 2002: 991-998).

The calculations in the **case study** showed that the **land costs** per dwelling of the stacked houses are lower than those of the single-family houses in terms of investments as well as in terms of maintenance of public space. The outcome suggests that the building of houses of the investigated "high-density" type would be a profit for the **municipality**.

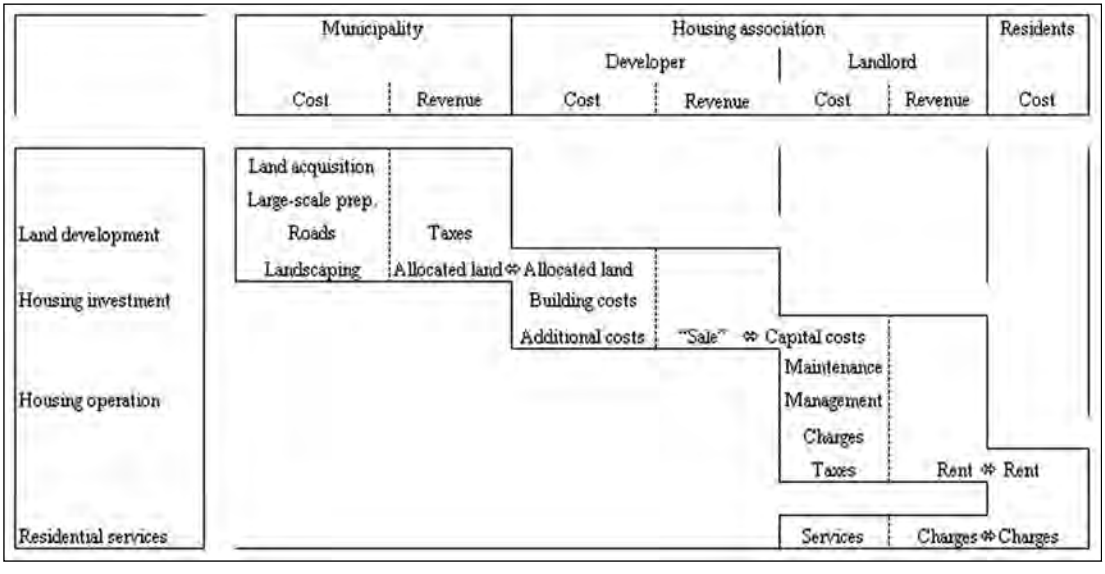



**Figure 3**
Stakeholders, costs and revenues on different levels.

For the **housing association** the investments in a high-density project that is built (without grants) would be higher than the investments made in building the same number of single-family houses. The **operating expenses** on the other hand would be slightly lower. What the overall outcome of "profit or loss" in investments would be depends upon the appreciation of the influence of resident's satisfaction on the **rentability** of the dwellings in the long term.

For tenants the two dwelling types will hardly differ as far as rent is concerned. Service charges of stacked dwellings will tend to be somewhat higher, especially because of cleaning costs of common building sections and maintenance of elevators (these were not included in the investigated project).

## 4. Problems in Measuring 'Equality'; Housing Density as an Example

As has been argued, within a case projects should be **comparable**, i.e. equal. In order to check **equality** of certain aspects, a suitable method of measurement should be applied and its adequacy should be underlined. This will be illustrated by the example of measuring density in the **case study**.

The density of equally sized dwellings can be assessed through analysis of $m^2$ of required land use per dwelling. This is a practical way of dealing with this question in a comparative study. Different types of areas can be discerned in this context: for instance net area for allocation, which includes private gardens and area built on, versus public space, which includes local roads, car parking and public green areas. Differences in projects in relation to these qualified types of required land can be compensated for. In the **case study** for instance, a rather big difference has been shown between the use of land for public green areas in the direct surroundings of the two compared housing blocks. As far as cost calculations and **housing density** results were concerned, it appeared to be easy to compensate for this difference.

Land use per dwelling is not an adequate indicator of density for research results that are to be generally applicable; for this purpose FSI, **Floor Space Index**, is being used to indicate density. With this indicator one can compare **housing density** in a more general way and also measure density in complex urban situations with several different functions.

Usually FSI is defined as **Gross Floor Area** (GFA) of the buildings divided by m2 of land use (VAN DER HOEVEN, et.al., 1996). However, in the executed **case study Usable**

**Figure 4**
Dwelling size, land use and density in the **case study** project.

| Dwelling type | Single-family | Stacked |
|---|---|---|
| Dwelling size | | |
| UFA = Usable Floor Area (m2) | 91.40 | 91.30 |
| GFA = Gross Floor Area (m2) | 109.00 | 127.00 |
| Land use | | |
| Allocated land (m2) | 117.00 | 86.00 |
| Additional public space (m2 *) | 98.00 | 77.00 |
| Total land use (m2) | 215.00 | 163.00 |
| FSI on urban block level | | |
| $^{U}$FSI = UFA / m2 land use | 0.43 | 0.56 |
| $^{G}$FSI = GFA / m2 land use | 0.51 | 0.78 |

4

**Floor Area** (UFA, "gebruiksoppervlakte", NEN standard 2580) was preferred as a basis for FSI, because primary functional requirements of dwellings are more linked to UFA than to GFA. The general access to the building in an apartment building adds to GFA without being added to primary functional qualities. UFA does not include this general access system and other sections of the building that do not reflect primary functional housing qualities. FSI based on GFA suggests a more optimistic density figure for stacked dwellings compared to single-family houses, than is justified if we look at realized housing requirements. Shown in Fig.4 is the dwelling size and density data of two **comparable** dwellings in the **case study**.

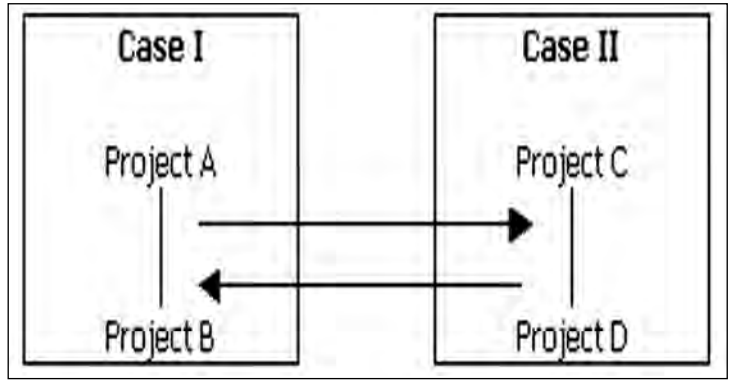
## 5. Discussion

This exposition is directed to an approach of **evaluation** research that focuses on **resident's appraisal** of different **design solutions** within the frame of affordable housing. It has been argued that **paired comparison** should be recommended, while resident's appreciation as well as functional quality and cost aspects should be considered as dependent variables. The topics will be discussed further, in particular their relationship to the problems of **international research**.

### 5.1. Paired Comparison

If an investigation covers two projects, in comparison to only one project, **design solutions** can better be traced as being the cause of (differences in) appreciation. Not all variables can be kept equal, some however can be. This excludes these variables from being the cause of appreciation (or non-appreciation). In an international perspective, (national) policy and constitutional regulations can be seen as variables that influence two projects in the same country in an equal way. So, in the **paired comparison** research **design**, they can be excluded from research conclusions.

Another advantage concerns the dependent variable itself. Resident's appreciation of one project (out of a pair) serves as a kind of standard for appreciation of the other project, and vice versa. Especially, in **international research** it is difficult to find standards of appreciation. Different countries have different social-cultural customs and preferences. In a comparison of two projects within one country the influences of these differences are excluded. While excluding the influences of socio-cultural customs and preferences, consequently a comparison




5

**Figure 5**
Comparison of differences

between different countries can thus be carried out in a **paired comparison** scheme. In this research **design** comparison between countries means a comparison of differences. Schematically, this can be represented as shown in fig.5.

## 5.2. Comparability or Equality of Projects

As mentioned before, each plan is a unique combination of **design solutions** for a complex combination of requirements. It is therefore difficult to find projects for comparison. Selection of projects moreover is being determined by chance, availability, co-operation of **housing associations**, municipalities, and etcetera. Therefore, the check up looking into **equality** should be a close examination, based on thorough analysis, as the example of measuring density (section 5) shows. **Functional analysis** (section 4.2) could also be used for this purpose (as in the executed research); sometimes, arithmetic compensation could be wise as well.

## 5.3. The Three Measurement Methods

Apart from the means of asking **residents** for their opinions (first method, section 3.1), a more or less objective measurement of quality by **functional analysis** (second method, section 3.2) can be useful. In this way, the **residents**' statements can be related to a concrete frame of reference, since the real dwelling is being described in a standardized format. Also, differences and equalities between dwelling plans can easily be observed. In any case the **functional analysis** could at least be a check for **equality** and differences in floor plans.

The level of satisfaction of **residents** is related to **housing quality**, but also to costs. **Cost-benefit analysis** (third method, section 3.3) should be done in a way that clarifies economic effects for the discerned parties in residential development projects. Of course the economic consequences for the final users (owner-occupiers or tenants) should be included as well. Separation of market-related and plan-related aspects, as done by the used costing methods, is a practical way to make **comparable** the cost-benefit results of different projects. This approach also offers opportunities for the "translation" of cost-benefit data when dealing with international comparisons.

## 5.4. The Context: Learning from Research of Design Solutions

Usually, architects learn from their own projects, each person in his or her own way. Manifested failures (mistakes) are being punished by unsatisfied clients. In worst cases it may even lead to facing legal actions. Some architects try new **design solutions** and evaluate these accidentally. This kind of learning process can be described as **learning by trial and error**. Systematic experimentation or even systematic

feedback is not pursued. A fortiori, in many cases user's **evaluation** is lacking, even though users are often not amused by high-profile projects that are discussed and applauded in architectural journals. In this exposition, a method has been proposed to evaluate specific **design solutions** in a more systematic way, in order to give feedback to architects and clients. Feedback can be used in new building development, which in its own turn should be evaluated.

For each plan, an infinite number of **design** problems arises and each problem has an infinite number of solutions. This means that not all possible solutions can be evaluated, even not '**ex ante**', in thought. Acknowledging this could lead to the conclusion that the process of **design** or plan **evaluations** is a hopeless task. In order to be effective, the number of independent variables should be limited to issues that (to a certain extent) are of general interest. Different **design solutions** for an overall concept like high-density building or **renovation** (instead of **redevelopment**) may be an example of such issues.

Even within these constraints, it is difficult to find projects that are reasonably **comparable**. This means that research can only be done in the form of **case studies**, since **testing hypotheses** on large samples is not feasible. This fact has repercussions for the possibilities of the generalisation range of the research results. Maybe it is better to consider these results as a way of indicating promising (and not-promising) solutions. Architects could use these indications to re-direct solutions in future **design** projects.

The publication of the results of **evaluation** makes **design solutions** a part of general knowledge, accessible to all stakeholders - users included - in building development.

## 5.5. Conclusion

The method of paired-comparison in **multi-method case studies** seems to be promising to discover and test relations between **design solutions** on the one hand and user's appreciation and cost/quality aspects on the other. In particular the possibilities of the proposed research **design** for international comparisons is recommended.

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## Notes:

[1] The term 'housing quality' will be used to discern it from dwelling quality, the constructive pendant concerning quality.

[2] The maximum affordable price for residents is considered to relate to income and to market value: the price a resident wants to spend for a specific quality level.

[3] Possibly, advanced statistical tests could be applied in a broader, not case-oriented study.

[4] In the Netherlands, bathroom, kitchen and storeroom are excluded.

# 6 THE ENABLE-AGE PROJECT: MULTI-DIMENSIONAL METHODOLOGY FOR EUROPEAN HOUSING RESEARCH

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## Abstract

*The main aim of the ENABLE-AGE Project was to explore the home environment as a determinant for autonomy, participation, and well-being in very old age within a follow-up perspective. More specifically, the project aimed to explore country specific housing-related societal support as represented in personal situations; to provide an update of housing policies and legislation; to provide methodological guidelines for home* ***assessment****s; and to provide policy recommendations in housing issues across Europe. The novel scope was to explicitly consider subjective and objective person-environment relationships as determinants for* ***healthy ageing****. A macro level update of housing policies (the ENABLE-AGE Update Review) supported the project process, integrated with the knowledge generated by the ENABLE-AGE Survey Study and the ENABLE-AGE In-Depth Study. In the survey a wide range of well-proven measurements was administered at home-visits with very old people, randomly sampled in five European countries. In particular, housing* ***accessibility*** *was assessed in detail, using the* ***Housing Enabler*** *instrument. The design of the ENABLE-AGE Survey Study was* ***longitudinal****, comprising two measurement points (T1, T2) with a one-year interval. For the ENABLE-AGE In-depth Studies,* ***qualitative*** *interviews followed by consultation interviews with a sub-sample were conducted. The ENABLE-AGE consortium has experienced a range of challenges successively and successfully overcome by intensive teamwork, bridging disciplinary, national, and cultural gaps in a constructive way. One result is the multi-dimensional methodology, available in seven European languages. This chapter describes the project and the integrative approaches ensuring that project design is complementary, all data collected has been analysed with respect to coherent objectives, and each analysis is used to consolidate and extend the other. As such, the data collected represents a goldmine for housing research and the synthesis of results from different parts of the project provides a strong basis for policy recommendations and housing guidelines for use across Europe.*

***Keywords:*** *Accessibility, Healthy Ageing, Home Assessment, Survey Study, Qualitative Approach.*

## Introduction

Recent research has indicated that the home environment is central to **healthy ageing** and well-being in old age (EVANS, et.al, 2002; SHIPP, BRANCH, 1999; STEINFELD, DANFORD, 1999; WAHL, 2001). Health care reforms are sweeping across Europe, and the current accelerating trend is the shift from institutional to community services, with the consequence of locating many more older people in their homes despite declines in physical and mental health. This, together with the fact that the population of very old people is rapidly increasing across Europe (MATHERS, et.al, 2001; UNITED NATIONS, 2001) poses new challenges to societal planning and housing development. In particular, the home environment has been identified as playing a key role in supporting autonomy, social participation, and well-being amongst older persons (WILLCOCKS, et.al, 1987; HEYWOOD, et.al, 2002; SIXSMITH, 1990). However, housing issues viewed from this wider perspective have not as yet been adequately addressed in research, policy, and practice, and there is a paucity of appropriate theoretical foundations and methodology for this kind of research (GITLIN, 2003). For instance, there are few recent studies based on theory and methodology which take the long-term and multi-dimensional perspective (IWARSSON, 2004) necessary for understanding the processes through which housing and home relate to autonomy, participation, and well-being. The aim of this chapter is to present a novel, multi-dimensional methodological approach to housing research, developed within the three-year ENABLE-AGE project funded by the European Commission (IWARSSON, et.al, 2003).

Current gerontological research and practice focuses on the person's ability to continue to live a normal life in the familiar environment as long as possible (SCHAIE, et.al, 2003). Consequences following diseases, injuries, or the normal ageing process affect biological mechanisms, often reducing the physical, psychological, and intellectual capacities of the individual (MAYER, BALTES, 1999). Within the ENABLE-AGE Project, a functional definition of **healthy ageing** was adopted. According to the World Health Organisation's International Classification of Disability and Functioning, ICF (WHO, 2001), there are multi-faceted relationships between health condition, body functions and structure, activity and participation, and environmental and personal factors. Disability, i.e. activity limitations and restrictions in participation, in old age is the result of a complex dynamic (VERBRUGGE, JETTE, 1994). According to Lawton's general **ecological model** and the **docility** hypothesis (LAWTON, NAHEMOW, 1973; LAWTON, SIMON, 1986), underlying much environmental **gerontology** research (SCHEIDT, NORRIS-BAKER, 2003), individuals with low functional capacity are much more vulnerable to environmental demand than those with high capacity, and environmental details can be crucial for what they can manage in their everyday lives. However, the empirical

knowledge base concerning the multi-faceted **person-environment** interplay among very old adults is limited, especially with respect to a **longitudinal** process oriented perspective. Due to the notion that **person-environment** (P-E) interactions underpin significant changes in health status in very old age, a process oriented perspective is imperative in order to increase the understanding of how the home environment impacts on **healthy ageing**. In integrating the ICF framework with environmental **gerontology** theories (LAWTON, NAHEMOW, 1973; LAWTON, SIMON, 1986) in a novel way, the ENABLE-AGE Project focused on functional and social aspects of **healthy ageing** in relation to, and with a particular emphasis on, environmental factors.

Crucial daily activities are performed in the home and its close surroundings, and as people grow older they spend relatively more time in their homes (BALTES, et.al, 1990; MOSS, LAWTON, 1982). Research suggests that people over 85 years of age tend to spend on average around 80% of their time at home (SCHMITT, et.al, 1994). Thus, an important goal in health promotion is to create home environments supporting healthy living and subjective well-being. Promoting health requires an understanding and measurement of the individual level alongside strategies for creating environments supportive for health (WHO, 1986), involving the societal level. A good physical and social housing environment can help to alleviate or prevent illness and declining health, yet evidence based on research explicitly and comprehensively considering the socio-physical environment is still lacking. In order to generate valid knowledge in this extensive field, substantial conceptual and methodological development is required. The ENABLE-AGE Project aimed to contribute to filling this void.

The main objective of the ENABLE-AGE Project was to examine the home environment as a determinant for autonomy, participation, and well-being in very old age, taking a **longitudinal** perspective, and exploring subjective and objective aspects of housing and their impact on health and ageing. The ultimate delivery of the project is guidelines for home **assessment**, providing methodological recommendations for capturing objective and subjective dimensions of the home environment and of functional health. The guidelines to be developed based on the ENABLE-AGE Project are intended for use in individual case management, planning of housing for sub-groups at risk, management of housing issues on the societal level in different European countries, and for providing data and research results to underpin consumer as well as social policy decisions (see http//: www.enableage.arb-.lu.se).

In order to represent different parts of Europe, the ENABLE-AGE Project involved five countries (Sweden, Germany, the United Kingdom, Hungary, and Latvia). The project comprised three major studies:

1. The ENABLE-AGE Survey Study;
2. The ENABLE-AGE In-depth Study;
3. The ENABLE-AGE Update Review
(A macro level analysis of housing policies).

An integration of all three methodologies was a main task for the project. Each study is briefly introduced below, while detailed descriptions are given later on.

The ENABLE-AGE Survey Study: The survey design was based on a comprehensive questionnaire incorporating a wide range of well-proven self-report scales and observational formats, along with project-specific questions on housing and health. The questionnaire was first (T1) administered during home-visits with randomly sampled very old people living alone in their private urban homes. A follow-up design (T2) was incorporated, whereby a modified version of the questionnaire was administered at a second measurement point with a one-year interval between the two measurements. Based on the fact that the participants were very old at inclusion, one year was considered an observation interval long enough to capture major changes related to housing, home and health.

The ENABLE-AGE In-depth study: This qualitative arm of the project involved in-depth semi-structured interviews conducted with a sub-sample of the survey participants in each of the participating countries. The interviews focused on very old peoples understandings of the meaning and experience of home in relation to health, well-being and ageing. Moreover, maintaining independence and community participation were key elements of the interviews. Initial interviews were followed by a small number of consultation interviews to develop complex case studies, deepening understandings of the relationships between housing, home and healthy ageing.

The ENABLE-AGE Update Review: One of the key aims of the project was to develop evidence-based recommendations that were relevant to national and EU level policy formulation to improve the housing situation and quality of life of very old people. This required an investigation of current housing standards and policies in order to:

1. Illustrate problems, needs and opportunities within the housing domain;
2. Empirically explore key policy issues and to provide a;
3. Critical policy analysis to identify weaknesses and gaps in current policy.

The policy update review was a key starting point for the whole project. The first component of this review concerned a detailed documentation of current building norms and guidelines in each country, underfeeding the methodology development for T1 of the ENABLE-AGE Survey Study. For the main component of the ENABLE-AGE Update Review, each country identified key policy topics, which in turn fed into a policy topic list at a cross-national level. This gave a macro-level analysis of current policies and housing trends.

The three elements of the ENABLE-AGE Project were integrated throughout the three-year project (Figure 1), each providing systematic input into conceptual definitions, research design, methodological development,

analyses, cross-national comparisons, theory development, and dissemination of results.

## Conceptual Underpinnings of the ENABLE-AGE Project

It was imperative to begin the project with a clear definition of key concepts for the project; such as **meaning of home**, place attachment, independence in daily activities, (functional) health, **accessibility**, and **usability**. Based on the ICF (WHO, 2001) and Lawton's general **ecological model** on ageing (LAWTON, NAHEMOW, 1973), a project-specific conceptual framework suitable for research on housing and health in old age was successively developed (Figure 1). Here, personal and social factors, objective as well as subjective environmental factors, and the structure of society contributing to autonomy, well-being, and participation were identified as interacting in a differentiated manner. Analyses currently in progress are based on the current version of the project-specific conceptual framework, and the empirical results stimulate continuous revisions of it, helping to refine theory development for future housing research. Further, it should be emphasised that throughout the project period the ENABLE-AGE Conceptual Framework served as a guide for the integration between the three study arms.

An important aspect of the ENABLE-AGE Project methodology already touched upon was the successive, integrative design of the survey instrumentation, the in-depth interviews and the policy review. In this respect, integration of quantitative and qualitative aspects of the project was an important guiding component of the research design. An advantage and necessary prerequisite, but also a challenge, for the ENABLE-AGE consortium is the fact that the research team comprised scholars from a wide range of disciplines, e.g. gerontology, human geography, geriatrics, psychology, occupational therapy, and sociology. Each brought their expertise to the project and shared their knowledge and know-how, working together to bring **quantitative** and **qualitative** approaches together in a truly complementary way across the project. This willingness to share has enriched the project substantially.

Typically, research including both **quantitative** and **qualitative** methodologies has attended to both in relative isolation. From the very start of the project process, the ENABLE-AGE Project Consortium attempted to integrate both quantitative and qualitative methodologies

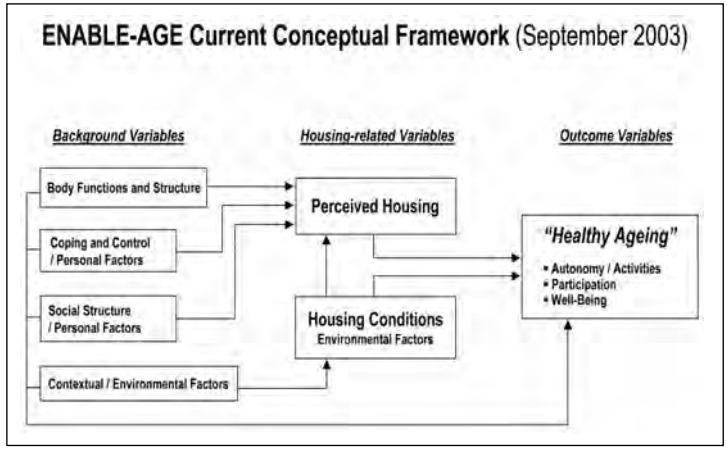


**Figure 1**
The ENABLE-AGE Conceptual Framework (June 2003 version). © The ENABLEAGE Project Consortium.

within several stages: the design stage, the data collection stage, the analytical stage, and the cross-national interpretation stage. The design of the ENABLE- AGE Survey Study and In-depth Study followed a model in which housing and health were conceptualised from a number of different perspectives (Figure 1) including:

- an objective perspective of housing focusing on housing conditions, housing standards, and environmental barriers;
- a subjective perspective of housing focusing on **meaning of home**, housing-related control beliefs, and housing **usability**;
- an objective perspective of housing **accessibility**, operationalising **accessibility** as an aspect of **person-environment** fit;
- a medical perspective of health in which participants self-reported their medical problems;
- an embodiment perspective of health characterised by symptoms;
- a functional perspective of health in which functional capacity and activity were objectively assessed as well as captured by self-reports, using different measurement levels;
- a psychological perspective in which coping with health and home, emotional well-being and mental well-being were all included;
- a social and community perspective in which social support and community participation were all seen as important aspects of relevance for the project.

This conceptual understanding underpinned both the ENABLE-AGE Survey Study and the ENABLE-AGE In-depth Study, keeping the three study arms closely related (Figure 1). This meant that conceptually linked questions of measurement and frequency were possible to address through the survey while research questions concerning how and why people behave in the way they do, as well as social constructions of independence, well-being, autonomy, and participation were being elaborated in the **qualitative work**.

## Methodological Developments

### Sampling Design

The initial sampling aim was to draw participants at random from official residential registers, in a similar way in all five countries. However, for different cultural, ethical, administrative, and practical reasons, this was not possible in the UK and Latvia. In the UK, since residential registers do not exist, the sampling strategy relied on use of general practitioner's patient lists. In Latvia, it was also not possible to use official registers, and participants were consequently recruited at social day care centres and through older people's voluntary organisations. Sweden, Germany, and Hungary all used official registers.

The target sample in each country was 400 participants, stratified for two age groups ("older" and "younger") and for gender (75%

women, 25% men). Based on mean age and life expectancy differences between West/Central and East European countries, in Sweden, Germany, and the UK, the "younger" age groups comprised participants aged 81-84 years, and the "older" 85-89 years. The corresponding age groups in Hungary and Latvia were 75-79 years ("younger") and 80-85 years ("older"). In order to tightly define the population sampled, only persons living alone in urban households were included. To make systematic and equal sampling in all five countries possible, a sampling definition flowchart (Figure 2) was developed and agreed upon. For quality assurance of the data collection and data entry procedures, a Standard Operation Procedure (SOP) document was written and distributed to all national project leaders.

After quality control and file cleaning procedures, the final sample for the ENABLE-AGE Survey Study at the first measurement point (T1) comprised 1,918 participants (Table 1). In April-May 2004, time measurement point 2 (T2) was completed in all five countries. A subsample of 40 participants involved in the survey at T1 were asked to take part in the ENABLE-AGE In-depth Study in each country (N=200). These were followed by consultation interviews undertaken by eight participants in each of the countries (N=40).

**Table 1**
Final sample for the ENABLE-AGE Survey Study at the first measurement point (T1), N=1,918.

## Interviewer Training and Teamwork

An important aspect of methodological rigour is the need for revision of instruments and interviewer training necessary in order to achieve sufficient reliability, validity, and trustworthiness for comprehensive, multidisciplinary cross-national research. Within the ENABLE-AGE Project, this issue was given very close attention, and from the outset responsible researchers were appointed for each major methodological work-package. Further, in each country interviewer teams were trained and monitored to carry out the **quantitative** as well as **qualitative** methodology systematically. In

| Country | Age group* | | | | | | n |
|---|---|---|---|---|---|---|---|
| | 75-79 years old | | 80-84 years old | | 85-89 years old | | |
| | Males | Females | Males | Females | Males | Females | |
| Sweden | ---- | ---- | 53 | 147 | 48 | 149 | 397 |
| Germany | ---- | ---- | 47 | 165 | 50 | 188 | 450 |
| United Kingdom | ---- | ---- | 76 | 169 | 37 | 94 | 376 |
| Hungary | 36 | 145 | 40 | 171 | ---- | ---- | 392 |
| Latvia | 21 | 176 | 14 | 92 | ---- | ---- | 303 |

* In order to reflect differences in life expectancy among the five countries involved in the ENABLE-AGE Project, in Sweden, Germany, and the United Kingdom, the "younger" age group consisted of persons 80-84 years old and the "older" of persons aged 85-89 years. In Hungary and Latvia, the "younger" age group consisted of persons 75-79 years old and the "older" of persons aged 80-84 years.

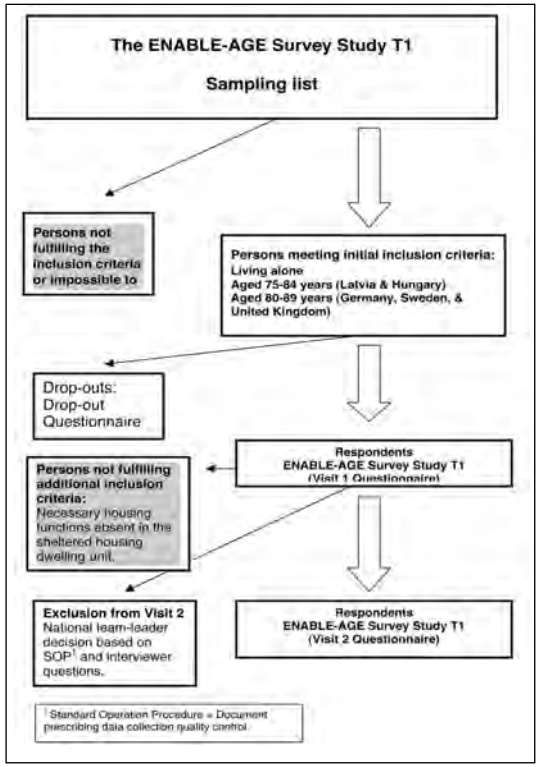


**Figure 2**
Sampling definition flowchart for the ENABLE-AGE Survey Study, first measurement occasion (T1).

2

addition, much attention was paid to translation (and back translation) of questionnaires, interviewer's manuals, interview schedules, and instructions; now available in seven different languages (Swedish, German, English, Welsh, Hungarian, Latvian, Russian).

Prior to the data collection within the ENABLE-AGE Survey Study, major endeavours were made regarding methodological development and interviewer training. The first phase of this process was integrated with the ENABLE-AGE Update Review, as a review of building standards, regulations and norms for environmental design in housing was necessary in order to revise the **Housing Enabler** (IWARSSON, SLAUG, 2001) for cross-national use. Further, all instruments and questions were translated into the seven different languages involved, followed by iterative piloting in the five countries. Later on in the process, two three-day interviewer courses were held, focusing on reliable administration of all instruments involved. Next, in each country the national project leader arranged national team courses, instructing and training all interviewers in their own language and context. Finally a small inter-rater reliability study was accomplished, involving critical parts of the survey study instrumentation (IWARSSON, NYGREN, SLAUG, 2004).

In terms of the ENABLE-AGE In-depth Study, a team of four to six researchers in each country conducted the interviews and data analysis. To maintain a consistent approach across the different countries throughout this work, the responsible researcher for this study created systematic and rigorous documentation of the **qualitative** approach as well as providing training sessions and procedures for data collection, data handling, and analysis. Such procedures ensured that each country approached the work in a similar way despite different disciplinary backgrounds and varying levels of expertise in the domain of **qualitative** research.

On a regular basis, during the different phases of the ENABLE-AGE Project, national team meetings and cross-national workshops were arranged. Each national project leader

regularly arranged team meetings involving all members of his or her national team, highlighting methodological issues of concern. Whenever difficulties arose, the national project leaders contacted the researcher responsible for the methodology in question in their mentoring role, in order to discuss and solve the problems encountered. Such problems were addressed within a cross-national framework within project specific workshops involving partners from the five countries.

This open approach to collaboration and successive methodological development encouraged each national team to share their findings with each other, to discuss issues arising around methodology, and to listen to and evaluate current thinking within the project. Inevitably such discussions drew interpretations from the in-depth interview data together with interpretations of the preliminary analyses of the survey data. This ensured that not only the national teams worked closely together but that the survey and in-depth interview interpretations progressed hand in hand, data from each source informing interpretations of the other.

## The ENABLE-AGE Survey Methodology: Combining Disciplinary Approaches

The ENABLE-AGE Survey Study at T1 was based on a comprehensive, project-specific questionnaire, administered at two home visits with each participant by means of interviews and observational assessments (Figure 3). The survey was designed using expertise in both psychological scaling and the precise measurement of functional and environmental variables within occupational therapy. This meant that objective and subjective assessment were incorporated into the project. Objective aspects of the home environment were assessed in great detail, and several subjective facets of the perceived home environment were also addressed in the survey (e.g., meaning of home, coping styles, housing-related control beliefs). Alongside demographic questions, the

**The ENABLE-AGE Survey Study**
**Questionnaire T1**

*Visit 1*

**Contents**

General information
Housing Enabler, descriptive part
Demographic questions
Assessment of Housing conditions and Housing adaptations
Assistive Devices/Technical Aids
Symptom List
Positive And Negative Affect Schedule (PANAS)
Modified Mini-Mental State Examination
Neighbourhood services and Place attachment
The Meaning of Home Questionnaire
Health Services
Perceived Health, Mobility, Vision, and Hearing
Geriatric Depression Scale
Housing Enabler, environmental assessment
The ADL-Staircase, and ADL performance difficulty items
Life Satisfaction
Questions for the interviewer to answer (reliability, quality of data, interview situation)

*Visit 2*

**Contents**

Perceived Functional Independence
Psychological Well-being Questionnaire
Visual Acuity
Housing Enabler, functional limitations and dependence on mobility aids
Usability In My Home
Adapted version of HOOP Questionnaire
Housing-related Control Beliefs Questionnaire (HCQ)
Leisure time activities
List of diseases
Coping Patterns Schedule (CPS)
Support
Home-related type of person
Participation in qualitative study
Questions for the interviewer to answer (reliability, quality of data, interview situation)

© The Enable-Age Project Consortium. Questionnaire with project specific questions, in combination with standardised instruments/assessments.

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questionnaire comprised several standardised instruments measuring different psychological variables such as activity, autonomy, housing **accessibility** and **usability,** as well as health and housing measurements. In order to cover health variables The ENABLE-AGE Survey Study Questionnaire included e.g. the Geriatric Depression Scale (**GDS**) (YESAVAGE, BRINK, 1983; HOYL, et.al, 1999), the Ryff Well-being scale (RYFF, 1989), and the **PANAS** scale (WATSON, CLARK, TELLEGEN, 1988). Subjective and objective housing variables were covered by means of e.g. the **Meaning of Home** Questionnaire (OSWALD, WAHL, 2004), the Housing-related Control Beliefs Questionnaire (OSWALD, WAHL, MARTIN, MOLLENKOPF, 2003), the **Usability** in My Home Questionnaire (FÄNGE, IWARSSON, 1999; FÄNGE, IWARSSON, 2003), and the **Housing Enabler** instrument (IWARSSON, SLAUG, 2001) (Figure 3). Furthermore, information on assistive devices, aspects of health and well-being, social participation, and so on, was collected by means of project-specific questions designed by the multi-disciplinary ENABLE-AGE Consortium. A revised and shortened version of the questionnaire was administered in a single home visit at T2.

Even though it should be kept in mind that it is the integration of the three study arms and the comprehensiveness of the instrumentation in the ENABLE-AGE Survey Study Questionnaire that represents the uniqueness of the ENABLE-AGE Project, in this context the detailed approach to housing **accessibility assessment** applied deserves a more detailed description. This approach distinguishes the ENABLE-AGE Project from other projects in housing research where the aspect of **accessibility** is rarely thoroughly assessed; to the best of our knowledge few if any research projects have used **accessibility assessments** based on a scientific methodology.

The **Housing Enabler** instrument is a novel, multi-dimensional **assessment** tool rendering very detailed **assessment** of housing **accessibility** possible (IWARSSON, 1999; IWARSSON, SLAUG, 2001). The Housing Enabler makes a predictive, objective, and norm-based **assessment** and analysis of **accessibility** problems in the physical home environment possible, and allows for analysis from individual as well as group/population perspectives. Sufficient results on inter-rater reliability (IWARSSON, ISACSSON, 1996; IWARSSON, NYGREN, SLAUG, 2004), content (IWARSSON, SLAUG, 2001), and construct validity (FÄNGE, IWARSSON, 2003) have been reported.

The **Housing Enabler assessment** is administered in three steps. In the first and second steps the **assessment** is conducted according to checklists for functional limitations and dependence on mobility devices as well as for physical environmental barriers. In the third step an analysis of **accessibility** problems is undertaken, by relating functional limitations and dependence on mobility devices to environmental barriers. The result of this analysis is a quantification of the **accessibility** problems anticipated in each case, in terms of a total score.

I. ***Assessment*** *of functional limitations:* This first step of the **assessment** is a combination of

interview and observation, in order to dichotomously assess the person's functional limitations (13 items) and dependence on mobility devices (2 items). Thus, the personal component of **accessibility** is operationalised primarily in terms of physical functional capacity, while four of the items concern perception or cognition. The result of this step is expressed in terms of profiles of functional limitations, i.e. the significant characteristic of this **assessment** is that it takes simultaneous occurrence of several different functional limitations into account. In this kind of profile the presence as well as the absence of any of the functional limitations is crucial, since the result of the **quantitative** analysis (see III below) takes both aspects into account.

II. ***Assessment*** *of physical environmental barriers:* A detailed on-site **observation** of physical environmental barriers in the home and the immediate outdoor environment (188 items). Thus, the environmental component of **accessibility** is operationalised in terms of the presence of physical environmental barriers. The housing environment is divided into four sections: outdoor environment (33 items), entrances (49 items), indoor environment (100 items), and communication features (6 items). In the original instrument, just below 70% of the items were defined according to official Swedish norms or guidelines. The remaining items were defined and assessed based on professional experience, primarily **occupational therapy** expertise. The 188 items constitute a valid source of information, and they are subsequently entered into the **quantitative** analysis (see III below).

III. *Calculation of* ***accessibility*** *score:* This step is a **quantitative** analysis of **accessibility**. It comprises a calculation of a total score predicting the demand caused by a particular combination of functional limitations in an individual or a group on the one hand, and physical environmental barriers (environmental design features) on the other, i.e. the degree of objective, norm-based **accessibility** problems in housing. For each environmental barrier item, the instrument comprises predefined points (1 to 4) quantifying the severity of the problems predicted to arise in the specific case. Based on the rater's dichotomous **assessments** in steps I and II of the administration procedure, the predefined points 1-4 already fixed in the instrument format yield a score summing up the degree of **accessibility** problems anticipated, i.e. predictive physical environmental demand. In cases where no functional limitations or dependence of mobility devices are present in the person, the score always is zero. In cases where the person has functional limitations and/or is dependent on mobility devices, higher scores mean more **accessibility** problems and higher environmental demand. A computerised tool for more efficient data analyses, on individual as well as group level, is available (SLAUG, IWARSSON, 2001; see http//:www.enabler.nu).

## The ENABLE-AGE In-depth Study

After being interviewed for the ENABLE-AGE Survey Study, participants were asked if they would like to contribute to the in-depth study. In this way, a sample of 40 participants in each country was identified for in-depth interviews. These participants varied in terms of their health status (poor to good health), participation (outgoing to reclusive) and environmental fit (poor to good) giving the research teams access to a diverse sample for the **qualitative** work of the project.. The **qualitative** work aimed to provide a deeper understanding of key project themes by revealing the inner perspectives of older peoples' home lives in relation to **healthy ageing**. In addition, the work contributed to developing a theoretical framework within which the relationship between home and **healthy ageing** can be located. As such, the **qualitative** design was driven by a **grounded theory** framework (CHARMAZ, 2003) in which the key concepts of health and well-being, autonomy and social/community participation were explored together and in relation to older persons' experiences of their quality of life in their home setting.

**Grounded theory** involves a process in which data collection and analysis are conducted in parallel (STRAUSS, CORBIN, 1990). The procedure is both a fluid and an iterative one. Findings from former interviews are built into the interview schedule in later interviews in a feed-forward process. Here, the researcher looks for conceptual saturation (i.e. to understand the universe of content of a concept) rather than identifying comparisons across individuals. As understanding of the concepts progresses, the researcher explores connections between concepts in order to learn about the relationships between various aspects of the phenomenon under investigation in the development of theory. The value of using such an approach allowed the different countries in the ENABLE-AGE project to examine key concepts while developing their analysis in culturally sensitive ways. For instances, issues of finance emerged as critical aspects of the relationship between housing and ageing in some countries (eg. Hungary) but not so crucial in others, while the relevance of war experiences underpinned domestic coping strategies, especially amongst older people in Germany and the UK but not so for the Swedish participants.

## The ENABLE-AGE Update Review

The ENABLE-AGE Update Review involved a five country macro level review of current housing policies and legislation relating to older persons. As mentioned earlier, the first phase of this part of the project was a review of building regulations and norms for environmental design in housing, accomplished by means of a template based on the environmental component of the **Housing Enabler** (IWARSSON, SLAUG, 2001). In accordance with the template, the country teams searched national data sources and presented relevant information on housing standards, guidelines

and regulations. Next, a Swedish architect with extensive experience of **accessibility** issues and universal design reviewed all data collected. Finally, the collated results were used for developing the ENABLE-AGE Project version of the **Housing Enabler** (IWARSSON, NYGREN, SLAUG, 2004).

The second and main phase of the ENABLE-AGE Update Review targeted housing policies, legislation, relevant types of housing, and typical pathways of housing decisions for older adults as well as general information on aspects of the national welfare systems considered relevant for the ENABLE-AGE Project, i.e. aspects of importance for very old people's living situation. This was based on relevant existing information sources available at European and national levels and consultation with experts, e.g. architects and policy makers. A further data collection template was developed and completed by each national team, providing the basis for national reports on policy and cross-national analysis and report. As indicated in Figure 1, the main role of the ENABLE-AGE Update Review was to provide information on background variables, viz. macro-level contextual/environmental factors.

## Integration of the Three Study Arms in Analysis and Interpretation

The data collection phase was carefully planned to allow an integration of the different methodologies applied, i.e. to integrate **quantitative** and **qualitative** data in the analysis as well as to integrate survey data in analysis and interpretation.

The first data collection occasion of the ENABLE-AGE Survey Study was conducted prior to the ENABLE-AGE In depth study taking place. This ensured that comments made by survey participants were evaluated with respect to inclusion in the interview schedule. Prior to each in-depth interview, the interviewer had access to the survey data of the participant. The **grounded theory** approach enabled any issues arising that held potential for elaborating understanding of the relationship between health, well-being, and home to be included in the in depth interview schedule. In this way, a feed forward process was adopted from survey to in depth interviews. For instance, any interesting comments, apparent discontinuities in answering survey questions and recurrent topics of relevance for the participant were noted and these were clarified and explored during the interview. Such information was extremely useful in gaining insights into the older persons' way of living at home. As an example, one older lady in the UK survey had revealed that she was virtually housebound, with very poor mobility, hearing, and sight. She continued to live alone, yet indicated a high level of community participation. During the interview, this apparent paradox was clarified when the lady described how the community "came to her" in constant visits from family, friends, and neighbours and asked her advice on community matters or simply included her in all the local gossip. She felt that she played an important

role in the community in bringing people together, providing "a listening ear and a word of advice". Later as the cross-national analyses progressed, similar results were found e.g. in Sweden.

Each of the participating country teams conducted between 30 and 40 in depth interviews with men and women in this very old age group. As the **grounded theory** framework developed, eight participants in each country have been investigated during consultation interviews in a case study design (YIN, 1989). Each case study involved the initial interviews, follow up consultation interviews (to clarify issues, elaborate interpretations and extend the data into relevant related areas), together with a consideration of the specific survey data for these eight participants. Here, survey and interview data from particular individuals were brought together in a single analysis. This analysis and resultant interpretations were taken together to the older person for them to comment on, evaluate and contribute to the analytical process (the consultation interviews). Such consultation interviews provided one further opportunity for the integration of the **qualitative** and **quantitative** data, analysis and interpretations in a reflexive process with researchers and participants both integrally involved. As the work progressed, it was possible to gain insights from the in depth interviews to help inform the design of the ENABLE-AGE Survey Study questionnaire at T2. For example, the interviews drew attention to the lack of survey data on social participation. As a result, measurement of social participation was more fully developed in T2.

Taken together this database of 30-40 in-depth interviews and eight case studies per country constitutes an extremely rich **qualitative** database at the national level. Moreover, the ENABLE-AGE In depth Study provides a unique opportunity to explore relationships between housing and **healthy ageing** in depth and cross-nationally.

It was at the policy, in depth and survey analytical stage that possibilities for a powerful mechanism for integrating data and analysis arose in the ENABLE-AGE Project, where issues of policy have been used to drive a holistic analysis. As an example of this, the policy analysis identified key policy directions and problems in each country. The in depth data provided understandings of how and why such policies were operating in the best interests of very old people, or indeed were failing to improve older peoples housing and quality of life. Furthermore, the interview data could identify gaps in policy provision. Finally, wherever appropriate, policy related issues could be explored using relevant data from the survey.

As an example of this analytical process, one key problem for older people identified in the ENABLE-AGE Update Review in the UK concerned transportation and the lack of policy initiatives for older people. In the in depth interviews, being home focused was important, as long as participants were able to get out and about in their community. However, transportation was often cited as a huge problem to overcome and a major factor

resulting in feelings of social isolation and exclusion from participation in wider society, especially once driving skills had been relinquished. Participants would rarely ask for special equipment such as lifts in cars as this compromised their feelings of independence and placed them as burdensome in relation to relatives and friends. Taxis were considered unreliable and expensive, especially where long distance journeys were anticipated. The results supported previous research from e.g. Sweden (CARLSSON, 2002); public transportation was described as unreliable, inconvenient and poorly designed in relation to the functional capacities of very old people. One lady interviewed described how her shopping trip became a nightmare when she could not manage to negotiate the step up from pavement to bus. The helpful driver bodily lifted her onto the bus. Not an optimal solution for anyone concerned and off putting for this particular lady who then felt averse to using public transport in the future. Thus, the ENABLE-AGE in depth interviews indicated the need to address the social and environmental context of transportation. Further, without adequate transportation giving access to community and leisure facilities, very old people can become isolated and this can create the conditions in which mental well being can be negatively affected. The following hypothesis was posed for examination within ENABLE-AGE survey data: Older people who are home oriented will suffer more from depression that older people who spend time in outdoor activities (YESAVAGE, BRINK, 1983; HOYL, et.al, 1999). A positive correlation was found between GDS scores and home oriented older people, supporting the hypothesis indicating that the less people go out the more likely they are to suffer depression (UK ENABLE-AGE Survey Study data, unpublished results).

As a consequence of the bringing together of the policy, interview and survey analysis in this way, fundamental recommendations for policy can be made on the basis of the grounded understandings and explanations gained throughout the different parts of the ENABLE-AGE Project. Similar examples are available in the different partner countries. At later stages in the analytical process cross-national comparisons will lend further insights to the different kinds of problems very old people across Europe face in their everyday lives and how policy can be framed to improve housing-related quality of life and support healthy ageing in place.

## Ethical Considerations

The ENABLE-AGE Project fulfilled all legal and ethical requirements of the participating countries. That is, in countries requiring formal ethical approval and approval for the storage of electronic data, such procedures were managed under the responsibility of each national project leader. Guidelines for this work were drawn up from the inception of the project and referred to nationally accepted guidelines in each participating country or best practice where such guidelines did not exist nationally. Examples of guidelines to follow were for

Sweden the Guidelines of the Swedish Medical Research Council, for Germany the Guidelines of the German Research Foundation and the German Society of Psychology, and for the UK the Standard Guidelines including the British Psychological Society Guidelines.

During the different phases of data collection, a substantial number of very old people were visited in their homes. Here, a positive and proactive ethical approach was adopted. Informed, written consent was gained from all participants and they were assured of their anonymity. All person related data were handled in a strictly anonymous way. Participants were informed that they were allowed to withdraw from the interviews if they wished, including a withdrawal of their data at any stage up to publication of results. Participants were informed that data would be anonymised and that extracts from interviews might be used in reports, for teaching purposes, and in different kinds of publications. The interviews could touch on sensitive issues for the older people, especially where decisions of moving due to ill health or declining functional capacity are involved. During the training courses and national seminars, the interviewers were trained and supported in dealing with sensitive issues and would be able to give advice at the end of the interview session if participants requested this. Furthermore, great attention was paid to ensuring that participation in the research was not too tiring or physically demanding (see BURY, HOLME, 1990:140-141).

In any research involving very old people, situations may arise calling for social and medical interventions. The data collectors were all well informed on such matters, and many of them were occupational therapists or other health care workers with professional responsibilities. That is, they were instructed to offer participants in such situations the information needed in order to be able to contact local health and social service authorities for advice concerning their personal situation. Finally, safety provision was mainly considered in respect to third party liability and injury and accidents of workers involved in data collection. Health and safety at work acts of the partner countries were complied with and all employees were notified of the respective, country specific provisions of current legislation.

## Current Project Status

In May 2003, T1 of the ENABLE-AGE Survey Study was completed (Table 1). Initial interviews have been completed for the In-depth study and consultation interviews and case studies are well underway. Analysis of Survey as well as In-depth Study data is ongoing, as is analysis of the ENABLE-AGE Policy Update Review data. By May 2004, T2 of the ENABLE-AGE Survey Study will be completed, followed by analyses of changes over time. The synthesis of results from the three ENABLE-AGE studies will provide the basis for policy recommendations and guidelines in housing policies for use across Europe. One final aim of the project concerns the ENABLE-AGE Home **Assessment**

Guidelines. These guidelines will provide straightforward guidance to practitioners in the housing field in respect to key concepts and approaches, policy background, methods of collecting information, and methods of **assessment** at the case level. Further work is envisaged to develop the preliminary guidelines beyond the scope of the present project; for example the development of an expert system on housing and health in very old age.

## Conclusion

The cross-disciplinary, cross-national nature of ENABLE-AGE Project has presented many challenges to the success of the project, not least in terms of:

- Linguistic and cultural sensitivities
- Differences in professional backgrounds and expertise
- Different practical frameworks; e.g. ethical frameworks for research governance
- Different academic interests and priorities

These differences presented challenges in almost every aspect of the project, for example in the use of the **Housing Enabler assessment** tool, the carrying out of the **qualitative** research, and the policy **assessment**. Throughout the three years of the ENABLE-AGE Project, the consortium has engaged in a commitment to scientific rigour and systematic, constructive problem solving, within a framework sensitive to cultural similarities and differences. However, determined efforts to meet and grow through these challenges have resulted in practical guidelines for conducting cross-disciplinary, integrative research:

- Mentoring; key experts within the consortium provide support and guidance across the project as a whole
- Training; targeted training to cover unfamiliar methods and approaches, in order to meet basic reliability and validity criteria
- Effective task management and progress monitoring

By combining **qualitative** and **quantitative** strategies in such an integral way within the project, information gained has covered personal, social, and environmental factors from both objective and subjective perspectives. The integrated approach to this work in terms of conceptual understandings, methodological design and forms of analysis as outlined in this chapter is particularly relevant to strengthening the evidence base in the area of housing and ageing. Bringing such information together has presented, and continues to present, exciting opportunities for new insights to emerge of theoretical and practical importance for very old people's housing, building upon the ENABLE-AGE multi-dimensional methodology for research on housing and health. Major parts of the methodology are now available in seven European languages, and the experiences gained are valuable for implementation of research on housing and health in Europe at large. Forthcoming results have the potential to promote an understanding of the ways in which very old people live their lives at home, taking account of their experiences of health,

autonomy, and participation. The data collected during the project period represents a goldmine for housing research, and the ENABLE-AGE Project will render scientific results during several years to come. Strong emphasis is currently being made to disseminate knowledge within scientific as well as practical domains. The ENABLE-AGE Project is due for completion at the end of December 2004.

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# 7 COMPARATIVE CASE STUDIES IN CROSS-NATIONAL HOUSING RESEARCH

*Annett STEINFÜHRER*

## Abstract

*With the on-going internationalisation of the social sciences, questions of cross-national research methodologies are becoming increasingly important also in the field of housing studies. The most prominent problems of cross-national research projects are the question of comparability, the way the selection is carried out, the direction of the approach, i.e. whether the focus will be preliminarily on differences or on similarities, and the necessity to find and to understand comparable data with comparable indicators for the empirical testing of the scientific hypotheses.*

*In the following paper, the methodological approach of a comparative research project on the courses and consequences of the urban transition in eastern Germany and the Czech Republic form is presented and discussed. The main focus of this study was on housing market changes and residential location decisions of urban dwellers in the 1990s. Both a multi-level and a multiple-methods approach were applied and embedded into a more general methodology called "contrastive comparison" from a German-Czech perspective. Two city case studies, one in either country, were carried out and analysed separately. In the end of the research process, the findings of the less familiar case (here: the Czech example) were reflected against the results of the German case study.*

*The first part of the paper is dedicated to the underlying questions and objectives of the research. Then, the comparative approach (contrastive and cross-cultural comparison) will be explained in more detail. Finally, the single methods as well as their strengths and weaknesses are described. It is argued that - despite the limits each method certainly has - a theoretically based, well-defined mix of different methods is appropriate to investigate the complex relationships between housing markets and households' behaviour in it.*

**Keywords:** *Multiple-Methods Research; Contrastive Comparison; Case Studies; Germany; Czech Republic*

## Introduction

**Cross-national research** is becoming increasingly important in both university and non-university research. In Europe, this process is being accelerated by the research policy of the European Commission and the enlargement of the European Union. Questions of cross-national research methodologies are therefore gaining growing significance.

In housing research, there is a long tradition of **cross-national analyses** predominantly focusing on the macro scale of national housing policies and housing market systems (e. g. TURNER, et.al., 1992; SKIFTER ANDERSEN, MUNK, 1994; KEMENY, 1995; BALCHIN, 1996; HEGEDÜS, TOSICS, 1998; MANDIC, 2000; LUX, 2003). Therefore, methodological reflections on how to compare have been part of the disciplinary discourse for quite a long time (recently: KEMENY, LOWE, 1998; BOELHOUWER, et.al., 2000; OXLEY, 2001; PICKVANCE, 2001).

Like other cross-national investigations, projects on housing research where two or more national examples are analysed face several challenges. First of all, the problem of **comparability** needs to be solved. This particularly means selecting features which are both within the scope of the research question and considered meaningful in the various national contexts. Secondly, the researcher needs to decide upon the direction of the approach, i.e. whether the focus will be preliminarily on differences, and therefore on a deeper understanding of the individual **cases**, or on similarities, hence on more general features. Thirdly, for the empirical testing of hypotheses, comparable data with comparable indicators need to be found and - not least - understood.

This paper presents the methodological approach of a cross-national research carried out of in the framework of a PhD thesis in urban sociology between 1999 and 2002 (STEINFÜHRER, 2004). It analysed housing market developments, the perceptions and the behaviour of urban dwellers deciding upon a residential location during the period of **post-socialist transition** as well as the consequences of these processes for housing markets and residential segregation patterns using the examples of eastern Germany and the Czech Republic.

## The Research Question: Residential location decisions, housing markets in transition and changing segregation patterns

The political, economic and social transition processes in **Central and Eastern Europe** since the mid-1980s are best reflected in the region's cities. Ownership and physical structures, functional and socio-spatial patterns, the distribution of wealth and poverty, the hierarchy of residential areas and housing preferences as well as opportunities all changed in the 1990s, be it rapidly or more modestly. This ongoing urban reorganisation is interconnected with and overlaid by globalisation processes affecting

this region as part of a newly forming world economy, too (an overview of urban transition processes in Central and Eastern Europe until the late 1990s is given in ENYEDI, 1998).

From an ***actor-centred perspective***, an understanding and explanation of the course and consequences of **post-socialist urban transition** should start at the **micro-level**, i.e. with the subjective perceptions and behaviour of the urban actors. If research focuses on housing and segregation patterns including their changes, the main actors are the urban residents who take, postpone and revise individual **residential location decisions**, thus changing the collective socio-spatial patterns of the city concerned. However, urban dwellers are not independent of framework conditions. On the contrary: they are part of the overall transition processes which significantly influence the structures of the housing market, the composition of the housing stock, the situation of the residential areas, and the symbolic evaluation of urban and suburban space.

Based on a revised typology of "exit" and "voice" (HIRSCHMAN, 1970), ***residential location decisions*** were conceptualised as a multi-optional decision-making process where both internal and external conditions of the household are assessed and weighed up by the actors. "Moving" and "staying" have been regarded as the two main and alternative action "sets", within the framework of which a number of options can be chosen, such as intra-urban mobility, interregional migration, protest, structural conversion of the apartment or change of attitudes towards the home (in more detail: STEINFÜHRER, 2004:22-32; KECSKES, 1994). Both "moving" and "staying" are reflected and decided upon several times in the life-course and are strongly influenced by household changes (ROSSI, 1980). Housing is thus conceptualised as a social adaptation process taking place during the entire life-time of an individual and a household, respectively (PRIEMUS, 1986).

The quantitative and qualitative situation of the respective **housing market** and its segments was regarded as the *main external condition* of residential location decisions. This aspect is usually systematically neglected in **housing mobility research**, which tries to explain residential location decisions chiefly as outcomes of life-cycle events and household resources.[1]

In the post-socialist **transition** countries of **Central and Eastern Europe**, housing market changes were remarkable during the 1990s (TURNER, et.al., 1992; STRUYK, 1996; SAILER-FLIEGE, 1998; HEGEDÜS, TOSICS, 1998; WIESSNER, 1999; MANDIC, 2000; LUX, 2003). Despite national specifics, the most decisive reform targets were the following:

1. The reintroduction of property rights, including in the field of housing, and therefore of a 'real' market, with the central process being the privatisation of the housing stock via restitution and (or) mass privatisation to sitting tenants;
2. The far-reaching deregulation of almost all issues connected with housing, including its formerly state-dominated financing and allocation.

Eastern Germany and the Czech Republic on which the project described here was focused started the transition process with a quite similar structure of the housing market segments (predominantly state and private home ownership and a smaller share of cooperative housing). This was due to a strong centralist housing policy until the end of the 1980s. Moreover, the typical urban legacy of state socialism was to be found in both countries: a high degree of abandonment and dilapidation of the inner cities contrasting with new housing estates at the peripheries in all categories of towns. Despite large-scale construction programmes, housing shortage was on the agenda. The application of the restitution principle, the reintroduction of a relatively important private rental sector and a reluctant privatisation of public rental housing to sitting tenants were the most significant milestones of the (East) German and Czech housing market policies in the 1990s.

Meanwhile these two countries, their housing policies and markets have significantly grown apart. To mention just the main difference, whereas the situation in eastern Germany is currently characterised by a huge supply surplus of dwellings (see the contribution of Sigrun KABISCH in this publication), in the Czech Republic the housing shortage is acute for several reasons which cannot be explored here in more detail. Nonetheless, there are still some common patterns. For example, in both countries **rental housing** has not been residualised so far (in contrast with other countries in the region; MANDIC, 2000), although its share has certainly diminished. And although suburbanisation proved to be the main process of socio-spatial differentiation, **residential segregation** by now has not grown to the extent expected at the beginning of **transition**. However, the reasons for this development doubtless differ between the two societies (in more detail: WIESSNER, 1999; SYKORA, 2003; STEINFÜHRER, 2004:47-93).

In the project, the courses and consequences of **urban transition** - in particular the changes of the **housing markets** and the **socio-spatial differentiation** patterns - in these two countries were investigated using **case studies** in *two medium-sized cities*, Leipzig and Brno. The main interest of the comparative study was in **residential location decisions** of urban residents, hence their perceptions of and their behaviour within the **housing markets**. Another focus was the socio-spatial consequences of the first transition period as an additional background condition for residential location decisions. Therefore, it was necessary to apply both a ***multi-level*** and a ***multiple-methods approach*** for the empirical investigations.

Justifying the selection of the cities Leipzig and Brno in detail would go beyond the scope of this paper. Nevertheless, at least a few reasons need to be given: First of all, the comparison itself was regarded as an objective on its own. **Cross-national studies** are rare in research on **urban transition** in **Central and Eastern Europe**. This is particularly true for medium-sized and large cities which are not capitals: much is now known about transition

processes in Prague, Warsaw and Budapest (see, for example, the analyses in ENYEDI, 1998) - yet almost nothing about smaller cities such as Leipzig and Brno. Secondly, it was intended to include an East German example in the investigation in order to reintegrate this particular case into transition **research**. Thirdly, Leipzig and Brno were selected because of their comparable size (about 500,000 and 400,000 inhabitants, respectively) and their similar urban structures (in more detail STEINFÜHRER, 2004:96-115).[2]

## Contrastive Comparison

**Comparative analyses** are frequently demanded, including in housing research (e.g. DIELEMAN, 2001:61). However, they are even more often called into question - be it their theoretical and methodological background, the criteria for the selection of **case studies**, the interpretations by the researcher, or the general **comparability** of social structures and processes.

First of all, comparing is inherent to human thinking. The perception, evaluation and classification of a certain fact usually occur with implicit or explicit reference to another one. A scientific **comparison** means the systematic analysis of the similarities and differences of at least two observable facts. The underlying assumption is that generalisable mechanisms are to be found to explain certain structures or phenomena (FRIEDRICHS, 1978:13). Scientific comparison can be understood as a specific approach of producing, processing and structuring data which has certain methodological consequences (SCHRIEWER, 1999:60).[3]

Two types of scientific **comparison** are to be distinguished:

(a) Approaches serving a deeper understanding of the differences and, therefore, of the individual **cases** - or just one of them;

(b) Approaches directed at the common features of the **cases** selected and therefore at generalisation (HAUPT, KOCKA, 1996:11).[4]

Within the research project outlined above, a variant of the first approach was applied since the by now strong structural differences between the two **cases** required each of them to be analysed separately. With reference to Heinz-Gerhard HAUPT and Jürgen KOCKA, two social historians, the specific comparative approach chosen was called ***"contrastive comparison"*** (HAUPT, KOCKA, 1996:15-16; with another terminology: OXLEY, 2001:95-97).

**Contrastive comparison** meant:

1. Either **case study** (the **housing markets** and actors' behaviour in Leipzig and Brno, respectively) was analysed separately within the logic of its own development and the specific national background conditions.
2. The starting point of the investigation - at the national, local and district **level** - was always the Leipzig case given the author being rooted in the background of the (East) German culture and language.

3. The situation in Brno was then interpreted against the background of the understanding gained for the more familiar case.
4. Finally, the main differences and similarities of the two **case studies** were summed up.

**Contrastive comparison** therefore also meant that the author was well aware that despite language knowledge in both cultures and a serious attempt at **cross-national** understanding, a structural bias always persists in favour of the author's 'own' culture. This bias is accepted within the framework of **contrastive comparison**, and the focus is on mutual learning, especially from the foreign housing culture for one's own. The stranger's view of the other society is redirected to the seemingly well-known one in an effort to call it into question and ultimately to understand it better from the newly-gained external perspective. Thus, with the help of such a **contrastive approach** an attempt is made to gain new insights - remaining aware that a German-Czech comparison from a German perspective will end up with different conclusions than a Czech-German one from the viewpoint of a Czech researcher.[5]

The *new perspective* on structures apparently familiar to the researcher is certainly one strength of this methodological approach. Another is the *deeper understanding of the individual case*. Since **comparative** housing **research** mainly focused on analyses of national housing policies and systems, **case study** investigations below the macro-**scale** are stipulated: "Rather than study whole countries and whole housing systems, there is much that might be gained from **micro-scale** housing studies that, for example, focus on towns, sets of households or individual housebuilders or landlords, comparing these between countries. [...] It would in most cases involve primary data collection. We might learn much about the whole by studying a part and putting this in context." (OXLEY, 2001:103) This is not least a plea for **comparative case studies**.

Methodologically, this approach fits into the **divergence perspective** outlined by Jim KEMENY and Stuart LOWE as opposed to a mere particularistic juxtaposition of several cases on the one hand and a generalistic **convergence perspective** on the other hand (KEMENY, LOWE, 1998).[6] Adopting a **convergence approach** therefore means paying attention to cultural contexts, hence being aware of national differences and not regarding them as exceptions from a general rule: "Here is found neither reduction to particularism where each housing system is unique, nor generalisation to universalism where all housing systems are the same. Instead, attempts are made to discern patterns and typologies of housing systems" (KEMENY, LOWE, 1998:170). A two-**case study** then is a specific application of this approach since due to the restricted number of cases it will not lead to a typology but with a clearer understanding of housing system differences and their consequences for the actors (KEMENY, LOWE, 1998:172-173; for a similar approach: SKIFTER ANDERSEN, MUNK, 1994).

Two dangers of such a **contrastive comparison** need to be mentioned before moving on. First of all, we need to be on our guard against the 'instrumentalisation' of 'the other', which can also be called scientific "imperialism" (HAUPT, KOCKA, 1996:15-16; NISSEN, 1998:414). In other words, a researcher may fail to do justice to the 'other' culture or even systematically misunderstand and present a distorted picture of it.[7] Secondly, a **contrastive approach** can end up without any comparison at all because the cases are merely juxtaposed (KEMENY, LOWE, 1998:163-164; NISSEN, 1998:410; OXLEY, 2001:94-95; PICKVANCE, 2001:16). The latter problem, however, is not restricted to **contrastive comparisons** but typical of many international and **cross-cultural studies**. With respect to **comparative** housing **research**, OXLEY (2001:103) criticises: "One of the greatest confusions in housing research that covers several countries is to box all such work together and call it 'comparative'. The use of the term 'comparative housing research' should be limited to research that genuinely compares and contrasts" (similarly PICKVANCE, 2001:11).

## Cross-Cultural Comparison

One particular difficulty and challenge for the investigation was its **cross-cultural**, German-Czech, nature over the borders of two national states with their own languages, housing cultures and **transition** policies. This naturally had consequences for the methodology of the empirical investigations because: "In perhaps no other subfield of social science research are issues of methodology and measurement as open to challenge and criticism as when they are applied in cross-cultural and cross-national settings" (JOHNSON, 1998:1).

Since it is impossible to measure 'the same' in different cultures with 'the same' instrument, another methodological criterion needs to be met: ***equivalence***, which in cross-cultural research is as important as the classical criteria validity and reliability. Two central notions of **equivalence** were worked out by Timothy P. Johnson after his analysis of altogether 52 different equivalence labels (JOHNSON, 1998:3-10):

(a) The equivalence of the meaning of certain concepts in different national and/or cultural contexts (***interpretative equivalence***);

(b) The equivalence of the measures and procedures used in empirical research (***procedural equivalence***).

Both types of **equivalence** are to be understood as ideal types which can never be reached completely in praxis, but which are instead a standard to be reflected upon. In the course of a rising number of **comparative cross-cultural studies** (e.g. the International Social Survey Programme, ISSP), questions of procedural **equivalence** are of high importance (an overview is provided by the papers in HARKNESS, 1998).

Procedural **equivalence** was also a key

issue to be considered before the start of the empirical investigations for the project outlined above, since for the complex research question several methods, including questionnaire surveys, were planned. **Questionnaires** and interview guidelines are texts with a double-edged problem: a linguistic one (they need to be translated from a source into a target language), and a methodological one, because they are an instrument for measuring identical or similar phenomena in different cultures. During the translation process these two problems need to be solved simultaneously. Because of the inevitable problems arising from these challenges, Janet HARKNESS and Alicia SCHOUA-GLUSBERG (1998) suggested that in the case of **questionnaire** translations the terms adequacy and appropriateness should be used instead of equivalence since: "Translation necessarily involves differences as well as similarity. Absolute absence of difference would amount to replication of the source text [...], absolute absence of similarity would force us to query the status of one text as a translation of the other" (HARKNESS, SCHOUA-GLUSBERG, 1998:93). This applies in particular when a **contrastive comparison** is carried out because of the above-mentioned problem of scientific 'imperialism'. Since a **contrastive approach** needs to start with one culture and a research question which first arose within this context, the criteria of **adequacy** and **appropriateness** of both the scientific problem and the instruments for the other culture are of special significance.

## The Methodology in Detail

Due to the complexity of the research questions and the necessity of a multi-level approach including macro- (national as well as local), meso- and micro-**scales**, two separate **case studies** (cities) in either country were regarded as most appropriate. It is important to notice that in this framework "**case study**" is not restricted to a qualitative - as opposed to a quantitative - approach (e.g. LEIMBROCK, ROLOFF, 1991; NISSEN, 1998). Instead, it is meant to be in line with another tradition of social research: the **mixed-method approach**es combining both **quantitative and qualitative techniques** and aiming at a preferably all-embracing understanding of a community, a neighbourhood, a housing market system or a city (still the most impressive example: JAHODA, et.al., 1975, first edition in 1933).

Although from an epistemological point of view the ongoing debate on "whether" **qualitative or quantitative methods** is certainly necessary (e.g. PHILIP, 1998; KELLE, ERZBERGER, 1999), in housing research the popular demand for "bridging the gulf" seems a bit artificial because **multi-method approaches** are wide-spread and typical rather than exceptional (ROSSI, 1980; KECSKES, 1994; MICHELSON, 1997; GIULIANI, 1997 and several contributions in this volume).

## Secondary Analyses

At the level of the city and the city region, respectively, ***census*** *and municipal* ***data*** were

examined in order to achieve an overview of the short- and mid-term results of the **housing market** transformation of the 1990s, mainly the consequences of the privatisation of the housing stock and initial changes in residential location patterns. Moreover, new **socio-spatial differentiation** processes (which were already a result of the transition period) and persistent **segregation** patterns (stemming from the period of socialism or even from the capitalist era before 1945) were investigated in Leipzig and Brno at the macro-**scale** via secondary analyses.

However, the situation proved to be quite different in the two cities. In Leipzig, the municipal department of statistics regularly provides relevant data, including at a smaller scale. A monitoring system of the local housing market and an annual public survey (*Bürgerumfrage*) are crucial additions to classical statistical indicators. Nonetheless, there is no regular **census** of the type necessary for traditional procedures of urban research, such as social area analyses or factor-ecological approaches, as well as for longitudinal investigations. This is one of the advantages of Brno, where data from national **censuses** have already been available at a small scale for several decades. On the other hand, Brno has no system to monitor structures in the period between **censuses**.

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**Figure 1**
One of the data sources used: classified adverts from Leipzig and Brno

## Own Empirical Investigations: Quantitative and Qualitative Methods

In Brno, ***expert interviews*** with local practitioners and scientists were carried out in order to obtain additional information on the municipal housing policy, local problems and potentials, the main targets of urban policy, to mention but a few examples. In Leipzig, such information was obtained from public meetings and daily newspapers, obviating the need for expert interviews.

As a further source for information on the local housing markets, ***classified adverts*** by households looking for a new rented flat were examined (see Fig.1). In these adverts, the households describe the main characteristics of the new flat wanted. This is a data source which is still only rarely used in housing research even though, in contrast with many other data, such **adverts** do not reflect the understanding of a researcher (such as a questionnaire) but are formulated by the urban dwellers themselves. Therefore, they allow analyses of subjective

interpretations of local housing markets and individual strategies to cope with them.

Beside the city and its local **housing market**, households and individual actors were the second main focus of the project. Their previous **residential location decisions** in the transition period and before 1990, positive and negative ties to their present location as well as mobility intentions and reasons for moving or staying were examined using *standardised **questionnaire surveys***. The financial and time scope of the research project did not allow a representative study on the level of the entire city. That is why again a **case-study approach** was chosen: The surveys were carried out in two **inner-city neighbourhoods** in either city. In Leipzig, 329 residents in the districts of Anger-Crottendorf and Gohlis-Süd took part in the survey. In Brno, altogether 258 **questionnaires** were returned in two inner-city neighbourhoods in Ponava and Staré Brno. The careful selection of two residential areas in both Leipzig and Brno allowed for comparisons between these two areas in the frame of the city **case study**. Methodologically, elements of both oral and **self-administered surveys** were adopted. After being informed about the survey, the residents of the respective neighbourhoods were handed the **questionnaire** by assistants and asked to complete it themselves. After a few days, the **questionnaire**s were collected. The **response rate** of this highly successful method was 78 per cent in Leipzig and 69 per cent in Brno.[8] The **questionnaire** contained both **closed** and **open questions**, giving the residents an opportunity for subjective interpretations and additional remarks.

Since **residential location decisions** are usually processes covering a longer period, time was a factor to which attention was paid in the course of research, too. This happened in mainly two ways. First of all, **residential location decisions** were conceptualised as actions in the past and the present which are, moreover, probably anticipated for the future, as well. That is why all of these three temporal points of reference were included into the questionnaire. Secondly, additional ***qualitative interviews*** were conducted between one and two years later with a few residents in both Leipzig and Brno who had already taken part in the questionnaire survey in order to obtain a narrative picture of

**Table 1**
Overview of the methods applied in the comparative research project. Source: STEINFÜHRER (2004)

| APPLIED METHODS | LEIPZIG | BRNO | DATA LEVELS |
|---|---|---|---|
| Secondary analyses | municipal data | census data | Macro-level: city, city region<br>Meso-level: district |
| Expert interviews | - | N=5 | Macro-level: city, city region |
| Standardised questionnaire surveys with closed and open questions<br>- response rate | N=329<br><br><br>78% | N=258<br><br><br>69% | Micro-level: individuals, households, social groups<br>Meso-level: residential area |
| Supplementary qualitative interviews | N=2 | N=4 | Micro-level: individuals, households |
| Classified adverts in newspapers | N=329 | N=618 | Micro-level: individuals, households Macro-level: city, city region |

the processes of 'staying' or 'moving', the problems related thereto, and the strategies used to overcome them.

A final level of investigation needs to be mentioned: the residential area. Due to the importance which life-course phases and household resources have for explaining housing mobility, structural factors of **residential location decisions** are rarely investigated as explanatory variables for both **mobility** and non-mobility. In the project, it was shown that not only the qualitative and quantitative structure of the regional **housing markets** but also the subjectively evaluated situation of the **residential environment** need to be taken into account for a thorough investigation of such decisions. Besides ***mapping*** and ***visual documentations*** (photographs), it was again the questionnaire survey which served for collecting the data relevant for this level of the analysis. Table 1 summarises the methods applied.

## After Fieldwork: Some critical remarks on the methodology

At the **macro-level** of the cities, the data *situation* in Leipzig and Brno differed considerably. If combined it would have been almost perfect, but for the individual **case studies** the gaps were partly remarkable. While in Leipzig, mainly the lack of regular, **longitudinal census data** on a **small-scale** was (and still is) a decisive shortcoming,[9] in Brno monitoring systems for the period between censuses and local surveys focusing on the subjective perceptions and evaluations of the urban dwellers are missing.

The main primary research technique in the project was standardised **questionnaire surveys** filled in by the respondents on their own. Although the **survey** conditions were a little more difficult in Brno than in Leipzig, the *survey technique* chosen was quite successful, as mirrored by the very good response rates (see Table 1). This is all the more remarkable considering the high degree of scepticism among Czech colleagues concerning the methodological design, in particular the fact that the questionnaires were handed over and recollected personally. However, the key to success was good survey organisation in advance. One weakness of the method proved to be a gender bias, with women being overrepresented in all four sub-surveys. However, this problem can certainly be solved with a **random selection criterion** within the respective household (e.g. the 'birthday method'). Another problem was the relatively small size of the samples, thus impeding the creation of subgroups for detailed analyses.

The ***questionnaire*** proved to be successful in particular because of the combination of both **closed** and **open questions**, the former serving quantitative and the latter qualitative (**content) analyses**. However, the standardised instrument did not always meet the requirement to measure and reproduce the complex inner-household proceedings connected with **residential location decisions**. Nevertheless, the open questions and especially the additional **qualitative interviews**

enabled some specific information on these issues to be gathered.

The ***content analyses*** *of* ***classified adverts*** are a promising but rarely used method in housing research. This is astonishing because they provide an almost direct micro-macro link: the authors (i.e. housing market actors of the demand side) report their housing preferences and needs in their own words. Moreover, in order for their search to be successful, they have to adapt to both individual and structural restrictions, in particular to the financial situation of their household and the state of the local **housing market**. Thus, a subjective image of a housing market is provided from the perspective of the urban dwellers. Nonetheless, this method also has its limitations. The actors along their biographical and social background usually remain invisible and conclusions on the direction of changes to housing standards are almost impossible. Finally, the proliferation of real estate agencies on the internet (more in Leipzig than in Brno) has reduced the relevance of this search strategy.

## Housing Systems on the Divergence Path - Some Results of the Project

A few main outcomes of the research are to be presented in four theses:

*(I) Despite the remarkable changes of the structures of urban property, they remain distinct from the western model.*

Both countries applied a restitution model for their older housing stock. In eastern Germany, the declared aim of a reconstruction of "justice" was accompanied by a new injustice mainly in favour of West Germans, and a recreation of the pre-war property patterns did not take place. Instead, an unprecedented ownership structure arose. The same - although for other reasons - holds true for the Czech Republic. Moreover, both countries kept their strong rental tradition to a relatively high degree.[10] One of the most important actors of the supply side today are municipal and cooperative housing companies, and in eastern Germany private rental housing plays a crucial part, too.

*(II) Housing shortage is not the only possible outcome of urban transition.*

Certainly, the East German case is not paralleled in any other transition country. Due to out-migration, new housing construction and reconstruction as well as changes of fertility patterns, the housing markets in eastern Germany are in a new form of imbalance. For many transition researchers not regarding eastern Germany as a society in **transition**, this pattern is only further evidence. But the housing market imbalance can also be interpreted as a striking example of an unintended consequence of interdependent contradictory **transition** processes. Moreover, one can expect similar developments in old-industrial regions without a sufficient number of newly generated jobs and an increasing out-migration.

*(III) The development of new* ***segregation***

*patterns is a slower and far more complex socio-spatial process than predicted. Not least, also a social "mixture" is kept in the transition or even newly established.*

Despite a high level of housing mobility in the 1990s, many inner-city areas in eastern Germany are characterised by a relative social heterogeneity, also in Leipzig. This can be explained with investments patterns which occurred often independently of location and contributed thus to a mix of housing qualities. Also the situation of the **housing market** contributes to the relatively low degree of **residential segregation** so far since it allows different social groups to enter former bourgeois neighbourhoods. But especially working class areas are increasingly threatened by abandonment and physical, social and symbolic deterioration. One of the losers of **transition** are many post-war housing estates, which are characterised by selective in- and out-migration processes and a symbolic devaluation, but - in comparison with other transition countries - also a relatively good state of repair.

In the Czech Republic, housing mobility was significantly lower and pre-1990 patterns are much more apparent. But at least in Brno, **residential segregation** is remarkable because the areas with a poor and less qualified population in deprived housing conditions in contrast with the neighbourhoods with the opposite characteristics are very much distinct, well-known and historically inherited. Despite profound social, political and demographic changes in the city in 20th century, the basic pattern of social and symbolic polarisation did not change. But the areas "in between" are quite heterogeneous and due to the rent and the housing policy in the Czech Republic in the 1990s, they did not change so much - at least when seen from the **macro-level** of **census-data**. Nevertheless, they are not "stagnating", instead many of these neighbourhoods face demographic changes, property turnovers, in- and out-migration, physical improvements and ecological degradation.

*(IV) "The" **post-socialist** city is a myth. Instead, a diversification of cities according to size, economic structure and location can be observed.*

This thesis cannot be explored in more detail. But a high degree of regional disparities is to be observed both in eastern Germany and the Czech Republic. In some regions with high rates of unemployment (>25%) and out-migration, a new type of a multiply deprived city is evolving - but in eastern Germany neither the bigger cities are very successful in their **transition**.

## Conclusion

Despite the limitations of each technique (producing quantitative or qualitative, cross-sectional or longitudinal, survey or mass, objective or subjective data), a theoretically founded, well-defined multi-method approach is appropriate for investigating the complex relationships between **housing markets** and households' behaviour therein in a **cross-**

**cultural context**.
Three challenges of cross-national research were singled out:

1. interpretative and procedural **equivalence**,
2. linguistic-cultural adequacy, and
3. the appropriateness of both the problem and the methodical instruments.

These challenges were clear from the very beginning but proved to be problems that needed continuously to be considered, mainly during the development of the methodological design and the interpretation of results.

One strength of the approach was certainly the application of **several methods** which complemented one another and which also served to answer a number of questions referring to different **scales** of housing research. The "traditional" dualism of **survey** versus **case study** or **quantitative versus qualitative methods** was thus - successfully - neglected.

As for the limitations, they stem from the overall project design. Strictly speaking, a **case study** approach focusing on the differences between the two cases is always restricted in its application to the examples chosen. But as always, there it is a dialectical relationship: a deeper understanding of these cases may be an objective on its own. Using **contrastive comparison** enabled an understanding of both the 'other' reality and (and in a particular way) the author's 'own' culture. This is all the more remarkable as the latter is usually not questioned because it is too familiar, including for researchers working in and on it. This was undoubtedly one of the major chances and, ultimately, findings of this **cross-cultural research**.

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## Notes:

[1] Not even the best known analysis on housing mobility (ROSSI 1980, first published in 1955) included these external factors. It is only in the interpretation of his data that ROSSI himself reflects critically: "One large class of factors has been completely neglected in the analysis. We have been primarily concerned with the household itself, considering the family abstracted from the larger context which is its environment. [...] Obviously, residential shifts involve more than just households. For one thing, the housing market defines the moving opportunities available to a household and opportunities must be available before a household can complete its moving plans [...]. The state of the housing market, especially that segment in which the household is interested, could either facilitate or impede the fruition of moving plans." (ROSSI 1980:161, 43)

[2] As always, other factors also played a part for the selection of these two countries and cities, respectively, such as language knowledge and the regional background of the author. However, these aspects were not decisive.

[3] An alternative view regards scientific comparing as a method, rather than a methodological approach (e.g. NISSEN, 1998:401-409).

[4] In the literature one can also find the similar differentiation of "case-oriented" and "variable-oriented strategies" (PICKVANCE, 2001:12-13).

[5] The most prominent example of such a contrastive approach in the history of the social sciences is doubtless Max Weber and his analyses of the rise of occidental capitalism, which he carried out not least via the 'detour' of Asian civilisations (HAUPT, KOCKA, 1996: 15).

[6] I am grateful to Zsuzsanna Földi (Budapest) who called my attention to this article.

[7] Interestingly, KEMENY and LOWE (1998:162, 168, 169) assign a similar methodological problem ("ethnocentrism") to the convergence perspective with its usually implicit attachment to the anglo-saxon housing paradigm.

[8] See the paper by Sigrun KABISCH for more details about the survey technique (in this publication).

[9] The last comprehensive census in East Germany took place in 1981. In 1995 only a housing census was carried out. Despite the urgent need of a "reunified statistics" also in this sense, in 2001 only the test for a so-called registered-based census was accomplished which will replace the traditional census with enumerators in future (with the last in West Germany in 1987).

[10] For the Czech Republic, however, one has to add: so far, because a large-scale privatisation has been going on the local level since the late 1990s.

# 8 PARTICIPATORY METHODS FOR SUSTAINABLE REMOTE INDIGENOUS HOUSING IN WESTERN AUSTRALIA

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## Abstract

*This chapter examines the application of a participatory approach to improve the sustainability of housing development within the remote Indigenous communities of Western Australia. A participatory action research project forms the basis of the analysis. This was conducted with the participation of a local Indigenous community, relevant local service agencies, the State Government and Murdoch University between 2001 and 2002 in the remote Pilbara region of Western Australia. The project comprised two stages. Stage 1 involved a participatory data gathering process. Stage 2, Ministerial approval dependent upon the Stage 1 report, required the Murdoch team to facilitate the initiation of a community-based socio-political-economic development process, build management structures, and strengthen local institutional support. A number of participatory methods, documented and practiced within the broader international participatory paradigm, were employed. The use and results of the participatory methods in Stage 1 and 2 are detailed. Outcomes of each stage are respectively presented. The chapter concludes with the complexities and constraints of participatory action community research and development that is situated within a wider institutional setting. Participatory methodologies are recommended within the Western Australian Government agencies in which to build their capacity for participatory processes that involve the restructuring of power relations required for dialogue and partnership with Indigenous communities.*

**Keywords:** *Participatory Methods, Sustainable Housing Development, Indigenous Community, Pilbara, Capacity Building*

## Introduction

The main aim of this chapter is to examine the application of a participatory approach to improve housing development for the **Indigenous** population in remote **Western Australia**. The chapter details a participatory action research project with an Indigenous community in the remote Pilbara region conducted between July 2001 and March 2002. The approach takes **sustainability** as the guiding principle and focuses on methods to involve community participation.

A paradigm of participatory development has been observed within global development literature and practice since the 1980s. This has resulted in a shift from a paradigm of modernization through infrastructure and capital to a paradigm that emphasizes the primacy of participatory and empowered self-initiated development (CHAMBERS, 1997:188; HAMDI, GOETHERT, 1997:5; PRETTY, 1995:1257). A development paradigm is defined by Chambers as a "coherent and mutually supporting pattern of concepts, values, methods and behavior, amenable to wide application" (CHAMBERS, 1994:1448). This paradigm has yet to be realized within Western Australian Indigenous affairs.

In recent years however, the closely related concept of sustainability has emerged as a new paradigm within Western Australia. Sustainability is a complex and highly contested term that is time and place specific and requires a participatory approach (PRETTY, 1995:1249). The sustainability of Indigenous communities is viewed by the current Western Australian Government as dependent upon firstly, the establishment of **governance** structures within communities to assume responsibility for infrastructure and community development; and secondly, the establishment of a coordinated **'whole of government'** structure (GOVERNMENT OF WESTERN AUSTRALIA, 2002:68). The current driving agenda within the Western Australian Indigenous housing policy includes capacity building, self-management and socio-economic independence, partnerships, accountability, benchmarking and service coordination (GERRITSEN, CROSBY, et.al., 2000:5; COMMONWEALTH DEPARMENT OF FAMILY AND CHILDREN'S SERVICES, 2001:2). A number of policy aims include partnerships between communities and Government, improved reporting of key Indigenous indicators and devolution of decision making to the regional level (DEPARMENT OF PREMIER & CABINET, 2002:3).

The Parnpajinya housing project within this chapter is aligned to emerging sustainability policy and was initiated by the Western Australian Minister for Housing and Works. Murdoch University was contracted to develop and initiate socio-political-economic strategies to support the sustainability of a housing proposal at Parnpajinya site, located a few kilometers from the town centre of Newman, a remote mining town in the Pilbara region. The project comprised two stages. Stage 1 involved a participatory data gathering process. Stage 2, approval dependent upon the Stage 1 report, required the Murdoch team to facilitate

the initiation of a community-based development process, build management structures, and strengthen local institutional support. A number of **participatory methods**, documented and practiced within the broader international participatory paradigm, were employed.

This chapter firstly frames the research by providing a historical background to the project; the use of Participatory Action Research as the guiding approach; and the specific participatory methodologies that were utilized. The use and results of the participatory methods in Stage 1 and 2 are then detailed. Outcomes of each stage are respectively presented. Conclusions focus upon the constraints that are presented by the wider institutional setting of the Western Australian State Government.

## Background to the Parnpajinya Housing Project

It was necessary for the Murdoch team to review relevant documentation to familiarize with the project context. Initial and on-going interviews were a means of triangulating and thus clarifying the documents. The following material is not referenced in full due to ethical concerns related to Indigenous issues.

## Recent History of the Indigenous Community and Housing in Newman and Parnpajinya

Newman is in Western Australia, 1170 kilometers north of Perth in the East Pilbara region and was established in 1963 by Mt Newman BHP, a large Australian resource company which initially provided services and infrastructure. In 1981, 'normalization' (a euphemism for the regularization of municipal and community services and in this case transfer of control from BHP to local and state government agencies) occurred (MCILWRAITH, 1988:67). During this time Indigenous people began to camp at the current Parnpajinya site, close to the infrastructure of Newman. Water was taken by the campers from a leaky pipeline, toilet facilities were not available, and washing was not possible. A group of permanent residents settled.

The late 1980s and the 1990s witnessed varying government and non-government interventions at Parnpajinya. A number of Newman residents provided some assistance; however, the community was largely antagonistic towards the Indigenous campers. Numerous consultations relating to housing, alcohol management, employment, education and training were conducted. Recommendations included sustained, co-ordinated and committed policies and programs to support and encourage self-management and self-help initiatives. The provision of temporary and permanent Indigenous housing was identified as a priority.

In August of 1993, the Parnpajinya site was excised and vested in the Aboriginal Lands Trust. Basic infrastructure and services were provided by government agencies and BHP.

The established infrastructure on the site was bulldozed after flooding and damage caused by cyclone Vance in February 2000.

The residents were moved into public housing in East Newman. Although, many residents stated their preference to stay on site, the move was encouraged by the government agencies. Parnpajinya became a wet camp (a place for drinking alcohol) for the homeless and transient. This move resulted in social discontent between the Martu (the local Indigenous people[1]) and wider community. The public housing was overcrowded, culturally inappropriate and as a result subject to severe maintenance issues.

The redevelopment of the Parnpajinya site was initiated by the then Western Australian Minister for Housing and Aboriginal Affairs. The layout plan/report was completed in November 2000 with limited community consultation and was to be immediately implemented with construction of 12 houses and a visitors' camping area (a 'wet camp' to drink) to be complete by mid 2001.

Elections in early 2001 resulted in a hold put on the proposed redevelopment by the new Western Australian Minister for Housing and Works. Murdoch University was contracted through the Aboriginal Housing Infrastructure Unit (AHIU) to address a number of concerns, most primarily the apparent lack of internal management structures required for housing development amongst the resident Martu community.

## Participatory Action Research

**Participatory Action Research** (PAR), a branch of co-operative inquiry (REASON, 1988:10), evolved from the theoretical traditions of critical and interpretative social science and has been further developed by feminism and post-modernism. In a critique of the positivist Cartesian philosophy these traditions recognize that knowledge is a form of power that is socially constructed by changing social and historical processes, relations, perspectives and interpretations. The emphasis is upon the need for multiple discourses, collaborative and non-exploitative relations, the placement of the researcher within the study and a praxis that is transformative and emancipative (HERRON, 1996:85; NEUMAN, 2000:85).

Participatory Action Research is best defined as research that includes both action and the **participation** of disenfranchised groups, analyses **power** differentials and the need for structural change. This approach was considered relevant to remote Indigenous Australia. This population suffers extreme poverty (poor health and housing, high infant morality rates, low life-expectancy, poor education levels and low employment rates) and is subject to a lack of power and influence over resources, decision-making, relationships and information (BROOME, 2002:269).

A participatory action research project may include the participation of people at different stages of the research cycle, from planning and initiating, through reflection to the actual implementation of the plans (SWANTZ, VAINIO-MATTILA, 1988:130) and can be thus fully collaborative, alienated or somewhere in between (REASON, 1988a:223). Participation is a contested term with multiple interpretations that range from manipulative participation,

consultative participation, interactive participation to self-mobilization which involves empowerment (ARNSTEIN, 1969:217; PRETTY, 1995:1252). Attention to the form and degree of participation of all stakeholders was considered by the Murdoch team throughout the project.

## Participatory Methodologies for the Parnpajinya Housing Project

Rapid Rural Appraisal (RRA) was employed as the participatory research methodology for the first stage whilst the second stage involved Participatory Rural Appraisal (PRA). The RRA is predominantly an extractive research tool for plans and projects. The PRA instead adopts a political stance, in which empowerment and local organizational capacity building are emphasized (BAR-ON & PRINSEN, 1999:280; CHAMBERS, 1994:958). A number of other participatory methodologies (see Table 1) were employed to complement RRA and PRA.

The research team was inter-disciplinary in accordance with the participatory research norm. Gender balance was provided by the team and sought from the community in all aspects of the project.

## ◆ Stage 1: Rapid Rural Appraisal

Stage 1 investigated the project setting and reported this to Government. This involved a month in the field from July to August 2001.

As neither Stage 2 nor the housing proposal had been approved it was necessary to avoid raising the expectations of the community in relation to housing delivery. This was particularly a concern because of the intensity of previous consultation.

If Stage 2 were approved, it would involve a different approach from Stage 1, the equalization of power structures within the project frame and the transformation of the nature of participation to encourage community interaction and ownership. In the event that Stage 2 was approved, conscious attention was also required in Stage 1 to avoid the development of dependency relationships between the community and the Murdoch team.

The RRA included stakeholder mapping and the compilation of a community profile.

**Table 1**
Participatory Research Methodologies used in the Parnpajinya Housing Project (right)

**Table 2**
Rapid Rural Appraisal used in Stage 1 (bottom)

| Set | Strategies | Tools | Objectives |
|---|---|---|---|
| Data gathering | Stakeholder mapping<br>Community profile | Conversational interviewing<br>Semi-structured interviewing<br>Participant observation and field journal<br>Networking<br>Focus groups and group work<br>Timelines | To assess the housing, governance, institutional and community development capacity of the Martu |
| Data analysis | Qualitative analysis<br>Quantitative analysis | Triangulation<br>SWOT<br>Prioritizing and ranking | To provide empirical evidence |
| Planning | Community visioning<br>Needs assess-ment | Community Development Framework | To provide an overview of community needs |

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| Methodology | Definition and Aims |
|---|---|
| | Stage 1 |
| Rapid Rural Appraisal | Developed in the late 1970s to enable researchers from different disciplines to understand situations from a local perspective, concentrate information that is appropriate for action and increase the timeliness of information (BAR-ON & PRINSEN, 1999: 278). |
| Social Analysis | A process that provides a framework for prioritizing, gathering, analyzing and incorporating social information and participation into the design and delivery of development operations (RIETBERGEN-MCCRACKEN & NARAYAN, 1998: 19). |
| Stakeholder Analysis | Stakeholder mapping is useful for the identification of stakeholders' interests in, importance to, and influence over the operation; the identification of local institutions and processes upon which to build; and lastly provides a foundation and strategy for participation (RIETBERGEN-MCCRACKEN & NARAYAN, 1998: 65). |
| Beneficiary Assessment | A qualitative method of information-gathering which assesses the value of an activity as it is perceived by its principal users (RIETBERGEN-MCCRACKEN & NARAYAN, 1998: 255) |
| | Stage 2 |
| Participatory Rural Appraisal | Evolved from RRA. PRA is a family of approaches, methods and behaviors to enable poor people to express and analyze the realities of their lives and conditions, and themselves to plan, monitor and evaluate their actions (CHAMBERS, 1994: 953). |
| Action Planning | Similar principles to PRA. Involves identifying problems and opportunities; goals and priorities; options and tradeoffs; resources and constraints; project team and tasks; and implementation and monitoring (HAMDI & GOETHERT, 1997: 29). |
| SARAR | A participatory methodology for empowering stakeholders at different levels to assess, prioritize, plan, create and evaluate initiatives. Based on Self-esteem, Associative Strength, Resourcefulness, Action Planning and Responsibility (RIETBERGEN-MCCRACKEN & NARAYAN, 1998: 295). |

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Community visions were tabulated in a Community Development Framework. This is summarized in Table 2 and further described through the following section.

## ■ Stakeholder Mapping

This method enabled familiarization and the building of rapport and trust. Semi-structured and conversational interviews, networking, participant observation and a field journal were utilized in which to map the stakeholders' relationship to the housing project and to each other.

The key stakeholders are listed below in the order of their decision making authority within the bureaucratic hierarchy and thus in this case the control that they were able to exercise over the content and direction of the project.

### ● The Western Australian Minister for Housing and Works

The final decision on the housing at Parnpajinya rested with the Minister for Housing and Works.

### ● The Aboriginal Housing Infrastructure Unit (AHIU)

The funding body and major advocate for the project was AHIU.

### ● Local Government and Non-Government Representatives

There was a diverse range of local government and non-government

stakeholders ranging from the Department of Indigenous Affairs (DIA), the Martu Baptist Church, Home and Community Care, BHP, Family and Children's Services, a Hospital, Police, Schools and a Shire Council.

These groups worked with the Martu in the face of crisis and uncoordinated chaos. The views within this group were diverse and ranged from support for the housing as a means of shelter for the homeless to the view that the housing would keep the Martu away from Newman. There existed general indignation and anger in response to the project, which was perceived as a political maneuver to delay the housing development.

- The Martu Community in Newman and Parnpajinya

Newman has developed into the largest Martu community in the Western Desert partly a result of infrastructure and services provided. The Martu in Newman however face increasing levels of dysfunction (TONKINSON, 1991:178; ANDA, MCGRATH, et.al., 2001:5).

At any point the Martu in Newman include firstly, the 'permanent' residents and secondly, visitors, often related to the former. The first group either resides within public housing in East Newman or at Parnpajinya for those who have been evicted from public housing. The second group either camp with their relatives in East Newman or at Parnpajinya. These groups have different housing requirements.

- The wider community in Newman

There was little contact between the team and the wider community other than the Shire Councilors and the BHP inter-cultural awareness training. Racism was obvious and posed a complex issue. There were no existing bridges to work upon and the construction of such was beyond the time-scope of the project.

## ■ Community Profile

A **community profile** provides a descriptive 'snapshot' in which the action research (planned for Stage 2) is taking place. This assists stakeholders to formulate an overview which describes their context and is most appropriate to the aims of the action research (STRINGER, 1996:76). Semi-structured and conversational interviews, networking, participant observation and a field journal were utilized to gather the following information.

- Demography and Housing Capacity

A total of approximately 250 Martu people were living in or around Newman. There are also, at any given time, a large number of semi-permanent and temporary residents (ANDA, MCGRATH, et.al., 2001:13).

The mismatch in the demography and housing availability was severe (see Table 3). This was evident in the overcrowding of the public housing in East Newman with approximately 6 people in

each 2-3 bedroom house. The lack of shelter was most evident at Parnpajinya (33 people living in sub-standard and limited housing).

- **Institutional Capacity: Local Service Agencies**

There was a small monthly inter-agency meeting which the Murdoch team attended. There was no substantial evidence of institutional capacity to support the housing development.

- **Community Development Capacity**

The agencies provided services and infrastructure in isolation, mostly for crisis management. Most of the mainstream town services were culturally inappropriate. **Community development** was not evident other than for gardening and cooking programs, the special housing assistance program and the BHP inter-cultural awareness program (ANDA, MCGRATH, et.al., 2001:21). The socio-political sustainability of the housing required greater attention to the coordination of culturally appropriate services as defined by the Martu whose outcome was the empowerment of the Martu.

- **Governance Capacity**

The Parnpajinya Management Council was composed of an older, often unwell, section of the community who met irregularly.

**Table 3**
Demography and Housing Capacity of the Martu at Newman and Parnpajinya
Source: (ANDA, MCGRATH ET AL. 2001: 14)

| Newman (East-Newman) | |
|---|---|
| Number and Type of Dwellings | Number of people in the dwelling |
| 33 Houses | 206 |
| 5 Units | 10 |
| 1 Caravan | 5 |
| **Parnpajinya** | |
| 2 Tin Sheds | 15 |
| 1 Mud brick 'house' | ? |
| 1 Caravan | 3 |
| Rammed Earth house, car bodies and canvases | 15 |

## Community Development Framework

**Community visioning** and needs assessment was the approach taken by the project team in investigating the preferred path of community development. This involved focus groups and timelines. Separate male and female focus groups were held. They were considered to be important as differences in power, resulting from gender, are often invisible and firmly entrenched (KAUFMAN, 1997:157). This involved two female focus groups (the second was the initiative of the women themselves), one male focus group and one community focus group. The second female focus group involved cross-checking information and deepening participation, highlighting the importance of time in the field. The male and female focus groups were focused upon community needs and visions and were facilitated by the appropriate gender. The community focus group was centered upon cross-checking and

developing the information particular to housing. Raising awareness of the complexities of the management and maintenance of the housing (particularly as Parnpajinya currently existed as a 'wet camp') and consensus building was the two primary aims of this meeting.

A **situation analysis** (SWOT - strengths, weaknesses, opportunities and threats) was conducted upon the community visions by the research team. This analysis enabled a categorization and ordering of priorities into a Community Development Framework. The framework was disseminated to all stakeholders to confirm the order of the priorities. Housing and infrastructure priorities included temporary accommodation, housing at the Parnpajinya site which would also serve as a community centre, a Sobering-Up Shelter and a hostel.

## ■ Outcomes of Stage 1

### ● Identification of the Primary Issues Relating to the Proposed Housing Development

The complexities of the management and maintenance of the proposed housing at Parnpajinya were found to be diverse.

Parnpajinya was identified as a camp for alcohol consumption and for those who had been evicted from public housing. However, the use of alcohol was not limited to this site. A 'wet camp' that was designed to accommodate visitors and drinkers was included on the proposed layout plan. The question of the most appropriate location of the 'wet camp' to the housing proposal, given the management that it required, was raised.

The fragmentation of the Martu in and around East Newman and in East Newman itself was a barrier to engaging the participation of the Martu and was also a substantial obstacle to the coordination of community development processes. The development of the Parnpajinya site was affirmed by the Martu to be as much about 'sense of identity' and a centre to practice culture as it was about housing. This did not detract however from the dire need for shelter by the population as a whole. There was limited local institutional capacity to participate in the coordination of community development processes to support the sustainability of the housing proposal. The potential governance capacity of the permanent Martu community was difficult to ascertain.

### ● Community Development Framework

This represented the means of providing a return to the community for their participation and would provide a useful foundation for the following stage if approved.

### ● Reporting

Stage 1 report was written in the field as recommended by Chambers to triangulate and cross check information with the stakeholders (CHAMBERS, 1994:961).
Following this report Stage 2 was approved by the Minister for Housing and Works.

**Table 4**
Participatory Rural Appraisal used in Stage 2 (right)

| Set | Strategies | Tools | Objectives |
|---|---|---|---|
| Data gathering | Facilitation | Dialogue Meetings Focus groups and group work Diagramming Mapping Timelines Oral histories and ethno-biographies Force field analysis Analysis of difference | To identify community needs and determine community and government roles and responsibilities |
| Data analysis | Triangulation | Brainstorming Prioritizing and ranking | To prioritize community needs and tasks |
| Planning | Action planning | Problem solving Community Action Plan | To present the identified and prioritized tasks for future community development coordination |
| Capacity building in governance | Facilitation | Individual meetings Focus groups Prioritizing | To build representative, decisive and accountable governance structures for the effective management of housing |
| Local institutional capacity building | Facilitation | Individual meetings Focus groups Brainstorming | To build a coordinated local institutional support structure for community development and housing management |

4

## ◆ Stage 2: Participatory Rural Appraisal

Stage 2 was conducted between September 2001 and February 2002, with a suspension between December and January as a result of cultural activities.

The following objectives for Stage 2 were developed on reflection from Stage 1 with the participation of the community, the local agencies, AHIU and in accordance with the Minister's brief:

- Compile and initiate a Community Action Plan with prioritized strategies;
- Improve governance, housing management capacity in particular;
- Improve local institutional support;
- Build co-ordination between and within the Martu community, Community Council and service providers.

A summary of the PRA process is tabulated below (see Table 4) and detailed in the following section.

### ■ Facilitation and Empowerment

The PRA aimed to equalize actual or felt power of the stakeholders in order to establish meaningful dialogue. In the case of the Martu and to a lesser extent the local agencies this required engaging in a process of **empowerment**. Rowlands comments that empowerment is a process that ultimately cannot be imposed by outsiders although external support and facilitation may encourage

and potentially speed up the process (ROWLANDS, 1995:105). Respect of community and cultural norms and obligations was also required.

The approach thus most appropriate for the PRA was that of **facilitation**. In this context CONNELL (1997) comments that a facilitator's role is to act as a bridge that links all stakeholders in a **partnership**. This requires time, patience, attention and flexibility in addition to an awareness of one's own dominating behavior, more specifically and ability to listen (CONNELL, 1997:258).

The approach of the PRA was to examine the broader picture with housing as one component. It was necessary to transform the participatory mode from passive community dependency to one of interaction that included all stakeholders. An important aspect in this regard was to define the project team as 'outsiders' as opposed to stakeholders.

## ■ Community Action Plan

A Community Action Plan helps people to identify and agree on the different tasks that need to be done, the logical order that these should be done, who has the responsibility to do them and when the tasks should be done (WALSH, MITCHELL, 2002:38). Tools and techniques utilized include dialogue, meetings, focus groups and group work, diagramming, mapping, timelines, oral histories and ethno-biographies, force field analysis and an analysis of difference.

A diagrammatic representation was drawn up by the team which contrasted the community needs and visions to current circumstances, with a question mark between. This was devised to invoke response as to the types of action that were needed to meet community requirements.

An initial meeting was held that met with little attendance. The organization of the meeting had been left to the agencies. This was a reminder regarding the state of coordination between the agencies and the Martu. The project team then proceeded to meet with the Martu in public places such as the shopping mall, parks and where an established relationship existed, at their homes. The development of relationships allowed insight into the community and means of cross-checking information. Two meetings with the elderly people through a relevant agency were arranged, in part to cross-check historical data. It was not until late October, after the first of these meetings, that the team came to understand just how inter-related the community was. The community was organized into family groupings, in accordance with marriage and other family arrangements. These groupings were recognized by all of the Martu community. This was thus taken as the most appropriate means in which to further the Action Plan.

Four lengthy family focus groups were conducted. Group work was facilitated by the team to resolve issues relating to the housing proposal and also to compile a Community Action Plan to support infrastructure development. This included identification of community roles and responsibility to partner those of service agencies.

## Capacity Building in Governance

Simultaneous to the facilitation of the Action Plan, a diagram was drawn up by the team and presented to community members. It demonstrated the circle of social capital (which was strong) and how this was necessary for governance (not so strong) which was in turn required to lead the community towards the economic and employment visions. This would in turn improve social life.

The community indicated that any work with the Martu Council should wait until the Council elections in late October 2001. This caused a major delay in the project. It did however allow time to reflect with the community on the importance of strong leadership and sound management structures prior to the elections.

After the Martu Council elections other concerns dominated the agenda during the project suspension. In the suspension period the Minister for Housing and Works approved the project. The time spent in the field in early February 2002 focused primarily upon group work and dialogue with the Council which included three lengthy focus groups. This required raising awareness in addition to facilitating a dialogue concerning the simultaneous resolution of housing and alcohol management. Initial ideas for this resolution were worked through and found to be flawed. Consensus was achieved. The location of the visitors' camping area and the 'wet camp', was determined by the Council to be at a distance from the new housing. This presented two options: either the housing proceeds at Parnpajinya with a wet camp elsewhere; or that a wet camp proceeds at Parnapjinya with the housing proposal elsewhere. The second was preferred by the Council due to the current use of the site as a 'wet camp'. There was no time or funding remaining within the project to facilitate the filtering of this decision to the community level.

## Local Institutional Capacity Building

The inter-agency forum had continued to grow throughout the duration of the PRA. Two workshops were facilitated by the team during 2001. The agendas were determined by the agencies. The first turned into an information session regarding the PRA process whilst the second focused upon community development priorities and appropriate mechanisms for local co-ordination.

## Co-ordination

The above objectives are inter-related and mutually enforcing. The project team facilitated these simultaneously through the PRA. A workshop was facilitated by the project team between the Council and inter-agency group in February 2002. This involved the Council presenting the endorsed Community Action Plan to the agencies and a discussion regarding the Council's decision on the location of the housing and the wet camp.

It had become apparent to the local stakeholders that the lack of a Coordinator's

position was a long term obstacle to the co-ordination of community development and thus the sustainability of housing development.

## Negotiations

The project team traveled to Newman in early March 2002 to facilitate meetings between the Martu Council and AHIU/Architect and a separate meeting between the community and AHIU/Architect as requested by the AHIU. The first meeting with the Council went smoothly with the official participants from Perth surprised by the conviction of the Council regarding the location of the housing and wet camp. This required courage to risk losing the housing and the Coordinator who would be tied to the housing and was a sign that an empowerment process had occurred. The AHIU/Architect informed the community that another site would be unfeasible due to infrastructure costs. The Parnpajinya site already had power and water connections. The second meeting with the community was not as successful with divisions apparent between the non-drinkers and drinkers within the community. The homeless and drinkers who had been evicted from public housing wanted the housing at the Parnpajinya site and thus contradicted the Council decision. A third meeting was arranged spontaneously between the Council, community and AHIU/Architect. The discussion continued about site location. The AHIU and the Architect confirmed other details, including housing mix.

## Outcomes

### Strong and Sustained Participation

There was a high participation rate that was sustained throughout the project by the majority of local stakeholders.

### Community Action Plan

A strong recognition of local community needs was evident in the community. Facilitation matched these needs to community voiced solutions resulting in a Community Action Plan. This plan represents a foundation for the future coordination of community development to support housing development.

### Success in Capacity Building of Community Governance

The capacity building in governance resulted in a Martu Council that was willing to be representative, decisive and accountable to the delivery of the housing. This Council required long-term management and administrative support.

### Success in Capacity Building of Local Institutional Support

Local institutional capacity building was successful in establishing the necessary support for the community and Council in the shorter-term.

### Determination of Housing and 'Wet Camp' Location

In April 2002 it was decided by AHIU and the Minister for Housing and Works that the

development of the housing and 'camping area' would occur at Parnpajinya despite the Martu Council's decision. A Coordinator was provided with a 2 year contract.

- **Reporting**

Stage 2 was written immediately upon return from the field and submitted to Government in April 2002.

## Conclusions: Capacity Building for Whom?

The major constraint of the PRA was the project frame as opposed to a process approach. Participatory action research at the community level required the Murdoch team to work within the schedule of the local stakeholders who were developing with the participatory process whilst simultaneously being mindful of the project time and resource constraints set by the Western Australian Government.

The decision by the community Council to separate the housing development from the 'wet camp' represented a considered, responsible and accountable platform of governance. This decision, which was the apex of the participatory process was perhaps considered by AHIU in decision making but was not implemented. The differential of power within decision making structures between the State Government and the Martu Council in Newman was highlighted. The placement of the housing and the 'wet camp' together represents an unsustainable housing development option in the eyes of the local people and will have ramifications in all aspects of Martu life in Newman and Parnpajinya.

The constraints posed by bureaucratic structures have been well documented. The normal bureaucratic tendency is to standardize, centralize, achieve material targets and impose top-down targets in a specified time period and thus to impede or prevent the open-endedness, flexibility, creativity and diversity of PRA (CHAMBERS, 1994.a:1447; GOULET, 1989:176). This is incompatible with the paradigm of participatory development.

It is the conclusion of this chapter that participatory methodologies are required within Western Australian Government agencies to build their capacity for participatory processes involving dialogue, partnership and learning forward. Pearson, a recognized Indigenous leader and activist, argues that the Australian Government needs to transform from a position of disabling to enabling so that Indigenous communities are in a position of senior partner who is empowered, engaged and in control rather than in a position of passive dependency (PEARSON, 2001:141-144). Participatory development within communities and a responsive and **enabling government** are now recognized to be mutually reinforcing. Community participation and control would most certainly better flourish in this environment and contribute to remote Indigenous housing sustainability.

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## Notes:

[1] Martu can also be spelled as Mardu which is an abbreviation for the Mardudjara people.

# 10 SOCIO-SPATIAL ANALYSIS OF TRADITIONAL KUWAITI HOUSES

*Omar KHATTAB*

## Abstract

*There are few attempts to study traditional housing stock in Kuwait based on its physical architectural components. The purpose of these attempts is to compile a record that could help in various endeavors such as historical preservation, rehabilitation and renovation of this stock. No attempt, so far, has been made to analyze traditional housing spaces from a social perspective. This study aims to introduce the concept of social analysis of spaces, referred to here as socio-spatial analysis as introduced by Hillier and Hanson (1984), which deals with the notion of looking at* ***space adjacency*** *and* ***permeability****, while considering its function.*

*This study is based on the extensive analysis of a relatively large sample of traditional Kuwaiti houses,[1] which includes Al-Sadu house, Luthan house, Behbehani complex, Al-Bader house, Al-Ghanem house, Dickson's house, and the Red Palace. The seven houses are subjected to a socio-spatial method of analysis called* ***gamma-analysis****, which shows the internal spatial structures of the house, as well as the interface between the residents and the visitors, who enter the house. In this method house plans are reduced to irreducible objects and relations which form* ***elementary structures*** *of the human spatial organization. This is, then, represented in some kind of notation or* ***ideography*** *in order to avoid the repeated use of verbal constructions for sets of ideas. That is to show how elementary structures are related to each other in a certain spatial system.*

*Privacy, as the main cultural definer, is discussed in relation to other aspect of vernacular domestic forms of the Kuwaiti heritage. The study defines important terms for analysis such as the cell and the carrier, the permeability, symmetrical and asymmetrical spaces, distributedness and nondistributedness of spaces. The main goal of the study is to identify the distinctive generative aspects of domestic forms of traditional Kuwaiti houses, through the provision of a visual, rather than verbal, descriptive method of analysis. This is essential to understand the particular form and function of the traditional house in the context of the Kuwaiti Muslim culture and traditions. And to arrive at the unique, deeply embedded social and cultural aspects which generate the form and functioning of vernacular architecture which is so rich and yet so little understood outside the Middle East.*

***Keywords:*** *Space Syntax, Socio-Spatial Analysis, Traditional Houses, Kuwait.*

## Study Objectives

The house is a prime reflector of a certain culture. Research of various forces that shape the spaces of traditional houses reveals a lot about the original inhabitants' social habits and cultural values. This should give insight for the design of contemporary houses that are socially and culturally compatible. In the case of Kuwait, the search for the underlying forces that shaped traditional housing continues. In the hope that this could lead to define primary design guidelines for both public and private housing that meets social and cultural needs of Kuwaitis.

Despite the presence of very few studies on traditional housing in Kuwait, no study has attempted to analyze the social aspects behind the special formation of this traditional housing. This study aims to analyze traditional housing spaces from a social point of view. It aims to introduce social analysis of space, or socio-spatial analysis, and to apply it on a sample of traditional housing in Kuwait. This study is based on the extensive analysis of a relatively large sample of traditional Kuwaiti houses, which includes Al-Sadu house, Luthan house, Behbehani complex, Al-Bader house, Al-Ghanem house, Dickson's house, and the Red Palace. The seven houses are subjected to a socio-spatial method of analysis called *gamma-analysis*, which shows the internal spatial structures of the house, as well as the interface between the residents and the visitors, who enter the house. In this method house plans are reduced to irreducible objects and relations which form *elementary structures* of the **human spatial organization**. This is, then, represented in some kind of notation or *ideography* in order to avoid the repeated use of verbal constructions for sets of ideas. That is to show how elementary structures are related to each other in a certain spatial system.

No doubt that privacy lies in the core of **Arab culture** and tradition. If anything, it differentiates Arab culture from other cultures. The entire house design revolves around the notion of privacy. This is apparent in the design of traditional Kuwaiti houses. **Privacy**, as the main cultural definer, is discussed here in relation to other aspect of vernacular domestic forms of the Kuwaiti heritage. The study defines important terms for analysis such as the **cell** and the **carrier**, the **permeability**, **symmetrical** and **asymmetrical spaces**, **distributedness** and **nondistributedness of spaces**. The main goal of the study is to identify the distinctive generative aspects of domestic forms of traditional Kuwaiti houses, through the provision of a visual, rather than verbal, descriptive method of analysis. This is essential to understand the particular form and function of the traditional house in the context of the Kuwaiti Muslim culture and traditions. And to arrive at the unique, deeply embedded social and cultural aspects which generate the form and functioning of vernacular architecture which is so rich and yet so little understood outside the Middle East.

## Space Syntax Analysis

HILLIER, B. and HANSON, J., (1984), introduced a unique method for analyzing domestic space which incorporated the social

meaning dimension in its mode of interpretation. An earlier concept for analyzing spatial organization was introduced by MARCH and STEADMAN (1971), which provided a good method of representing space adjacency but lacked the social dimension. Hillier and Hanson developed this technique further and gave more insight into the human relations embodied into the spatial configuration of the built environment. The application of their technique, especially, offered means to arrive at the interface between public and private domains. This proved to be problematic and not as straight forward as the authors suggested, giving the fact that they overlooked the social science data especially that on social psychology (LAWRENCE, 1987). However, this method of analyzing space adjacency and permeability still hold a lot of valid points relevant to the nature of the investigation in this paper.

In order to introduce the concept of social analysis of space we ought to put it into context. Since we 'read' buildings or experience them in three ways; through what we see and feel, what we do, and where we do it. We simply experience a building and read it through its form, function and space (MARKUS, 1993). By looking at the form we look at the geometrical volumes of the buildings, the physical enclosure, which we could see, feel, touch, hear, smell, etc. By considering function we consider the 'label' designers give to a building or space, e.g. health centre, mosque, school or entrance, living room, which is not only as MARKUS (1993), argues, descriptive of the existence of the space but prescriptive of what is to come into being. We also consider all the material settings, including furniture and non-fixed elements that determine the use of a space. While, finally, by looking at space we look at the interface, adjacency and **'nextness'** (MARKUS, 1993) of spaces where certain functions take place within a specific form. The social analysis that HILLIER and HANSON (1984) would deals with the third notion of looking at space adjacency and permeability.

> *"One of the most important ways in which the built environment carries the imprint of society is in the way space is organized for human purposes."* (ASPINALL, 1993: 337)

They aim, through their method of analysis called gamma-analysis, to show the internal spatial structures of a swelling, as well as the interface between the residents and the visitors who enter the dwelling. In this method house plans are reduced to irreducible objects and relations, which form elementary structures of the human spatial organization, which is then represented in some kind of notation or ideography. This will show how elementary structures are related to each other in a certain **spatial system**.

## Terminology

It should be stated that the approach of HILLIER and HANSON (1984), which is named Space Syntax, goes far beyond the mere process of abstracting dwelling plans into social relations diagrams, which are named gamma maps, for

typological or analytical reasons, to the notion of searching the rules behind settlement's growing and order and the stage of proposing a theory for the effects of **social morphology** on the shaping of spatial structures. The socio-spatial analysis aims to show the underlying spatial structures of the traditional houses under research. The analysis of permeability and nextness, deepness and shallowness, axis and accessibility of spaces within the **spatial structure** of these houses will be studied.

### A. Cell and Carrier

Firstly, a primary cell is an object, a building, or a dwelling, as HILLIER and HANSON (1984:19) define it. They, also distinguish between closed and open cells.

> *"The simplest building is, in effect, the structure consisting of a boundary, a space within the boundary, an entrance, or a space outside the boundary defined by the entrance, all of these spaces being part of a system which was placed in a larger space of some kind which 'carried' it."* (HILLIER, HANSON, 1984:19)

### B. Permeability

Among the interior spatial patterns of a building, a house, the most important one is the permeability of the system; that is how accessibility and movement are controlled by the arrangement of cells, i.e. rooms in this case, and entrances (HILLIER, HANSON, 1984). Permeability could be measured for the spatial system of the house. There is a difference between direct and controlled permeability, or between the contiguity and containment relations respectively. Note that in the gamma analysis interior habitable subdivisions of a cell, i.e. rooms in a house, are represented by a hollow circle. While circulation spaces, i.e. corridors and lobbies, are presented by a line.

### C. Symmetrical and Asymmetrical Spaces

One of the important qualities of the gamma analysis is that it tells us about some important qualities of the cell subdivisions. Two of these are symmetry and asymmetry. A symmetric relation could exist between two spaces when their relation to third space is the same. In other words, when neither of them controls permeability to the other. While an asymmetric relation could exist between spaces when one of them controls permeability to the other from a third space.

### D. Distributedness and Nondistributedness of Spaces

The two other important qualities of interior house spaces are those of distributedness and nondistributedness. Distributedness of space means that there is more than one independent route from one space to the other passing through a third space. While if there is only some space through which any route from one space to the other must go, this would be called nondistributedness of the latter two spaces.

It is worthwhile, at this stage to mention that all spaces included in this analysis method are those defined as **convex spaces**, as opposed to **concave** ones (HILLIER, HANSON,

1984:94). These are all the spaces that cover a measurable space that do not contain protruding parts in them, or in other words not concave. A convex space is defined by concave boundaries, while a concave space is defined by convex boundaries, or at least having one convex boundary (Figure 1).

## Study Methodology

Seven traditional houses were selected as sample case studies for the application of the socio-spatial analysis model. These houses represent the various types of traditional Kuwaiti houses. There are very few remaining examples of this kind due to widespread modernization. The house sample selected here covers almost all the surviving traditional houses. In fact, those seven houses might be the only remaining intact old Kuwaiti houses that are still in use. Obviously some houses have changed use, but the link among them is that they are all listed as national heritage that must be preserved by the government, which has the jurisdiction over their ownership and leases them for a limited period, for approved uses such as art galleries, restaurants, office building, and of course as residential units. Before we introduce each sample house, it might be appropriate to introduce some general definitions that apply to the Kuwaiti house.

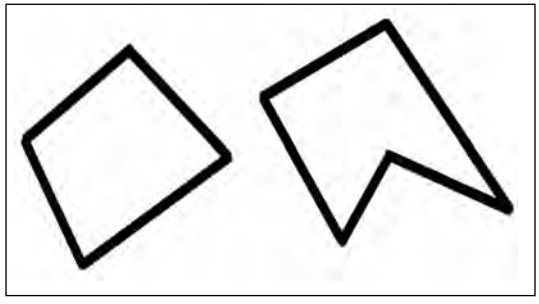


**Figure 1**
Convex and concave spaces

### A. Entrance Courtyard:

Entrance, or guest, courtyard is mainly for the use of formal guests who come for business like visits. Main activities are reception of formal visitors and strangers who intend to carry out some business with members of the household.

### B. Diwaniya Courtyard:

Diwaniya court is mainly for male social gatherings that are regular every week and sometimes more than that in special events such as feasts and election seasons. The main activity is chatting, while some games are also practiced, by friends to the household, such as cards, chess, backgammon, billiards, etc. There is always a television set and some music playing sets. There also might be book shelves and reading area. A dining space is usually attached to it, with proper facilities, to entertain friends and social guests.

### C. Household Courtyard:

Household, or harem, courtyard is for the use of the family, women and children, for daily activities such as eating, living, sleeping, studying, playing, etc.

### D. Kitchen Courtyard:

Kitchen, or service, courtyard which is used for cooking, cleaning, food storage and servants' residence.

### E. Animal Courtyard:

This is the court devoted to rear animals such as sheep and household birds such as chickens, ducks and pigeons.

## Socio-Spatial Analysis of Case Studies

The proposed socio-spatial analytical model follows this sequence:

1. Defining the space system, after deciding on the selection of convex spaces,
2. Representing the space system, in the form of permeability maps or axial maps (HILLIER, HANSON, 1984:93),
3. Analyzing the system of syntactic relations, i.e. analyzing the relations in terms of the basic properties of symmetry Vs asymmetry and distributedness Vs nondistributedness.

This model forms the basis for the social measurement, and interpretation at the same time, of the spatial patterns of the traditional Kuwaiti houses. It should be stressed that space orientation in regards to the cardinal points is important in the socio-spatial analysis. This was clear in the work of GARSON (1968) and MARSH and STEADMAN (1971). This dimension has a particular importance in the case under investigation being in a desert environment, where orientation is vital in regards to sun shine, preferable and no-preferable winds. This point will be taken into account in the search for underlying rules of the spatial patterns in the traditional Kuwaiti house.

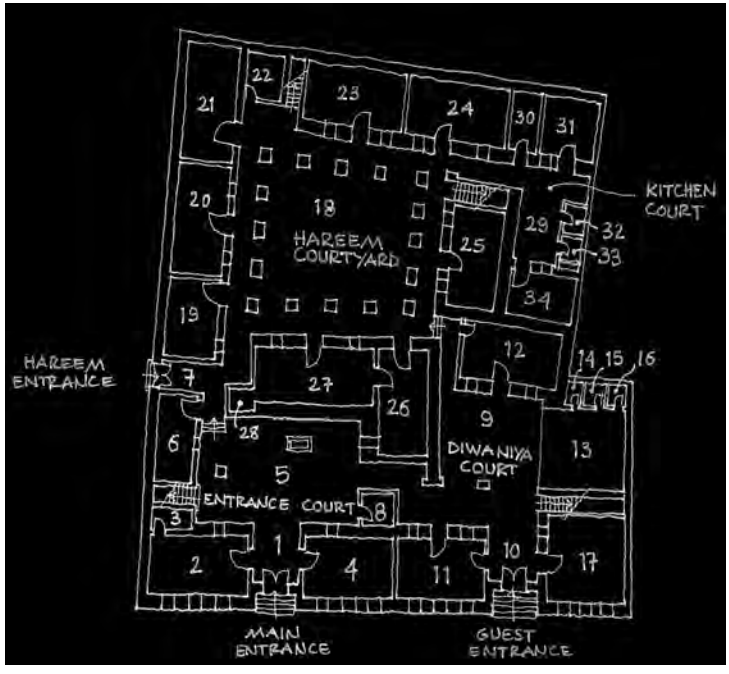
Each sample house was redrawn, by the author, using original sources. All spaces were numbered, anti-clock wise, in relation to main distributing space, i.e. the courtyard. Permeability graphs, or **justified graphs**, were drawn for each house plan, using space numbers for identification of various cells. Then all resulted permeability graphs were compared for similarities and differences among them. This provided a visual, as opposed to a verbal, description of the spatial system of the traditional Kuwaiti house. It also helped in obtaining some **quantitative analysis** of the spaces in traditional Kuwaiti houses for the first time. It also helped to arrive at the underlying social and cultural aspects that shaped these houses.

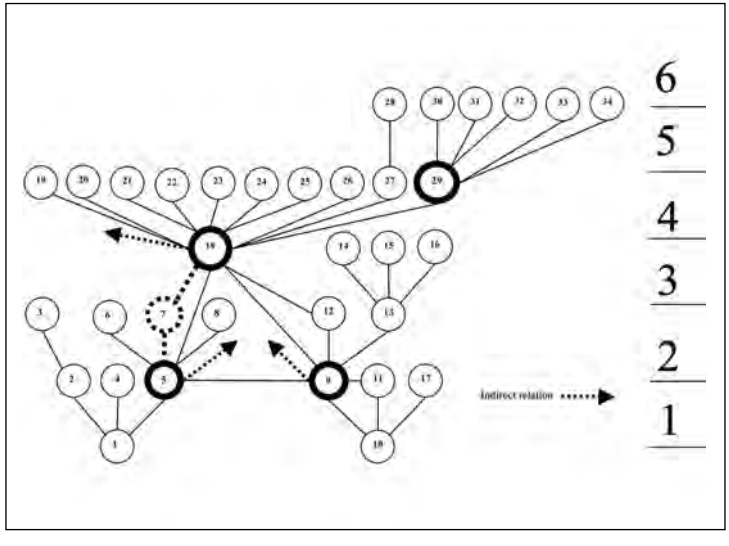
Obviously justified graphs might look different if drawn from another starting point, or room. Actually they are not only different in representation, but also in reality. As HANSON (1998) indicates, depth or shallowness of spaces varies, sometimes significantly, depending on where one is positioning them. In this study starting position was always selected at the commonly identified 'main entrance' to the house, which is mainly recognized by users.

### 1. Al-Sadu House

The original house was built in mud at the turn of the 19th century, which was rebuilt in 1936 using stone walls and reinforced concrete columns and slabs to become the first Kuwait house to use this type of construction. The house took its name from traditional Kuwaiti

**Figure 2**
Socio-spatial analysis of Al-Sadu house. Gamma map (justified graph for space permeability) for Al-Sadu House Ground floor plan of Al-Sadu House (right)

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weaving craft society, called "Sadu" in local dialect that selected the house to be their headquarters in 1980. The weaving of wool is the oldest and most traditional craft practiced by Bedouins of Kuwait. It is directly related to the desert environment and its natural abode. It involves the production of a range of objects including tents, rugs, saddle bags, cushions and many other household items.

The plan of the house is based on the architectural style of the Kuwaiti house. It incorporates four open courtyards; entrance, diwaniya, household or harem, and kitchen courtyards. Each courtyard is surrounded by a number of rooms related to its function. The house has three doors, one open on diwaniya courtyard for friends, one on entrance court for formal guest and strangers, and one open, indirectly, on harem court for female guests and family. There are a total of 34 convex spaces in this house, which appear in its gamma map [figure 2].

## 2. Luthan House

Named after the region where it was built during the 1930s before the oil boom. Where small groups of people used the place as a resort, or shelter, during spring and summer. The house was built on two stages; at first the kitchen court was built out of clay and sea coral stone, secondly the diwaniya and harem courtyards were built out of brick walls and reinforced concrete slabs. The house was inhabited by sheikh Sabah Al-Salem Al-Sabah, the late Emir of Kuwait. It contains four courtyards; the diwaniya, the household or

harem, the kitchen or servants, and the animal courtyards. The house is currently a centre for arts and crafts, such as painting, calligraphy, ceramics, photography, traditional embroidery, and the like. The house has four main doors; two open on diwaniya courtyard, one on harem courtyard, and one on kitchen courtyard. There are a total of 46 convex spaces in this house, which appear in its gamma map [figure 3].

## 3. Behbehani Houses

The Behbehani house complex is an intact living part of the architectural heritage of Kuwait. The twenty eight-house complex represents the traditional coastal type of domestic architecture. Built gradually during the 1940s, and named after its owner and developer Yusuf Behbehani. The complex contains one main courtyard-like open space and twenty eight dwelling units each has its own internal courtyard. Its importance stems from the fact that it contained the very first two-story houses to be built in

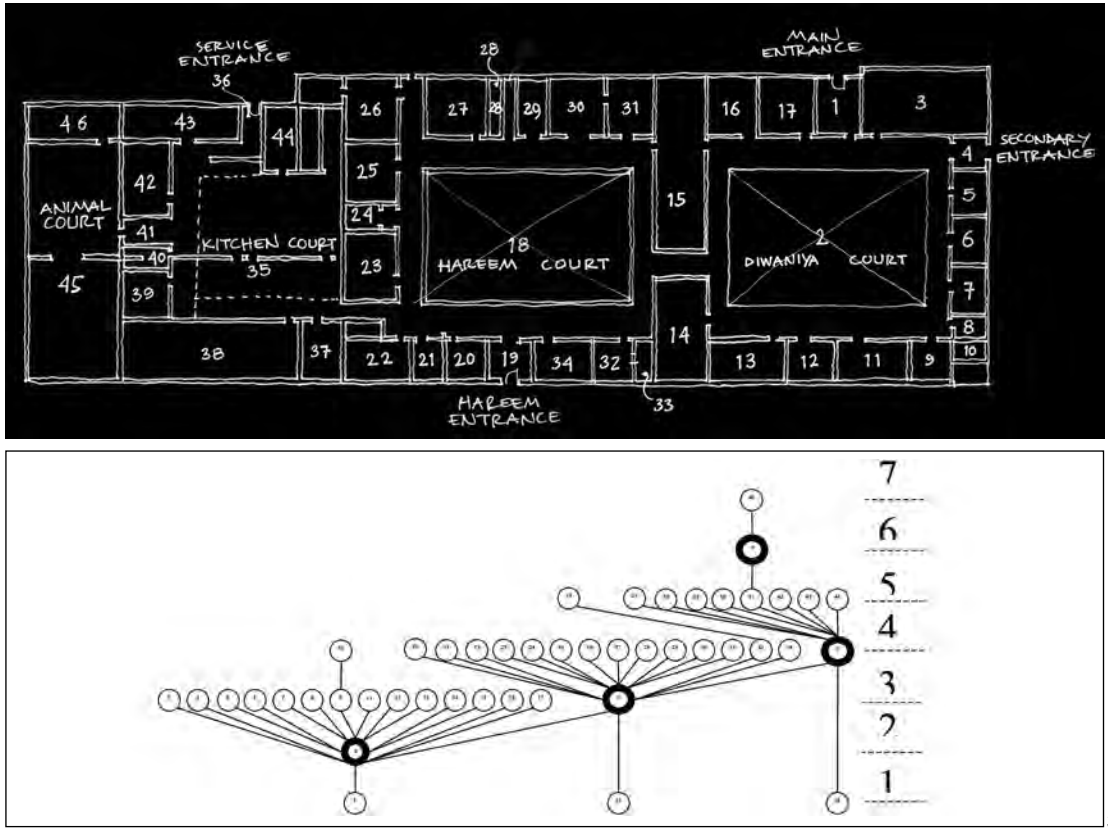
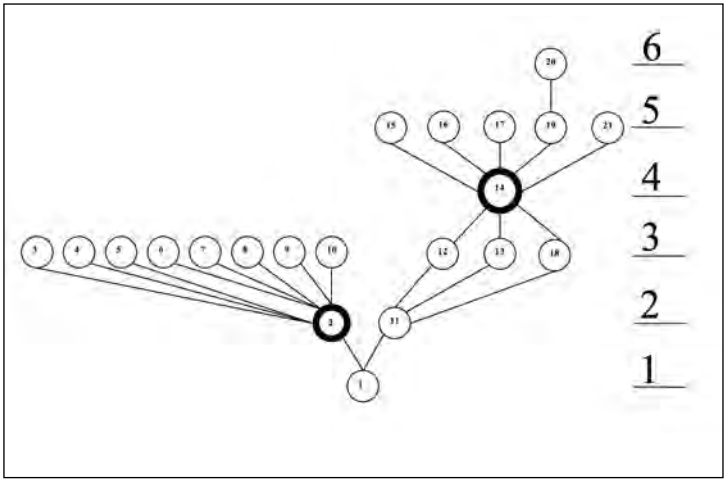


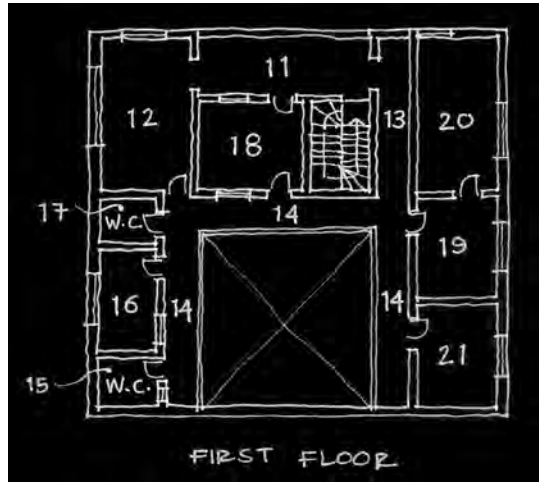

**Figure 3**
Socio-spatial analysis of Luthan house. Gamma map (justified graph for space permeability) for Luthan House Ground floor plan of Luthan House

Kuwait. Currently, the complex, as a cluster of houses, is the only remaining intact example of Kuwaiti vernacular architecture (Khattab, 2002). There are generally two type plans of houses in the complex, with minor variations among them. A representative sample house was selected from the complex for analysis purposes. The house has one door opening to the courtyard. There are a total of 21 convex spaces in this house on two stories, which appear in its gamma map [figure 4].

## 4. Al-Bader House

AL-Bader house is one of the oldest in the sample. It was built during the 1840s out of mud and coral stones with wooden roofs. It was used as house, guest house and later as horses' stables. The house contains four main courtyards; diwaniya, harem, kitchen, and amara, or business, courtyards. In addition to these main courts there is a smaller one which is the animals, or sheep, courtyard located between the amara and kitchen courts. Al-Bader house is probably the most representative of traditional Kuwaiti lifestyle, with its space arrangement and locations. The house has four entrances; two opening to the diwaniya court for friends and acquaintances, one on amara



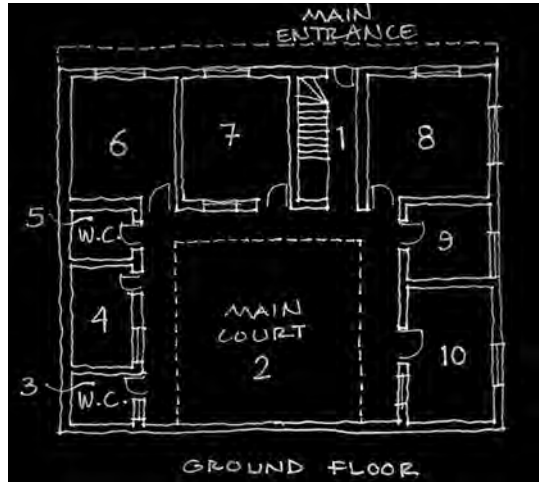




**Figure 4**
Socio-spatial analysis of Behbehani House. Gamma map (justified graph for space permeability) for Behbehani House Ground and first floor plans of Behbehani House

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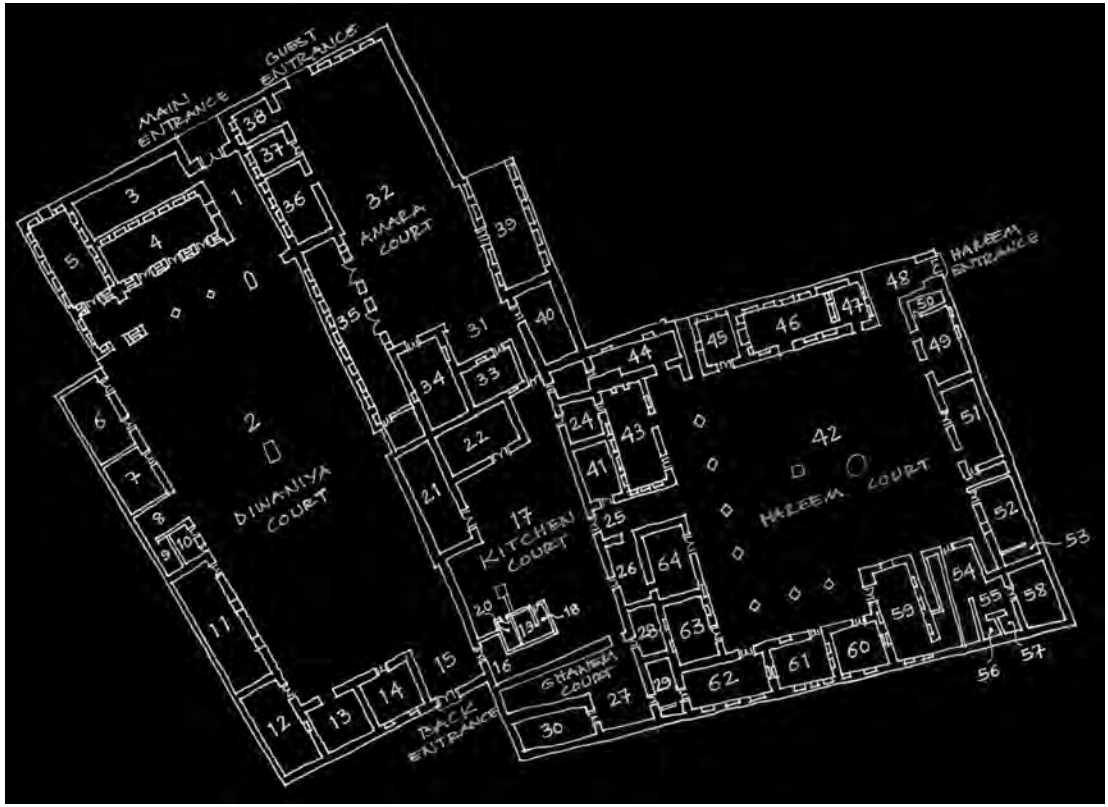
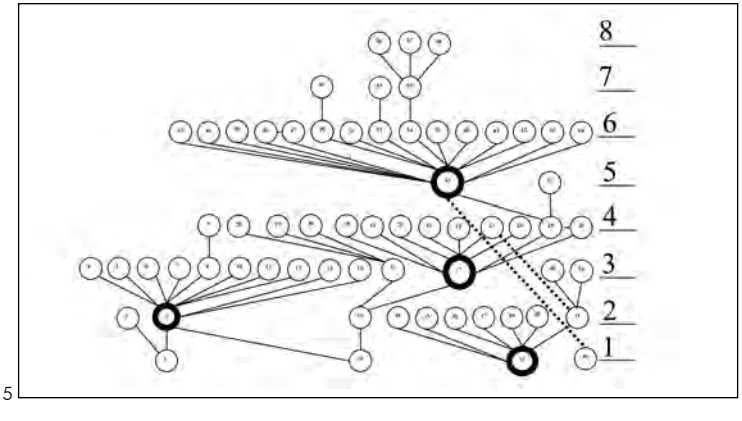



**Figure 5**
Socio-spatial analysis of Al-Bader house. Gamma Map (justified graph for space permeability) for Al-Bader house Ground floor plan of Al-Bader house

court formal guests and business, and the last on harem court for females and family. The house is currently part of Kuwait National Museum building which is adjacent to it. There are a total of 64 convex spaces in this house, which appear in its gamma map [figure 5].

## 5. Al-Ghanem House

Built in 1919 for a rich pearl merchant. Similar to houses built during the same era, Al-Ghanem house was built of mud and coral stone, with traditional wooden roofs. The house

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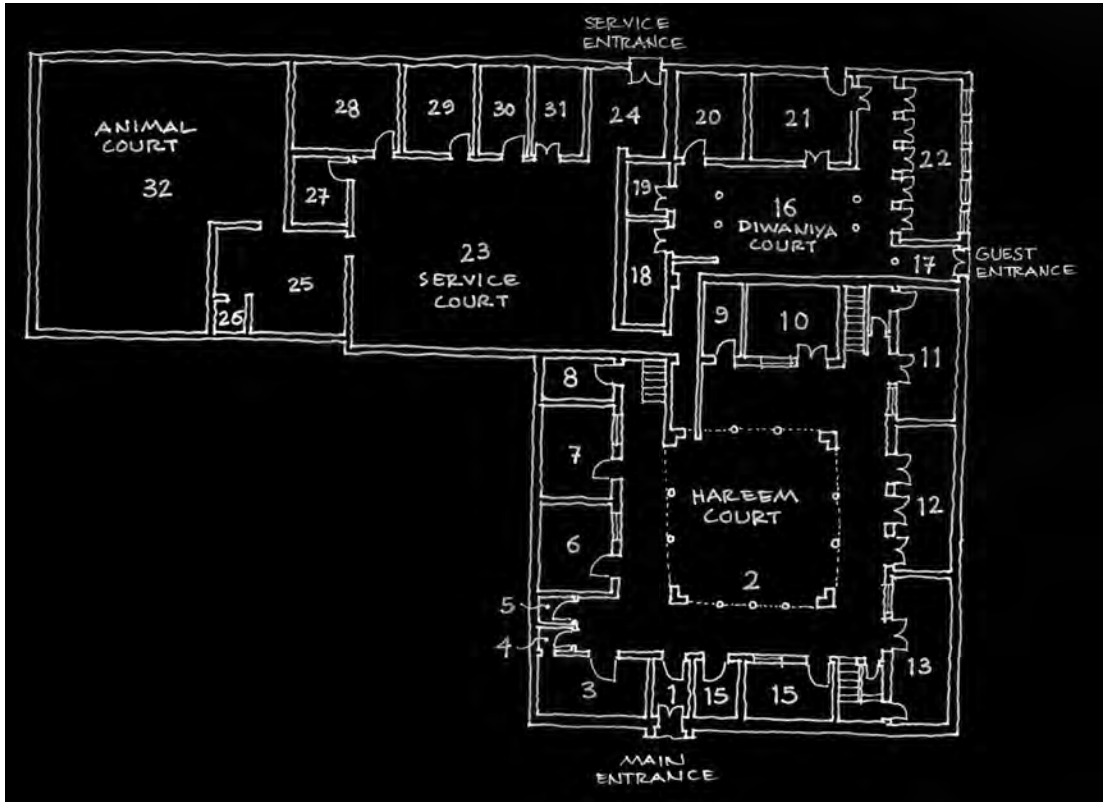
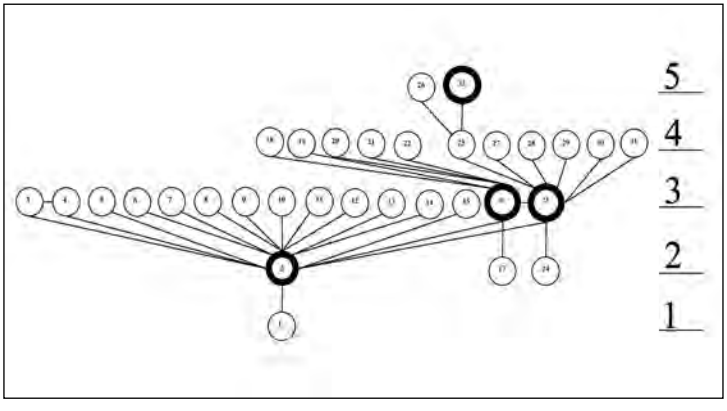



**Figure 6**
Socio-spatial analysis of Al-Ghanem house. Gamma map (justified graph for space permeability) for Al-Ghanem House. Ground and first floor plans of Al-Ghanem house




6

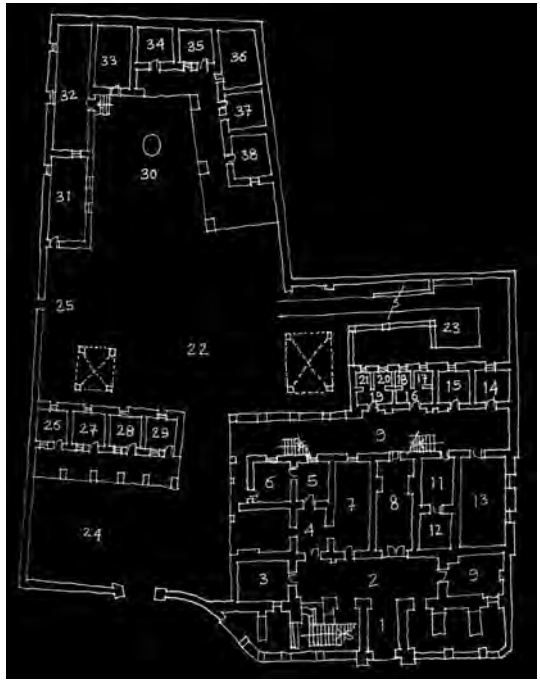
has four courtyards; diwaniya, household or harem, kitchen, and animal (sheep, cows, horses and chickens). It has three doors, all open indirectly to diwaniya, harem, and kitchen courtyards respectively. The house currently contains the ateliers for the National Council for Culture, Arts and Letters called the Liberal Art. A number of local as well as regional art exhibitions are held in the spaces of the house. There are a total of 32 convex spaces in this house, which appear in its gamma map [figure 6].

## 6. Dickson's House

Although named after its longest residents, Col. H. Dickson the British Political Agent, the Dickson house was originally built for a Kuwaiti merchant towards the end of the 19th century. It was a small dwelling that consisted of a number of storerooms in purely Arabic style house. When the house became the seat for the British Political Agent it went through a series of changes and alterations that transformed it into a colonial veranda house. The mix between the two cultures, Kuwaiti and colonial, gave the house a very unique style that separated it from all other houses in Kuwait at that time. The house was originally built out of mud and coral stone with a wooden roof. Major structural modifications were made later during and after the Dickson's residency to strengthen it. The house currently serves as a museum dedicated to the Dickson's family. Currently the house contains five courtyards, two original ones; the household and the service, and three came as a consequence of the various additions. These are the entrance, the external, and backyard. It also has three doors, one leads to the main entrance and the other two leading to the service and external courts. There are a total of 38 convex spaces in this house, which appear in its gamma map [figure 7].

## 7. Red Fort Palace

Built in 1914 as a summer resort for Sheikh Mubarak Al-Sabah, the Emir of Kuwait. It took its name from the color of the mud it was used in its construction, since it was taken from the nearby palm oasis of Jahra. The summer house also took the name 'fort' after surviving its siege



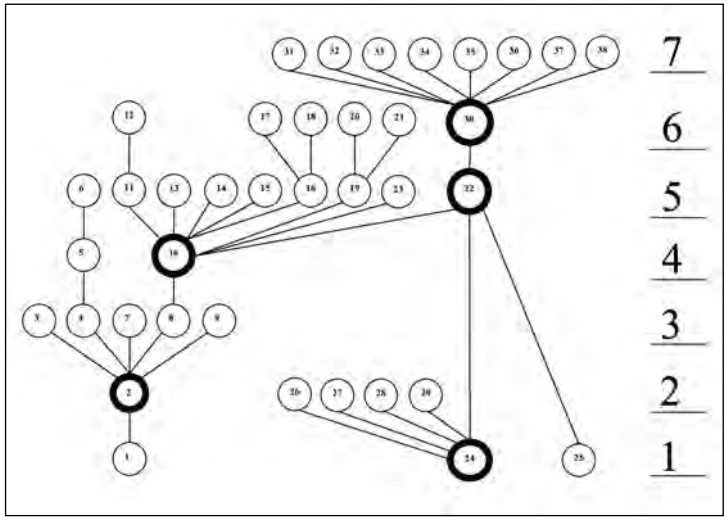



**Figure 7**
Socio-spatial analysis of Dickson's house. Gamma map (justified graph for space permeability) for Dickson's House Ground floor plan of Dickson's House

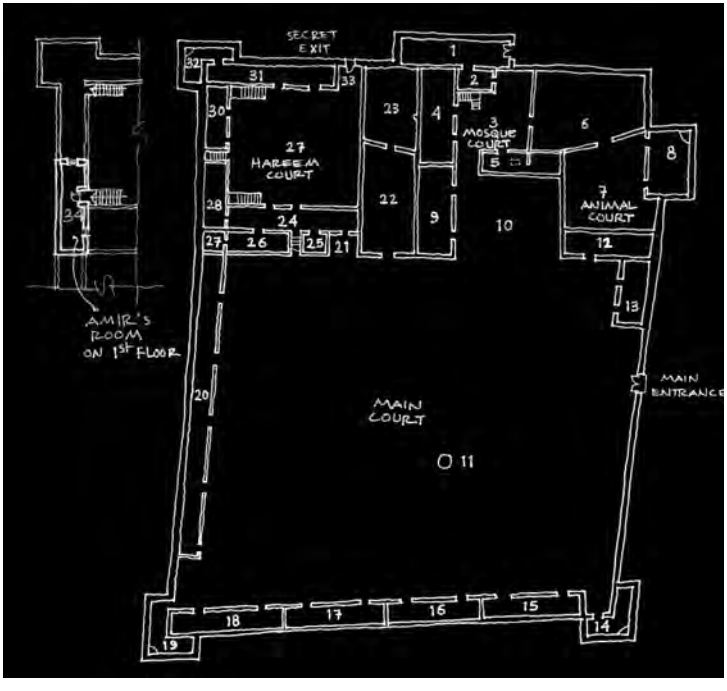
in 1920 during the battle of Jahra. The house has six courts; main, mosque or diwaniya, harem, kitchen, and two animal courtyards. It also has three gates; the main gate from the east open to main court for use by guests and animals, and the secondary one from the north open to mosque court for formal guests and soldiers, and the small, secret, one from the north open to harem court for use by family and women. There are a total of 34 convex spaces in this house, which appear in its gamma map [figure 8].

The following tables summarize some of the results of the socio-spatial analysis of the traditional Kuwaiti house sample.

## Discussion

Based on the comparison of permeability graphs, or gamma maps of all seven sample houses, some observations were clear:

1. The sample houses were constructed within around 100 years from the oldest to the most recent.
2. Older houses in the sample had a bigger diameter if compared to newer houses in the sample.
3. This difference was less obvious in the comparison of the mean depth of the house spaces, which shows little correlation with date of construction.



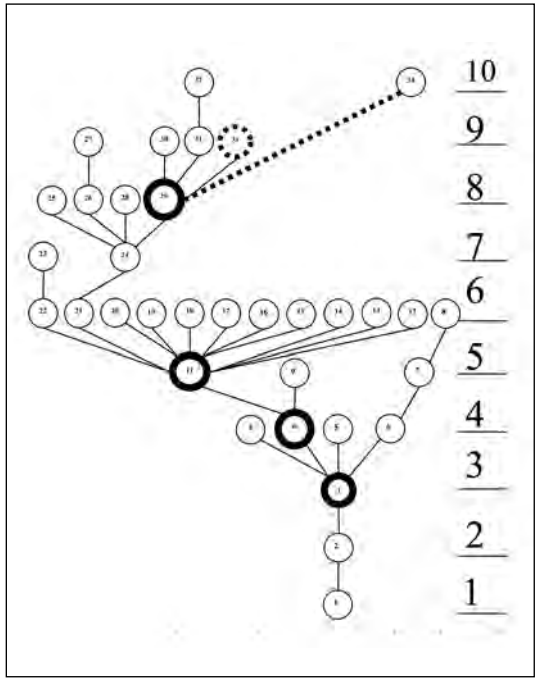




**Figure 8**
Socio-spatial analysis of Red Fort palace. Gamma map (justified graph for space permeability) for Red Fort palace. Ground floor plan, and partial first floor plan of Red Fort palace

**Table 1**
Rank of sample houses according to date of construction.

| Sample house | Date of construction | Rank |
|---|---|---|
| Al-Bader house | 1840s | 1 |
| Dickson house | 1890s | 3 |
| Red Fort palace | 1914 | 2 |
| Al-Ghanem house | 1919 | 4 |
| Luthan house | 1930s | 5 |
| Al-Sadu house | 1936 | 6 |
| Behbehani house | 1940s | 7 |

1

**Table 2**
Mean diameter and depth of all spaces in the traditional Kuwait house.

| Sample house | Diameter | Mean Depth |
|---|---|---|
| Al-Bader house | 8 | 3.3 |
| Dickson house | 7 | 5.0 |
| Red Fort palace | 10 | 6.2 |
| Al-Ghanem house | 5 | 3.3 |
| Luthan house | 7 | 3.7 |
| Al-Sadu house | 6 | 4.5 |
| Behbehani house | 6 | 3.6 |
| Average | 7 | 4,2 |

2

**Table 3**
Mean diameter and depth of harem court in the traditional Kuwait house.

| Sample house | Diameter | Mean Depth |
|---|---|---|
| Al-Bader house | 5 | 3 |
| Dickson house | 5 | 4 |
| Red Fort palace | 8 | 3.7 |
| Al-Ghanem house | 3 | 2.7 |
| Luthan house | 3 | 2.6 |
| Al-Sadu house | 4 | 2.7 |
| Behbehani house | 2 | 1.7 |
| Average | 4.3 | 2.8 |

3

4. The mean diameter of all spaces in the traditional Kuwaiti house sample is 7, and the mean depth of it is 4.2, which are larger that those recorded for other traditional desert settlements in Egypt, for example (KHATTAB, 1994).
5. The mean diameter of the traditional Kuwaiti harem courtyard is 4.3, and the mean depth of it 2.8. This indicates that harem courtyard falls on a diameter, or ring, larger than the middle of the house. And that its mean depth is bigger than half of mean depth of all house spaces.
6. Harem courtyard has reached the deepest diameter in the Red Fort palace, where it recorded 8 on a total diameter of 10 for the whole house.
7. All permeability graphs, or gamma maps, drawn for the entire sample took the shape of tree-like branches.
8. All courtyards, i.e. diwaniya, harem, kitchen and animal, are asymmetric and distributed space, while all other cells, or rooms, around them are mainly symmetric and nondistributed spaces.
9. In some cases, like in the Red Fort, the deepest space was the Emir's private room, while in other cases it is the main private bedroom opened to the harem court, or a storage room opened to the kitchen court. In all cases, one can find the need for privacy. Obviously sleeping is a private function that needs to be protected from strangers. While food storage, in contemporary life might not fall in the same privacy category, this was not the case more than hundred years ago, where food supplies were scarce and in dire shortage. Hence, food storage and consumption could, understandably, have such a need for privacy and protection
10. There is always more than one entrance to the traditional Kuwaiti house, apart from Behbehani houses which were the smallest among the sample. There is always a separate family entrance to the harem courtyard for use by women mainly. In some cases there is a separate entrance to animal or service courtyard, mainly for use by animals such as sheep and horses.
11. All nondistributed spaces must have access to one, or more, of the courtyards which are themselves distributed spaces.
12. The implications for the future of this research, after testing the socio-spatial analysis model on a limited scale here, are to develop summary tables such Table 3 for all other courtyards and main spaces, i.e. living, sleeping, eating, etc. This could help in providing a detailed analysis of all spaces in traditional houses in Kuwait.

## Conclusion

The need to study and analyze more Kuwaiti traditional houses with this model, even if they were destroyed using available records, and compare them to the sample to strengthen the findings. It is also important to subject a sample of contemporary Kuwaiti houses to socio-spatial analysis and compare the results with those of

the traditional houses, in order to arrive at a better understanding of the effect of **modernity and change** on the social and cultural values inherited by Kuwaitis. Although it is not meant here to provide an extensive critical evaluation of space syntax analysis, it is worthwhile just touching on the issue. Since space syntax analysis holds a lot of potentials for meaningful objective social analysis of buildings.

It also carries with it viable **statistical tools** that enables researchers to prove their hypotheses beyond doubt. It has obviously attracted more of these researchers over the past two decades with ever growing numbers, where 4 symposia have been held on the subject. Also more computer software has been developed based on the theories of HILLIER and HANSON (1984). Yet one can observe that the development of these theories has gone more in the direction of settlement analysis as opposed to **domestic space analysis**, whether traditional settlements (AL-GHATAM, 2003), or contemporary (AL-SAYYED, 2003). It also went beyond the analysis of house planning to a wider scope of city planning, to suggest theories for the social construction of the city (HILLIER, 2003). Since the potentials for analyzing people movement in space, which could be very useful in explaining some phenomena such as why some streets attract shoppers (HAMMER, 2000).

Yet one fundamental limitation of space syntax is still there, which is the fact that it provides a two-dimensional account of architectural phenomena which are experienced, otherwise, as a three-dimensional reality as HANSON (1998), explains. She goes on to add that architectural speculation brings together visibility, or what we can see, and permeability, or where we can go, through **spatial layering, transparency,** and the inter-penetration of volumes and the dissolving of boundaries. These effects, she argues, will generate new space syntax tools that allow three-dimensional representation of space, to capture the immanence of architectural reality (HANSON, 1998).

As for the case of analyzing traditional Kuwaiti housing stock in this paper, the author believes that the two-dimensional permeability graphs will serve the purpose of the study, which is to arrive at the underlying spatial system, or structure, of the traditional Kuwaiti house. On the one hand, this is the first attempt to carry out a socio-spatial analysis of this kind, and on the other hand there are few other studies on the visible architectural design of the traditional Kuwaiti house. Therefore, this study aims to set the path for further research on the socio-spatial qualities of the traditional Kuwaiti architecture, in the hope that this will provide better understanding of its essence and character. This, hopefully, might lead to more insightful interpretation of it in contemporary architecture in Kuwait.

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## Notes:

[1] There are very few surviving examples of traditional Kuwaiti houses mainly due to the widespread of modernization. The sample selected in this study covers almost all the remaining houses from the traditional Kuwaiti housing stock.

# 11 METHODS FOR UNDERSTANDING CHILDREN'S EXPERIENCE OF THE PHYSICAL ENVIRONMENT

*Sofia CELE*

## Abstract

*This paper argues that the methodological difficulties that arise when children are involved in research are best met by utilising a combination of different qualitative methods. By drawing on the methodological experiences made during a consultation project in Stockholm, Sweden, this paper describes the use of mapmaking, drawings, interviews, walks and photography, with eight and ten-year olds. The decision to combine different qualitative methods was based on the belief that it is necessary to, not only understand how children value physical objects, but also to be aware of the interplay between social, cultural and physical elements in the environment, which contributes to, and creates the overall experience of place.*

*Children are different in their psychological, sociological and biological development as well as in their personalities. By combining a variety of different methods it is possible to obtain a diverse picture of children's realities, and to minimise the loss of information that can occur due to writing disabilities, shyness and other individual characteristics. One of the most important issues to remember when dealing with children in research and consultation projects is that children have difficulties in dealing with and handling power relations with adults. It is also necessary to remember to allow the children to interact with the environment. They are encouraged to reflect upon this interaction, whilst doing so.*

*Different methods and approaches will result in different knowledge, but when they are used correctly and are well collated, they will provide a diverse picture of children's views on their environment as well as that of the interplay between children, the physical environment and other city-dwellers, including the many social and cultural aspects which control these relations.*

***Keywords:*** *Children, Qualitative Methods, Triangulation, Outdoor Environment.*

## Introduction

Recent years have shown an increase in the interest of developing different qualitative methods for involving children in the research of housing areas and other physical environments. Some of this interest concerns ways of gathering information about the relationship between **children** and their **physical environment**, as well as trying to establish methods for working with children in the actual physical planning process.

Working with children always implies additional challenges to the research process and is also very different from working with **adults**. Children think differently to adults and the key to working with children, therefore, needs to be to work with rather than for them, letting them express themselves, rather than presenting them with an adult framework, to which they have to respond. This is where the major methodological difficulties lie when conducting research with children.

This paper draws on experiences made in a project in central **Stockholm**, Sweden, the aim of which was to find out how children experience their local environment. The project is the result of co-operation between several of Stockholm's City District Councils and Stockholm University. The project focuses on the ways in which children get to school in several different areas of Stockholm. This first part of the project was carried out in the dense inner city area of Norrmalm.

## Setting Out an Agenda

It was realized quite early in the project that it would be necessary to combine several quantitative and **qualitative methods** to gain the necessary knowledge of, not only how children value and experience their environment but also how the same environment can be valued and experienced from an adult perspective.

In order to obtain 'hard facts' about the areas, which were to be studied, such as the actual traffic flow, and parents' opinions on their children's environment, quantitative methods such as a survey and traffic counting were used. This material was later brought together with the material gained from the participating children in order to put the knowledge acquired into perspective and also to ease interpretation.

Since the project mainly concerns children's environment on their way to school it was necessary to use methods, which would make it possible for the children to express spatiality and include several different places and qualities simultaneously. It was necessary to find ways of including the children's homes, their school route, their school and thereby belonging qualities.

A combination of several different qualitative methods was seen as a suitable approach. The reason for this was multiple. Firstly the project was laid out in the belief that it is necessary to, not only understand how children value physical objects, but also, that it is the **interplay** between the social, cultural and physical elements in the environment, which creates the overall experience of place. Secondly, children are different, not only as individuals, but also in their psychological, sociological and biological development. It was therefore considered that by using a

combination of different methods, it would be easier to get a more diverse picture and to minimise the loss of information that could occur due to writing disabilities, shyness and / or other individual characteristics of the children.

The process of leaning on, or drawing from, multiple methods for gaining knowledge on a subject is called ***triangulation***. This approach has become increasingly popular within the social sciences, and can be seen as a way of trying to bring together several different perspectives on the same subject, in an attempt to maximise the understanding of the research question. Combining methods will make it possible to approach the phenomenon from different perspectives within the same study. The material gained from each technique does not necessarily reinforce or validate that produced by others, but it does, in fact, rather often reveal contradictory findings. This may be a problem during interpretation of the material but it does also prove that triangulation often is a satisfying way of capturing the complexity of a problem and points to the contradictions within human behaviour and everyday life. (VALENTINE, 2001:45) The decision to use triangulation in this study was based on previous experiences of the difficulties in working with children, both as an adult to try and understand children's complex realities, and also because children often have difficulties, due to their psychological development, in expressing their views to their own satisfaction. Approaching the everyday life of children from several different perspectives, and the use of different methods would, therefore, maximise the possibility of drawing an accurate picture of their world.

Methods and approaches previously presented by researchers and writers such as Kevin LYNCH (1977; 1978), Robin C. MOORE (1986) and Colin WARD (1978) were used as inspiration, but they were also, in this as in other cases, amended to suit the specific situation. However, the experimentation with different methods described in this paper can also be seen as an attempt to explore the concept, which LATHAM (2003:1993) has referred to as *'methodological hybrids'*, which attempts to go beyond what is usually gained by the more traditional methods, such as interviews.

Exploring everyday life is an approach that has become more and more popular within the field of human geography. This interest has begun to further develop from the initial interest in the single, every day, phenomena to the more general aspect of how all elements of social life are linked together in a greater and more complex perspective. (THRIFT, 1996:40; LATHAM, 2003:1998)

Since methods, which allow children to document their everyday life, seems a suitable approach for gaining knowledge on a whole range of child-related issues, (HART, 1997) this was the approach which was chosen.

It was decided that all participating children should be asked to make a drawing of their school route. They should include things they liked and disliked about their environment. No further restrictions or instructions were given, however, on what to include in order to allow the children to express themselves freely. The drawings were then discussed during group interviews with the children. These interviews

were then immediately followed by a walk, during which the children showed their school route and the things they often experienced on their way to school.

Even though the methods that were chosen were different from one another and could be used separately, it was seen as important that the children should be able to see a connection between the different tasks they were being asked to perform. However, asking the children to perform all these tasks in one day was not considered to be a reasonable alternative. The drawings and maps were made in advance, but the interviews and walks were performed consecutively. This was necessary in order to make it possible to establish connections between the drawings and what the children described during the walks. It also ensured that the children would remember what had been discussed during the interviews. A digital camera was used during the walks in order to document the places and objects that the children pointed out during the walks.

All the empirical work conducted with the children was performed by two people. Working as a pair proved to be invaluable especially during the walks, where one person would not have been able to give every child the attention he or she wanted. Working with another person also made it possible to discuss experiences and to be informed about the things that the other person had experienced. However, working in a pair can only be successful if an approach to the topic to be studied has been carefully laid out and well prepared. Good co-operation and understanding between the individuals involved is also required.

Contact with participating children was made via schools. Two school classes from different schools, which are in close proximity to each other, were chosen and they agreed to participate in the project. A total of 44 children were engaged, half of them being eight-year-olds and the other half ten-year-olds. The children's parents were informed through parental meetings and also via a letter, in which they were given information about the project and also the opportunity to object to their child's participation, particularly in regard of their children being photographed. However, no parent had any objections to their child's participation in the project. Full feed back will be given to the parents when the interpretation of the material has been completed.

## Drawing Pictures and Maps

The drawing task consisted of two different parts. Initially maps of the local area were handed out and the task was for the children to mark out the way they normally took to school. The younger children brought the map home with them and the parents helped them to mark out their route. The older children performed the task in school by themselves, even though they had some help from their teacher and in one or two cases also from their parents.

The aim was primarily to gain knowledge of which streets the children used for getting to school. Many children marked out several different routes and separated them by using different coloured pencils. Approximately half of the children had separated parents and, hence,

had two different addresses from which they had to get to school. Often these addresses were close to each other, but in some cases, staying with one of the parents meant that the children had to go to school by car or bus. Some children also used different routes if they wanted to walk by themselves, or with their friends. The majority of the children had other alternatives for getting to school and they often chose their routes according to their mood and also the time available. The children were asked to write their names on the maps and the addresses of the children, provided by the school, were compared with the maps that were handed in. These maps were used as a basis for grouping the children for interviews and also for planning the walks.

The children were also asked to make an A3 drawing of their **school route** and to include things that they came across on their way that they liked or disliked. No instructions were given on what to include or what to exclude, in order to obtain information on the physical, social and cultural elements in the environment. This was a task that almost all children performed without major difficulties. The majority of the children drew colourful maps, in which their home, school and other interesting things occurring between both places were included. The drawings made by the younger children were most informative and included more objects than the older children's drawings. The younger children also invented their own ways of including houses, people and roads in a picture-like way, but still retained a form resembling a traditional map. They also often included themselves and attached several papers to one another in order to include more things without changing their scale. The older children's' drawings were much more restricted by the urge to picture things the 'right' way, rather than how they actually experienced them. Their drawings were, therefore, more static and less informative.

On the whole the drawings were a very useful tool for understanding what children notice in their environment. Major features such as a supermarket, subway station and other things that adults would choose to include were not reproduced on the children's drawings. Instead, features such as a bakery and a fish store, places with very distinct smells, were included on almost all drawings, even by those children who did not pass right by them on their way to school. Not only physical objects, such as houses and streets were included, but also features whose main importance lay in their social or emotional meaning. People that the children often met on their way to school, homeless people, dogs, pleasant or unpleasant sounds or smells, places good for activities, such as playing, climbing or running, featured prominently in the drawings. The older the children were, the fewer objects they included. The objects, which were included for their meaning rather than their physical existence, also reduced, the older and more 'mature' the children, were. However, since the children in this project were between eight and ten years old this was not a major problem. Children a few years older tend to be more restricted in their expression as a result of influenced by their wish to picture things the 'right' way, and they are less willing to integrate their own

experiences by the production of a map or a drawing of their environment.

Adults are often hesitant to use maps with children because they are not confident enough that the children will understand maps. However, the ability of children to understand and also produce maps is surprisingly good, even at an early age. (SOBEL, 1998:10-21) They often need some directions when they are initially presented with the map, but when their school or house has been pointed out to them they usually quickly realise how the rest of the environment is illustrated on the map. Many of the adult's judgement of the children's use of maps are hampered by their own need and ability to produce accurate, to scale maps of the environment. This should never be the aim when working with children and maps. If a researcher needs an accurate map of an environment, they are readily available elsewhere. One of the interesting aspects of working in this way with children is not only the opportunity to study and observe their mapping abilities, but also to see which objects children choose to include on their maps, and which type of things are of sufficient interest to be remembered and reproduced on the maps. These objects reveal a great deal about how a child experiences, values and uses his/hers environment.

Younger children often draw their maps using a panoramic or pictorial view, in which they can draw houses, trees, people and animals as actual objects instead of symbols. It is common for these objects to be depicted in an aerial view of the street pattern, or an overview of the environment. The older the children become the more their ability to produce aerial maps, in which objects are reduced to symbols, increases. The younger children focus on objects with which they have a relationship, and with which they can connect an experience. This may be beauty, fear, comfort, secrecy or similar things, which are often relatively easy for the researcher to identify. (SOBEL, 1998:13-19) Some things that are included seem to have no special meaning for the children, and they cannot explain why these objects have been included. The most likely reason for this is that this is an object or a part of the environment, which, by its very existence, seems to contribute to the identity of a place, or eases orientation.

## Interviews

After completing their drawings the children were interviewed in groups of approximately four or five. The groups were formed with consideration given to where the children lived. Group interviews, or focus groups, as they are sometimes called (DRISKELL, 2002:147), were chosen for several reasons. Since interviews were not going to be the main method of research, the additional time necessary to conduct single person interviews would not have been realistic, in respect of the time restrictions placed on the project. Group interviews have the advantage that a discussion will often develop within the group, thus enabling the interviewer to step back from time to time to listen and observe the group process from a more objective stance, instead of

steering the respondents in a structured and hierarchical way. This is an advantage since the interviewer is more likely to obtain and receive interesting information as the interviewees develop an independent group dynamic, which can reveal much un-spoken information to the interviewer. (BEDFORD, BURGESS, 2001:123-124)

It is important that the members of the group either know each other already, or, alternatively, are complete strangers, and not likely to meet again. This depends largely on the subject in question. If there already is an existing group structure, it is probably possible to start with the interview immediately, there being no need for the group members to get to know each other, or to deal with their initial shyness. A group interview can loosen up and reduce the power relationships that inevitably exist between the interviewer and the interviewee, especially when children are involved. However, within an existing group there are always internal power struggles or competitive relationships, in which one or two participants are more talkative and dominant than the others are. It is important that the interviewer is aware of this and tries to minimise the effect of these phenomena, in respect of controlling the interview. The interviewer needs to be able to act as a leader, but he/she also needs to be able to step back and allow the group interview to evolve independently.

The interviews were performed in a structured way, whilst care was taken to maintain the desired informality. Different themes had been set out in advance and questions arose from these themes. These themes related to the children's experiences of their housing estates, their schools and their everyday environment, and also of adult behaviour. The children were asked questions and then they answered them one by one, waiting for each other to finish. If the children wanted to add something, they were encouraged to attract the interviewer's attention by raising a hand. If a child interrupted someone else, they were asked to wait for their turn. In fact, all the children generally respected each other's right to speak as well as the views and opinions put forward by each other. When all the questions had been answered by each child, they were then permitted a more relaxed discourse amongst themselves prior to the introduction of the next theme.

Conducting interviews with children is very different from interviewing adults. All academic knowledge concerning metho-dologies is wasted if it is not possible to hold the children's attention throughout the session. An adult who becomes bored during an interview will try to conceal this fact by acting as if all is well, and they will most likely continue to answer any remaining questions politely. A child who becomes bored during an interview will act very differently, depending on how old he or she is. The eight-year-olds in this project clearly announced that they had had enough by sliding off their chairs to hide under the table, walking away, or by repeatedly asking when it was time to go out for the walk. The ten-year-olds behaved in a similar way but instead of sliding off their chairs they became chatty and giggly. To a certain extent, this type of behaviour can be seen as a way of testing the limits with the

adult researcher. However, it is also a fact that children of this age are not able to sit still and retain their concentration over long periods of time.

Three things proved to be necessary in order to keep the children interested. Firstly, it was important to keep them active and to focus on their drawings. By having the children independently describing their drawings, the influence of the adult researcher was minimised and the children were very engaged when they were showing their drawings. Whilst waiting for their turn to speak the prospect of being able to show their drawings helped them to remain focused. It was, however, also important not to keep them waiting too long as they then felt excluded from the group. Secondly, the emphasis on a relaxed attitude towards the children was also important, as was the fact that emphasis should be placed on the concept of there being no right or wrong way of doing a drawing or answering a question. The primary aim was that the children told the adults about their environment, and that it was the children's stories and drawings, which were the focus of attention the whole time. In this way it was the children who were in control of the situation. Thirdly, it was important to provide the children with fruit and something to drink, to which they could help themselves throughout the sessions. This aspect was seen as 'luxurious' in particular by the younger children, as well serving the purpose of making them less hungry and giving them something to do with their hands.

## Out and About

After the interviews the children were asked to describe their environment during a walk which was planned with consideration given to where the children lived. The **walks** took place just after the interviews and, therefore, in the same group formations. The children were told that the aim of the walk was for them to show and describe their environment and to talk about the things that they particularly liked or disliked about it. Although the children were instructed on how to behave in traffic and in **public spaces** they were, on the whole, given free rein to do as they liked. This not only made it possible to closely observe their behaviour, but it also increased the children's spontaneity. An alternative way of using the walk could be to ask the participants to write down their impressions and thoughts about the different places seen or experienced during the walk. Since, however, this would make the walk more controlled and intellectual and, therefore, affect or detract from the possibility of observing the children, it was decided that it was probably more suitable to ask the children to write down their impressions when they are older, or when work is being done with adults (see, for example, DE LAVAL 1997; NORDSTRÖM, 2002).

Robin C MOORE (1986) has written about the experiences that he made when walking with children. He realized that when he used other methods he gained information regarding specific places, such as the children's favourite places, but missed out on the environment that the children used for getting to

these places; children use, not only the places that have been set aside for them, but also their entire environment for playing and exploring. The walks made it possible to access and gain knowledge about the whole environment rather than just clearly defined places.

The walks also proved to be an invaluable contribution to the interviews since the children found renewed energy, were much more relaxed outdoors, and spoke more freely. The walks became a combination of interviews and observation studies, since children often do not fully realise how they use their environment, or they do not feel like, or even know how to, share this information. During the walks the children could be observed, and they all, even those, who had been shy or unwilling to talk during the interviews, came alive during the walks and not only talked, but also illustrated what they said by jumping, climbing, running and hiding, while they described their actions.

All children seemed proud to show their houses, flats, backyards and the things they passed by everyday on their normal route to school. Not a single child seemed to be disinterested, ashamed or not willing to participate. It was obvious that this exercise was something they enjoyed and also took seriously. Although many children were laughing and playing during the walks, the child whose turn it was to show his or her environment showed enormous self-control and concentration, neither of which had been possible to achieve during the classroom or interviewing sessions. The children also acted as monitors for the other children telling them how to walk, where to be quiet, and how to behave in the environment.

A digital camera was brought on the walks and the children were asked to point at things that they, for some reason, wanted to be photographed. These could be dangerous road-crossings, odoriferous bins, beautiful trees, people, or just anything that, for some reason, caught their attention. The camera was also used to take pictures of the children and the way they used their environment during the walks. The fact that a digital camera, rather than a traditional camera, was used proved successful, since the children were able to look at the pictures and also approve of them at the time of the event. Using photography as a method made it possible to actually observe, not only how the children used their environment, but also to notice and interpret the objects that the children had found interesting. (see DAMISCH, 1980; BANKS, 2001; RASMUSSEN, SMIDT, 2003)

The walks not only provided knowledge of the environment, but also an opportunity to observe the children as they were interacted with their everyday surroundings. Observing children is a complicated task, since adults are so different from children. It is possible for an adult to participate physically with children, but they are never fully accepted as one of the group. The adult will always be 'different' and not a part of the children's reality or their imaginary world. (PUNCH, 2001:165) Fully participant studies are therefore impossible and even semi-participant observations bring their difficulties simply because of the difference in size, imagination and 'the otherness' of adults in comparison with children. Nigel THRIFT

(2000:556) has argued that it is perhaps not always necessary to perform a participant observation; it may instead be a better idea to act as an observant participant. Iona OPIE (1993) has described how she, when doing observation studies in a play area, was accepted, not as an equal, but more as an object in the environment. After a while the children were not affected by her presence, but accepted her as something, which existed in their environment, but would not interfere with their behaviour.

During the walks the children were aware of the adults who were walking with them, but they were so engaged in describing their environment and showing them their places that they did not seem to reflect on how they were behaving. This meant that it was possible to observe and be close to the children without actually disturbing them and, thereby, possibly influencing their behaviour. Observations could also be made regarding other city-dwellers, their reactions and behaviour towards the children. Walking with the children also made it possible to see and understand how the environment interacts with the children.

A tape recorder was not used and neither were any notes taken during the walks. The only direct documentation made was the photographs. This lack of documentation during the walks is open to criticism. However, it would not have been appropriate to use a tape recorder since it would only have documented sounds, and taking notes would have made the walks much too formal. Instead, the walks were conducted with all senses present and receptive, without the distraction of the mechanical processes of recording and writing, with the aim of understanding the environment and how the children reacted to and interacted with it. After the completion of a walk all impressions and experiences were written down individually by the researchers before they were shared. The writing was done spontaneously, and allowed to flow, without much consideration being given to the content as it was intended to be instantaneous and personal. This resulted in the writing spontaneously reflecting a wide spectrum of information concerning visual objects, sounds, talk, smells, feelings and impressions of how children cope with the environment. This approach made it possible to obtain a lot of information that would have been very difficult to record in any other way. Since individual perceptions and physical experiences were used as a starting point for analysis, it was possible to reach a level of understanding of the area and the children which would have been difficult, perhaps impossible, otherwise. The information gained this way added up to a very diverse picture of the investigated area and the children's use and perception of it. The active engagement with, and the closeness to the subjects, did not, as may sometimes have been suggested, make academic analysis more difficult. It did, in fact, present an understanding from which an even deeper analysis was possible.

By experiencing the environment in a physical way a different type of knowledge was received. SMITH (2001:36) describes something similar when she writes about performance, and the necessity to come closer

to the subjects: *'To be with the subjects in a way that enables us to recognize how the various skills are acquired and implemented' (...)*. The act of experiencing the studied environment with the children resulted in the development of deeper insight into the important knowledge related to the everyday physical experience of place. (THRIFT, 1996; INGOLD, 2000; LATHAM, 2003). This is important knowledge, difficult to put to words, since so much of it is gained and used through physical experience and practice. It is often both unspoken and unknown, or rather so well recognised that it is considered not worth mentioning by the respondents. This is particularly true in regard of children as they often assume that all humans perceive the world in exactly the same way as they do. Understanding this everyday perception of place is crucial for understanding how an environment functions for its dwellers, and walks provide an excellent way of trying to solve this methodological dilemma.

## Issues of Gender and Personality

It was noticeable that the children's differing personalities reflected which method suited them best. Overall, it is possible to say that a creative method such as drawing seemed to suit the majority of the children, as long as it was possible for them to express themselves freely and not be controlled by a researcher, their peers, or a teacher. However, the presence of others, i.e., adults and children was positive, since many children were interested in asking questions and describing their drawings while doing them. The method, which included physical activity, also proved successful since it loosened up the existing power relations not only within the group, but also towards the researchers.

The girls participating in this project were much more dominant than the boys. They were excited by the opportunity to share their knowledge and often interrupted the boys by giggling or talking. This behaviour, quite obviously disturbed the boys, who subsequently expressed during the interviews, that the girls were childish and always giggling at things in class.

However, some of the older girls were quite obviously not at ease with sharing their drawings with the rest of the group. They said that their drawings were 'worthless, ugly and silly', even though they had expended considerable effort doing them. These girls were not obliged to show the rest of the group their drawings, but they were asked if they would display them after the session. They immediately agreed to this. It was not a problem for them to discuss their drawings in a one to one session, or to hand them in afterwards. Three of the girls acted in this way, but none of the boys. This response probably has its roots in an existing pattern of gender and power relations, which has culminated in these particular girls experiencing relatively low self-esteem. Although some of the participating children were just ten years old, they showed signs of not wanting to be seen as children, but as 'teenagers'. This attitude was sometimes reflected in the answers given during the interviews. However, this façade was not very

sustainable and only glimpses were noticeable during the interviews. It may be worthwhile to bear this information and experience in mind when working with children. If the terminology and vocabulary used is inappropriate and too childish the children will not provide the information, which is being sought. Iona OPIE (1993) solved this dilemma by referring to the children she studied in a playground as the 'people' in the playground. Children around the age of ten seem to be equally sensitive to the words 'children' and 'play'.

## Conclusions

So what did the project actually gain from using these multiple methods when trying to understand how children experience and use their local environment? Some positive results became obvious at an early stage.

Firstly, by using several different methods it became possible to include the views of all the participating children. Children differ in their physical and sociological development and also, of course, in their personalities and interests. Some children managed to perform and communicate well via all the methods used, but for others it was obvious that they felt more at ease with just one specific method.

The children's drawings played an important role during the interviews, especially with the younger children. Using them as a starting point for the discussion proved to be invaluable. The thrill of being able to show what they had produced also made it easier for them to stay focused. When conducted correctly, the interviews were useful and it was possible to gain information related to several aspects of the children's **everyday life**, and their **experience** of housing and **urbanity**. The most directly positive thing about interviews is that it is possible to access a large amount of information over a very short period of time. However, the main values of the interviews in this case was to establish contact with the children, gain knowledge about their drawings, and plan a framework for the walks. It may also be appropriate to question the use of traditional interviews as a single method for pre-teen children unless it is combined with additional methods. It is, for several reasons, impossible for an adult interviewing a child not to influence the child's answer. The knowledge gained from that type of interview with young children could, therefore, be, to some extent, open to question. The main reason for this is not that the interview, per se, is an unsuitable method, but that it is difficult not to influence the children. Since many of the children's movements seem to be almost unconscious responses to their physical environment, it also seems difficult for the children to fully recall how they use an environment when they are not in it. It seemed that this was easier for them when doing the drawings, probably because they were involved in a **creative process**. It should be taken into account that the phrase so commonly used during the interviews: *'I just walk on my way to school,' turned out to actually mean 'I transport myself from point A to point B and I walk, run, climb, balance, swing and slide when doing so.'* (see MOORE, 1986)

The experience from this and other

projects (see, for example CELE, 2001) is that interviews with children are best performed by someone who is ready to take children's realities seriously, and who also has the time, knowledge and expertise to perform in-depth interviews, perhaps in order to carry out discourse analysis. If an in-depth knowledge of a few children's realities is not the aim of the study, then the traditional interview is probably not the most suitable method to use, unless it is combined with other methods.

All the children were at ease during the walks and the atmosphere from the interviews changed. The girls who had been uncomfortable during the interviews were in control of the situation during the walks. One of the reasons this seem to be such a valuable method, setting aside the hands-on information that results from them, is that the power relations between the children and the interviewer(s) are reversed. During the writing, drawing and interviewing sessions, the responding child, is always, trying to understand and produce what he or she is asked to, despite whatever efforts are made to reassure or relax him/her in recognition of the somewhat vulnerable situation. During the walks the children are in control, whereas the interviewer just follows along, and attempts to understand the environment to which he or she is introduced. All children seemed proud of their home environment and were eager to show their homes and backyards and to introduce their parents (if they were not at work). None of the children had reached the stage where they found their home or parents embarrassing.

The effectiveness of bringing the children out for walks and thereby experiencing the environment directly with them was remarkable. It seemed as if the **physical activity** of walking and **playing** facilitated for the children to talk about and reflect upon their environment. The walks presented invaluable information regarding children and the urban environment. This experience certainly calls for a need to further develop and experiment with this method.

The project described here demonstrates that it is not only appropriate but also necessary and desirable to combine different types of methods in order to gain knowledge of children and their physical environment. Different methods will result in different knowledge, but when correctly and integrated appropriately, as in the pieces of a jigsaw puzzle, they will provide a diverse picture, which will not only focus on children's views on their environment, but also on the interplay between children, their physical environment, other people and the many social and cultural aspects which control these relations.

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# 12 STRUCTURAL ANALYSIS OF URBAN SPACE IN RESIDENTIAL AREAS

*Dorota WLODARCZYK*


## Abstract

*This paper describes the development of a* ***"structural analysis"*** *research method, which is based on the interplay of several traditional and some new ways of studies. These include retrospective reflections on practice, interpretations of the results of Gestalt psychology, case studies, site analysis and observations, and interviews. It was inspired by Ch. NORBERG SCHULZ (1963:100), who advocates the method as exhaustive and complete:*

> *"Form as structure. ... It consists in understanding the architectural form as a whole where many different factors are unified. A 'structural analysis' has to render an account of the Gestalten (elements) and relations, which determine the formal totality. ...If we extend the concept of structure also to cover the 'contents', and the relations between form and content, the analysis becomes a real exhaustive architectural analysis."*

*This practice-oriented method intends to bridge the gap between research and practice. Structural analysis constitutes a kind of reflective research approach (see i.e. MALBERT, 1998:14) developed to support knowledge generation for design professions, including urban planners, thereby giving practitioners tools for making decision about urban arrangements while designing housing areas.*

*J. ZEISEL (1997:xi) supports the approach, when stating in his book Inquiry by Design that the most effective way to make better design decisions is to study environment-behavior (E-B) problems by employing several methods in parallel; the choice of methods depends on specific design and the research situation. He argues that "applied E-B researchers need to participate in design decisions, and designers can contribute to shared E-B knowledge if they make decisions with an eye towards eventual evaluation".*

*Four cases were selected carefully, using the criteria of urban location, satisfactory maintenance of the area, affordability, efficient land use and intentionally representing range of time. Graphic representations of analysing urban space were developed and tested.*

*The research findings were finally applied in a newly built neighborhood. After the residential area was completed and inhabited a questionnaire was formulated by sociologist and carried out by a group of trained interviewers - students of architecture. It was addressing among others the following issues: the inhabitants' image of the community, their identification with the neighborhood, the preferences of urban spaces, feeling of safety, evaluation of community life. In this questionnaire the perceptions of the urban space was examined.*


***Keywords:*** *Structural Analysis Methodology, Residential Urban Space, Gestalt Psychology.*

## 1. The Relevance of Structural Analysis in Architectural Design

The importance of carefully structured residential areas with attractively woven open spaces is recently becoming more recognized. Home means more than just the house itself, it also spreads to the surrounding local environment, where meaningful aspects of life are experienced. **Streets**, **squares** and **open areas** enrich the life of inhabitants, whereas lack of care for the spatial order of the housing arrangement impoverishes its quality. Urban space is a place of potential meetings and interactions of its users. The physical environment has an impact on human behaviour. Disregard for this fact may create barriers in human interactions, in development of social ties and lead to a feeling of isolation. A well developed residential areas, in its contemporary interpretation, accounts for ecology, sociology and history.

When working as a practicing architect designing several residential one-family areas consisting of 30-70 units in Gdynia, Poland, I got the opportunity to learn from my own experience by visiting newly built environments, interviewing the residents and drawing conclusions from the practice. J. ZEISEL (1997:xi) promotes that approach and underlies that *"design training emphasizes making decisions and taking risks, while research training stresses the importance of testing concepts and minimize risk"*.

These experiences and observations encouraged me to structure a research study on housing areas with the emphasis on a shape of outdoor space defined by buildings, trees, and topography. Urban space, vital for social life, too often is treated as random voids between solids, or leftover space after erecting buildings. In fact it is a concrete entity characterized by features, possible to examine. Formal properties are of great interest to architects because they refer to the architect's means of expression in realising a project. Formal categories used to be the rules, which had to be complied with if the building was to be 'beautiful'. Suspicion accompanied the formal approach to architectural issues in the times of functionalism when all formal aesthetic speculations were rejected. By putting special emphasis on the description of the spatial - structural form in this paper however, I wish to point out that negligence of the formal dimension is just as bad as reduction of architecture to form only. Ch. ALEXANDER (1964:100) describes the acceptable designs as *"fit between a form and its context"*.

Below I will describe and discuss two kinds of methods to analyse the structure of urban space. The first of these is based on the concepts used in Gestalt psychology and the other on site observation.

## 2. Methods Based on Concepts of Gestalt Psychology

### 2.1. Gestalt Psychology Concepts

A review of Gestalt psychology literature, including the work by Köhler, Arnheim, Koffka,

Strzeminski and their positivist experiments, provided a point of departure for an interpretation of perception useful in analyzing urban arrangements. The concepts taken up from gestalt theory included the good shape law, balance, closure, figure-ground phenomena, concavity and convexity, and principles of grouping. These were screened and found important in the perception of urban spaces and became useful in analyses of residential areas.

Psychologists Wertheimer, Köhler and Koffka started experimental psychological research on how a perceived object is determined by its context, configuration, meaning and even knowledge collected on the issue by the observer. A special place, among those analysing visual perception and reception of works of fine art and architectural masterpieces, is held by Arnheim, Gibson, Strzeminski, Zorawski, Sumien and Zeki.

While reviewing relations between form and its visual perception we see that certain elements of Gestalt psychology are particularly interesting for studying urban space in housing developments. These are balance, shape and form, dependence of the whole on its parts, closure and openness, tendency towards geometric forms, tendency to perceive the simplest of forms, rhythm, the convex and the concave shapes, interdependence of form and background, similarities and differences.

## 2.2. Analysis of Geometry

Geometry determines the overall configuration of urban arrangement, even if the mind of the designer, guided by intuition, is not necessarily concerned and consciously aware of geometrical dependencies. Sometimes the analysis uncovers the presence of geometrical figures and proportions favoured, according to Gestalt psychology, by users of space. According to E-G. VAKALO, (1982:150) some rectangles, transformed squares are used for shaping space more often than others. Among them, the rectangle called the square root of two, 1:1.41, rectangle called 1:1,5, developed by adding a half to the whole square and the golden rectangle proportioned 1:1.62. LE CORBUSIER (1970:68) has written *"Geometry is a language of man…But in deciding relative distances of the various objects, he has discovered rhythms, rhythms apparent to the eye and clear in their relations with another. And these rhythms are very root of human activities. They resound in man by organic inevitability, the same fine inevitability which causes the tracing out of Golden Section by children, old man, savages and the learned"*.

**Geometric analysis** refers to the general concept of the interior and urban composition, depicturing the principles of using spatial elements: planes and solids to define the form. The geometric analyses conducted demonstrate that application of angles deviating from right angles give an orderly effect when consequently repeated. The observer moving around urban interiors encountering the first intersecting walls which meet at an angle other than a right angle see it as a vexing deformation, a sequence of space developments with the same angle allow for recognition and acceptance of the applied

principles. The reasons underlying development of interiors with application of such angles are for example; the shape of land lots for the project, or wish to obtain a spatial illusion of lengthening or shortening the perspective.

Geometric analysis in this study focuses on the assessment of size, positioning, form, proportion, axiality, rhythm are supported by gestalt concepts of closure, balance, good shape law, concavity and convexity.

### 2.2.1. Closure

Closure characterises urban space, reflecting the subconscious human need for protection and security. This was expressed in the earliest societies by building dwellings in clusters surrounded by outer boundaries. Strictly defined squares, streets, and towns surrounded by defence walls were further manifestation of that phenomenon.

Gestalt psychologist Koffka experimentally demonstrates that closure is perceived as a strong distinctive feature, superior to factors of proximity and continuity. Figure 1 a. Vertical lines in his experiment, though close together are not read as a group. The study subjects identified lines closing space as groups, although the distance between the lines was threefold as compared to other lines lying closer to each other. The distance of short slanted lines is equal to the closest lying vertical lines. KOFFKA (1955:151) concludes the finding stating that *"close areas are self-sustaining, stable organizations"*.

The essence of space is its very "centre", not necessarily the geometric centre. An individual conquers space when he/she finds himself/herself inside it. Four vertical planes limiting space close it completely and constitute the most often met and the strongest type of defined space. Not only walls but also corners define space. Corners, their number, distance between them, vertex angles at which they intersect the walls dictate space development: triangular, square, rectangular, polygon, round, organic, etc. Therefore walls are the functions of corners. Corners indicated by detached, almost symbolic elements, e.g. columns, masts, tree trunks create imaginary, invisible (we draw them in our minds, linking particular elements as space corners) walls. This process results from our tendency to close interiors. On the other hand, walls, which do not intersect and are situated at a distance from each other,

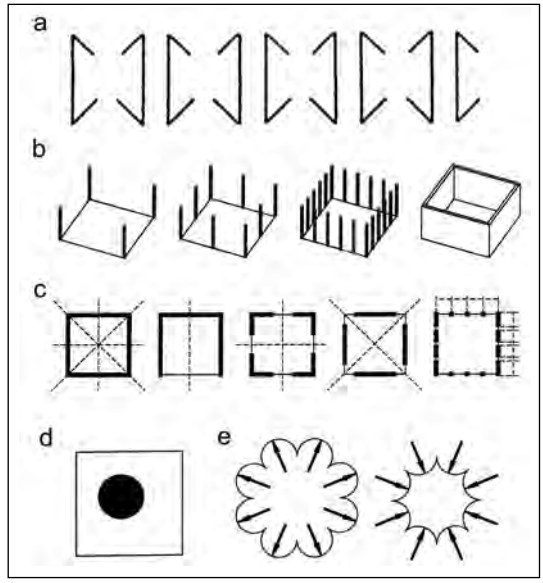


**Figure 1**
(a) closure is perceived as a stronger feature, superior to proximity and continuity; (b, c) degree of closure; (d) unbalanced location of a disc; (e) aggressiveness of the convex shape and passivity of the concave one.

stimulate our imagination to imagine corners and complete the definition of a given space.

Having conquered space in the defined interior evokes a deceitful wish to become familiar with its surrounding. Spatial or visual opening up is possible by openings in limiting planes. Openings provide communication and visual contact with neighbouring space. At the same time their number, size and location may reduce the degree of spatial closure. Figure 1 b, c.

The degree of closure can be presented as relation of the length of the part embracing space, to the length of visual openings. Location of openings is not without implication for the degree of closure. Gaps in corners open up space more than openings in the centre of the wall. Corners are the critical/hot spots. Morphological properties such as axis, balance, symmetry and rhythm are the function of arranging openings. Spatial closures, well-defined spaces, can be met in architecture on many levels: a square in a town, an atrium in a building or a room constituting part of a house.

### 2.2.2 Balance

Balance is a term, which appears in various fields, means a state of homogeneous spatial force in composition, where action is replaced by a state of rest. In a balanced composition such factors as size, shape, direction and location determine each other to such an extent that no change seems to be feasible. A composition lacking balance gives the impression of incidental, temporary. Attaining **balance** is suggested by many fine art theoreticians as one of the principles of creating a cohesive work of art.

Arnheim described in his work *Art and Visual Perception* experiment on elementary figures - a black disc on the white square background. Figure 1 d. Looking at the drawing observers start to distinguish the asymmetrical placement of the disc with reference to the boundary lines of the surrounding square. In the psychological laboratory of Stockholm University experiments were carried out confirming these observations. A black disc was moved around on a white square while the test subjects were to consider whether the disc showed a tendency to move in any direction and if so how strong this tendency was. Eight vectors assigned to particular positioning of the disc showed the noted movement tendencies. Arnheim called the discovered pattern the *structural skeleton of a square*. The positioning of the disc on one of the skeleton features introduces an element of stability.

Other factor affecting balance revealed is the weight (gravity) of the element depending on its size and other distinctive features (texture, colour, brightness). Experiments conducted by psychologists show that if we ask somebody to divide a perpendicular line in half the mark is in the decisive majority of cases too high. And when the line is split in the middle it is difficult to believe that the top half is not longer than the bottom half. Obviously, ways of achieving balance may be quite complex - balance does not require symmetry. The opinion of Bruno ZEVI (1957:194) is worth reference here, due to his explanation of the difference between

symmetry and balance *"if we place the same number of weights on the two pans of the weighing scales the scale will be balanced; if we position them identically on both sides of the scale we obtain symmetry, however if on one side we place the weights one on top of the other and on the other side horizontally in a row - we obtain balance"*.

### 2.2.3. The Good Shape Law

Gestalt psychologists adopt the ***good shape law*** as the principal law in visual perception. The law states that the observer has a tendency to see every geometric pattern simplified. This also reflects perceptive ability to recognise configurations on the basis of minimum information or stimuli. Human being systematizes own perception of the environment in the simplest and most organised manner. Slightly irregular figures are perceived as regular ones. KOFFKA (1955:168) studied the reception of an irregular 12-vertex polygon, where only four vertex angles measured 30 , the rest measured more or less. The observers perceived the polygon as absolutely regular. SITTE (1965:9) says that observer is not able to perceive small irregularities of space and the precise estimation of the angles without measuring devices is not possible. This example can validate the thesis that people living in a self created environment, dominated by solids and space governed by right angles, see figures slightly deviating from rectangles as rectangles.

### 2.2.4. Concavity and Convexity

Concavity and convexity are line, plane deformations attributing remarkably strong features to the line, plane depending on the direction of deflection. A **convex** shape, taking up space, becomes something independent and detached defining the generated figure. We naturally associate an object with a convex form, while the concave form is perceived as background. By affecting the environment from which the convexity cuts out space, the convex object has an element of dynamism expressed by its tendency to move towards this space. Concavity on the other hand withdraws space leaving a hollow, niche, a tempting interior waiting to be filled in. Deflection seems to be the result of external forces giving a passive character to the concavity. Rudolf Arnheim illustrates the aggressiveness of the convex shape and yielding passivity of concavities. Figure 1 e.

Considering this principle, with reference to walls defining urban interiors and the shape of the interiors themselves, we notice that the convex façade gives the impression of guarding the dynamic, bursting interiors. In effect, a convex wall gives concavity to the urban space, which it defines. It emphasises the independence of the object, significantly reduces the importance of external space to that of surrounding environment.

A concave façade becomes a special fragment of the wall surrounding space creating a convexity of the urban interior. It attracts, invites to enter and is often used as entrance part of buildings. Convex form of an urban interior gives positive impressions of feeling welcome, whereas concave forms suggest distance, leads us around.

## 2.3. Analysis of Distribution of Unique and Repetitive Elements

Analysis of the occurrence of **unique and repetitive** elements requires the revealing of spatial or formal properties, which result in perception of elements as single or repeated. A unique element is defined through possession or lack of attributes distinguishing them from repetitive elements. Size, orientation, location, shape, configuration, colour, material, texture and function might be the factor, which facilitates the distinction.

Repetitive and unique elements are the tools influencing the overall composition and perception of residential area, which usually consists of homogeneous tissue: houses of similar volume, shape, roof angles, material etc. The skilful distribution of unique elements enriches the urban environment, provides the sense of orientation. **Repetition** and **uniqueness** of elements can take place on various scales, levels in the urban arrangements. It may occur in the plan, section or facades. One of the difficulties faced in designing housing developments is the homogeneity of tissue used for developing the housing environment.

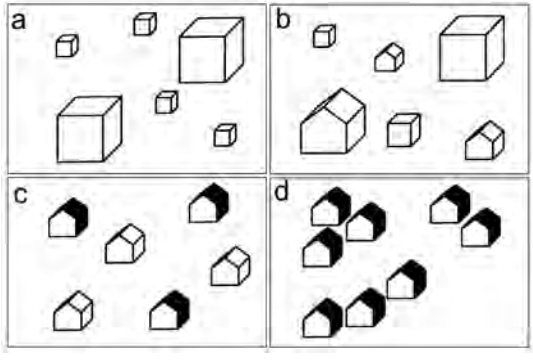


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Figure 2
The rules of grouping are based on similarities, the degree to which parts of composition resemble each other in some perceptual qualities: (a) similarity of size; (b) similarity of shape; (c) similarity of brightness or colour; (d) similarity of location.

Homogeneity and functional likeness of the development gives the impression of monotony. The use of unique elements solves the problem but requires considerable skill of the designer to maintain cohesiveness of the housing development. The tendency to leave an imprint of one's personal brand in the housing environment may have an adverse effect on the surrounding environment whereas common arrangement features may contribute to a feeling of solidarity between the inhabitants. Proposed analysis of repetitive and unique elements is based on the gestalt principle of object grouping.

### 2.3.1. The Principles of Object Grouping

Gestalt psychology experimented on assigning to groups certain elements of relatively chaotic compositions. In effect the principles of object grouping were developed, principles essential for considering similarities, repetitions, and uniqueness of architectural elements. People have a tendency to identify and next group similar elements. Every aspect of perception - size, shape, brightness, positioning in space, orientation, colour, movement, etc. - may result in similarity-based grouping. Repetition is the repetitive use of an element or feature in the composition as a whole. **Repetition** is subject to grouping, also gives rise to rhythm. When it is applied immoderately may result in boring spatial organisation when applied subtly orders space arrangements.

The rules of grouping, first formulated by Wertheimer refer to factors that cause that some elements of the composition are seen as belonging more closely together than others.

According to Arnheim the rules of grouping are based on similarities, the degree to which parts of composition resemble each other in some perceptual qualities. Figure 2.
He suggests the following types of similarities linking elements into groups:

- similarity of size Figure 2 a.
- similarity of shape Figure 2 b.
- similarity of brightness or colour Figure 2 c.
- similarity of location Figure 2 d.
- similarity of orientation

## 2.4. Figure-ground Representation

Every urban environment may be presented as a pattern comprising figures and backgrounds. Graphic representation of the figure-ground phenomenon can serve as an instrument illustrating structure, order of urban space and mutual relations between solids and voids. The synthesised picture clearly shows surface relations between build up areas and open areas, helps to ascertain the hierarchy of urban space, variety of size and degree of closure. The balance between open space and solids is of key importance for the town, district or housing structure.

If urban space has a precise, defined shape, when plans for it are of the same importance as the surrounding buildings the observer can experience a reversed reading of the figure-ground picture, open space will be perceived as solids. When we look at a plan where open space is badly developed the phenomena of reversed reading will not be possible and the buildings would be seen as figures/solids and space between them as

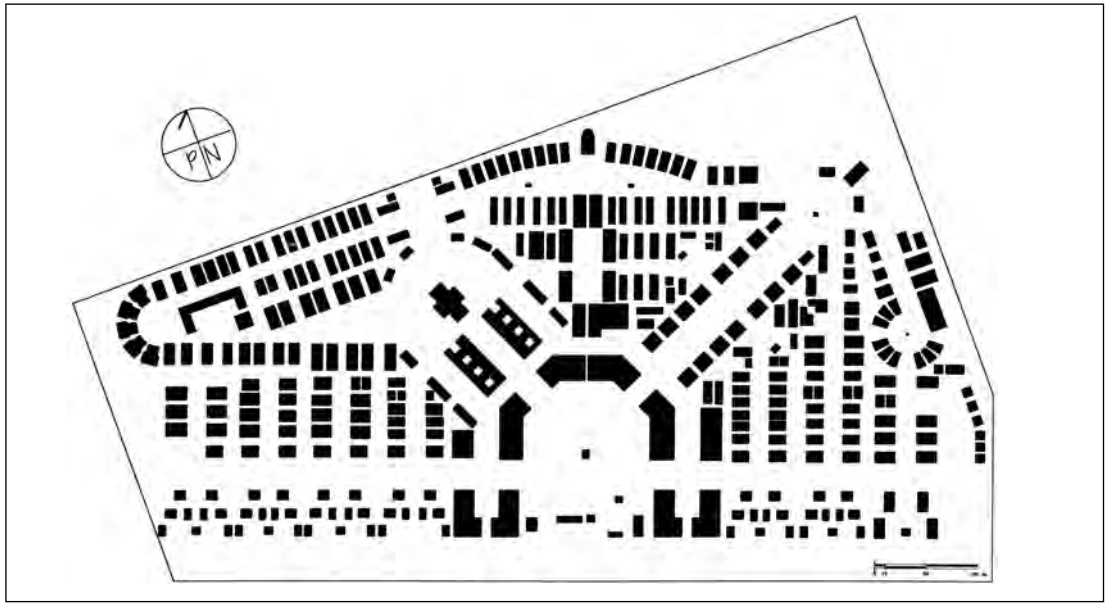


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**Figure 3**
Case study - Figure - ground representation of Seaside, Florida. The synthesised picture shows surface relations between built up areas and **open areas**, the hierarchy of urban space, variety of size and degree of closure.

background. In the urban arrangement consisting of detached objects, often high buildings characterised by relatively small footprint, the urban tissue looses continuity and linkage qualities.

It is interesting to mention that already in eighteen century Giambatista Nolli draw the map of Rome in a manner resembling figure-ground representation. Open spaces on his map are carved out in the build up volumes and give a more figural impression than solids that define the space. The building mass gives shape to urban interiors: squares, streets, pedestrian pockets, inner block space, and parks.

Figure - ground representation facilitates assessment of balance between voids and solids in the arrangements studied. It illustrates structure, linkage quality, and interrelations between open spaces themselves and buildings. Clearly defined open space allow for a reversed reading of the figure-ground image. Voids - background appear as solids. The reversed reading is not possible to be perceived, when the urban space is not clearly defined.

### 2.4.1. The Figure-ground Phenomenon

A pattern with two forms usually gives the impression that one form occupies space while the other provides the background for the former. A simple line drawn on a piece of paper is an object on a shapeless background. If the line takes on the shape of a contour, e.g. a circle we tend to see the contoured area as a circle, a flat disc. The question which elements are perceived as objects - the figure on top, and which are not objects - the background, is ambiguous and required extensive studies to be made by gestalt psychologists. Pioneer works were carried out by Edgar Rubin in 1915 specifying principles which surface is perceived as a figure:

- we tend to see a contoured surface (which seems to be more dense) as a figure and the surrounding area as an unlimited background;
- the second principle stemming from the first says that we perceive the relatively smaller object as the figure;
- stronger texture, density, mass singles out an object from the background;
- if there are two areas split horizontally there is a tendency to see the lower part as the figure. This conforms to the environment of the observer where objects are usually perceived in circumstances "where the background e.g. the sky or a wall which take up to more or less the upper part". The same rule applies if we turn it upside down and the black part is found below;
- simplicity of shape - particularly symmetry
- predestines an area to the role of a figure;
- the case is similar with object orientation in line with typical direction - vertical or horizontal;
- convex shapes implicate figures, concave
- the background;
- movement singles out an indistinctive figure from the background.

## 3. Methods Based on Observation

### 3.1. Circulation-to-use Spaces

Circulation and spaces are the most important dynamic and static elements of the residential area. The communication layout: vehicular and pedestrian is a determining factor for how the area is perceived by its inhabitants. It determines the location of entrances, the hierarchy of importance of spaces; it is a cognitive tool for composition. The question how a given system is experienced by the observer does carry weight. The interdependencies of spaces and communication routes influence directly the pattern of spatial arrangement, which can be linear, central, elongated, condensed. The analysis is a tool for discovering the spatial organisation of the arrangement and helps in evaluating composition, repetitive and unique elements, geometry, symmetry, and rhythm. The contemporary community environment favours convenient and safe movement to all places in the neighbourhood. Local access streets provide frontage to lots and by design carry no traffic other than that generated by the street itself. They are planned so that motor vehicles using them have to be driven slowly, thus making conditions safe for variety of neighbourhood activities. They are either cul-de-sacs or loops. Christopher Alexander suggests that the street is safe if the number of vehicles used by inhabitants does not exceed 50. So fulfilling this recommendation the length of the street will differ according to the number of cars per household.

Almost a hundred years ago, in 1906, the architects Unwin and Parker, when designing the Hampstead Garden Suburb, as the response to increasing vehicular traffic, promoted a hierarchical network of minor and major, paved and unpaved, wide and narrow streets that led to the invention of both of the cul-de-sac and the secondary and the service road. But they were forced to struggle against UK bylaws. These required the layout of new streets according to rigid specifications on straight lines, but the architects managed to pass the Hampstead Garden Suburb Act and restored the legality of the outlawed cul-de-sac.

### 3.2. Private, Semi-private, Public and Semi-public Space

Analysis of interrelations between: private space, semi-private, public and semi-public illustrate their size, mutual positioning, and contact points. Access to particular parts of the urban arrangement for various users is determined by reception of the composition as a whole. An important issues, demanding special care are the edges - contact points between neighbouring spaces of different categories. In the case of undesirable adjacency of public and private space it is necessary to meticulously develop the transitional zone. Possible surrogates include, among others, varying levels/ elevations of neighbouring spaces, or esthetical visual partitions to allow proper functioning of these spaces and their isolation. Proper proportion between public, semi-public, semi-private and private spaces and their distribution are vital for the social qualities of the area.

C. STEIN (1973:66), Ch. ALEXANDER

(1977:86) recommend 20-30% of neighbourhood area should be used as common space. In any environment space may be occupied by a number of users, some of territories may overlap, while others are strictly delimited. This requires a form of boundary notation, which makes it possible to identify each territory. The boundary elements may include: walls, tall fencing; boundary symbols like lower fences, changes in ground elevation, etc. The perception of space is dynamic and more concerned with the potential actions that may take place there, then the shape of the space itself. The qualification of space by means of senses relies upon the way in which the person will act and interact with others within it. The factor of distinguishing space is it's belonging to a household, group or society. Surveys show that people in post Soviet countries experience the difficulty with respecting different types of spaces, which causes some misunderstandings and social problems.

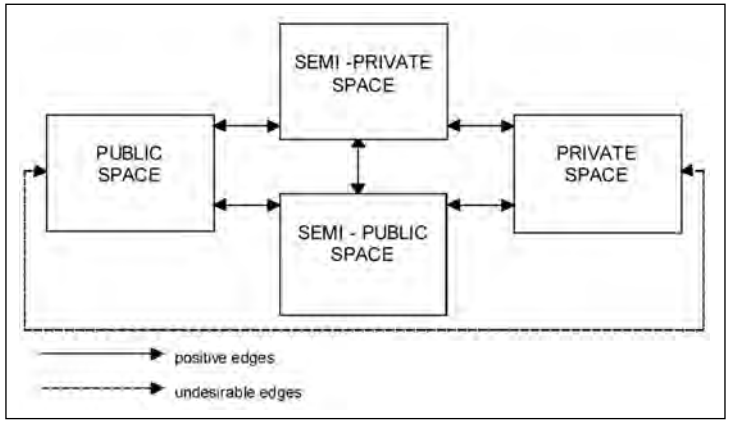



**Figure 4**
Edges and connection of different types of space is important for the functioning and perception of the housing area.

**Private space** is the territory belonging to a person or family. In the legal sense a lot with a house, usually constitutes a legally owned property. In order to create a feeling of intimacy and isolation the private space is separated from its surroundings. Semi-private space, even though it is privately owned, is open with the consent of, or by the will of the owner. It is thus available for others in a limited way (non-fenced front lawn, entrances, porches). Unfenced or symbolically delimited front gardens surrounding a court or cul-de-sac optically enlarge the semi-public space of the **street**, **square**. In such case the legal rights of ownership are secondary for the identification of the type of space.

**Semi-public space** - in single-family housing groups of houses - may delimit blocks of development, which are identified by its inhabitants through a set of signs and symbols. Also, in a single family housing, the semi-public and **semi-private spaces** located 'inside' of a larger territory create a new kind of space: communal space, enhancing the safety of the inhabitants, by creating a feeling of sharing a common responsibility for it. When a space is shared by a growing number of people, its broad availability finally leads to the formation of an open public space. In the case of one-family housing developments we can always constitute it as the space of transit roads, common squares and parks, available to all inhabitants, their guests and random passers-by.

The presence of a certain amount of public and **semi-public space** creates a feeling

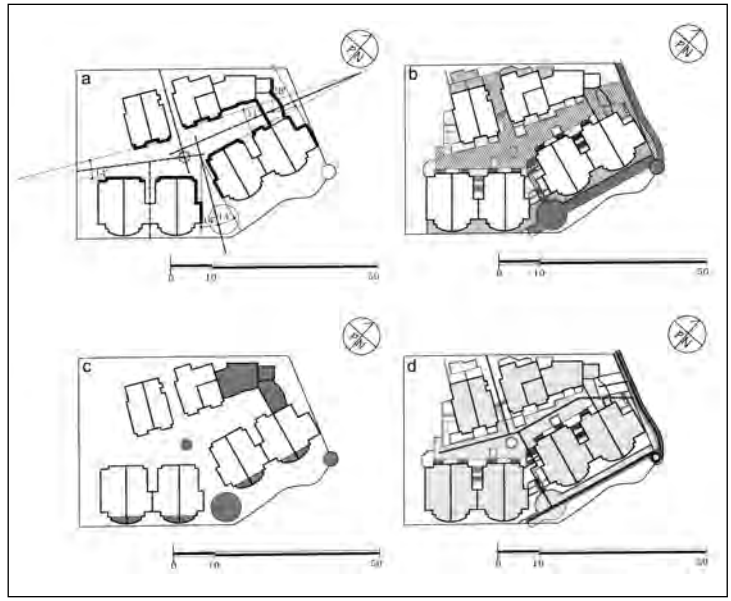
of belonging to a larger social group and the basis for such functions as meetings and other activities of living in an aggregation. The relations between these spaces, based on their locations seem to be most important.

## 4. Analysis and Diagrams as Graphic Representations of Spatial Properties

The analysis, applied to selected case studies of residential areas, was organized as descriptions, sets of conventional drawings - maps, plans of the sites, plans of buildings and elevations - and diagrams. The diagrams were developed as simplified representation of the residential area to convey essential characteristic and relations. This elimination of all but the most important features makes those remaining easier to notice, compare and remember.

As a result five means of graphic representation of urban space were developed and tested:

1. Figure-ground representation Figure 3,
2. Geometry Figure 5, 6: a;
3. Proportions between public, semi-public, semi-private and private spaces Figure 5, 6: b;
4. Repetitive and unique elements Figure 5, 6: c;
5. Circulation patterns: vehicular and pedestrian in relation to urban spaces Figure 5, 6: d;

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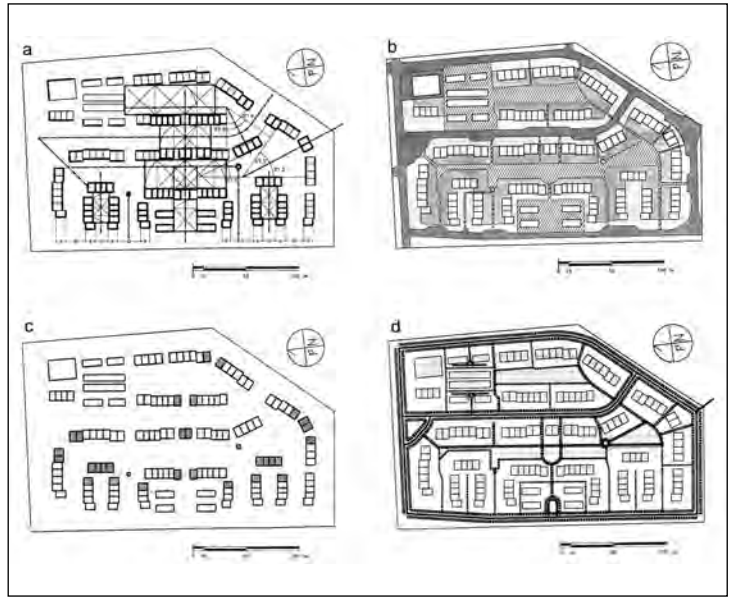


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## 5. Four Case Studies

Four cases (WLODARCZYK, 1996: 88-125) were selected carefully, using the criteria of urban location, satisfactory maintenance of the area, affordability, efficient land use and intentionally representing range of time to work out the methods. These were:

- Ojcowska, Skarpowa in Gdansk, Poland (1927-1929)
- Seaside, Florida, (1981) Figure 3
- Edgecliffe on the Rideau in Ottawa, Ontario (1987) Figure 5: a,b,c,d.
- Chatham Village in Pittsburgh, Pennsylvania (1931) Figure 6: a,b,c,d

The selection of examples and time span are to provide an opportunity to study one and multifamily housing, various urban arrangements implemented at different time, the size range of analysed urban arrangements varies from 0.3 ha (in case of Edgecliffe on the Rideau) to 32 ha (in case of Seaside), the types of houses. The spread was intended to validate the applicability of the proposed analysis to various scales. Of importance here was the development of the tool of analytical diagrams, convenient for discussions and comparisons.

**Figure 5**
Edgecliffe on the Rideau in Ottawa, Ontario (1987)
(a) geometry
(b) proportions between public, **semi-public**, **semi-private** and **private spaces**
(c) **repetitive** and **unique elements**
(d) circulation patterns.
(left)

**Figure 6**
Chatham Village in Pittsburgh, Pennsylvania (1931)
(a) geometry
(b) proportions between public, **semi-public**, **semi-private** and **private spaces**
(c) **repetitive** and **unique elements**
(d) circulation patterns.
(left)

## 6. Using the Methods in Neighbourhood Design

### 6.1 Application

The research findings were finally applied in a newly built neighborhood, designed by the author. (WLODARCZYK, 2003:19-25) Suchy Dwor in Gdynia, the 5-hectare residential area (a part of a bigger housing enterprise for 2000 inhabitants) consists of 67 affordable one-family houses: detached, semidetached and organized into triplexes. There are several types of houses, different in size: some for traditional families, other smaller for single-parent families or single persons. The affordability measure was to propose a dwelling, the cot of which was calculated to be the equivalent of the price of a flat in a slab building.

When creating the housing area main efforts were done to realize:

- affordability as well as grow home concept
- influence of inhabitants on interior design
- heterogeneity of income and age
- integration of different housing types
- harmonious architecture
- smaller lots
- security
- urban spaces enhancing social contacts tested by private, semi-private, public relation diagram
- urban space well-defined - linkage quality of urban interiors
- streets not generating through traffic

The implementation of some of these proposals was slightly tempered by the market-oriented developer, but many of them were realized.

### 6.2.Evaluation of the Newly Built Area by the Residents

As a final step, after the residential area was completed and inhabited, the urban design of Suchy Dwor was evaluated by a questionnaire

addressed to the new inhabitants. (WLODARCZYK, 2003: 7-12) The questionnaire was formulated by a sociologist and the research carried out by a group of trained interviewers and students of architecture. The study was conducted as an open questionnaire on a random sample of 35 households.

The questionnaire (in appendix 3 of the same source) covered the following issues:

- the inhabitants' image of the **community**
- the inhabitants' identification with the **neighbourhood**
- issues which trouble inhabitants and require immediate resolution
- the perception of the neighbourhood's urban spaces, pedestrian routes
- safety issues
- the inhabitants' expectations about optimal **residential environment**

Interestingly, in addition to answers of the questions in the questionnaire, many unexpected remarks, problems and suggestions were brought up during direct contacts with the inhabitants. Remarks and suggestions popped up, some of which could be taken into account during the development of the neighbourhood, while others constituted creative ideas for further work.

## 7. Conclusions

1. The structural analysis approach proposed in the paper facilitates better understanding of the spatial organisation/ arrangement of housing development. The usefulness of the approach is validated by the fact that results/diagrams reveal considerable diversification of solutions in the studied arrangements, seemingly very similar at first glance.

2. The urban arrangement, treated as a cohesive entirety, may be divided into several layers, which, though interrelated, may be, up to a certain moment, studied separately. This also means that the suggested method for urban analysis can be supplemented and developed to ensure more comprehensive descriptions and understanding of spatial structure.

3. Analytical studies of existing arrangements provide an opportunity to re-discover, or "dive anew" into, the ideas and intensions of designers. This will facilitate the recognition of principles governing development of housing, including principles in historical solutions, which may be incorporated into contemporary design.

4. The proposed analytical approach provides an opportunity to learn about the shape, structure and functioning of residential areas, and may also be used in both designing and presenting concepts.

5. The method presented in the paper, putting emphasis on evaluation of the entire urban composition by analysing its parts and interaction of parts, may also find application in didactic work. In the process of analysis, students have an opportunity to discover problems and key issues by themselves, to supplement the information given.

6. Gestalt psychology concepts and the

results of studies on spatial perception are important tools in the process of analysing urban interior forms. It provides support for the designer in translating human expectations into the appropriate architectural form.

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# 13 EMPIRICAL ANALYSES ON HOUSING VACANCY AND URBAN SHRINKAGE

*Sigrun KABISCH*

## Abstract

*The paper reports current experience in the empirical analysis of housing attitudes and behaviour in the context of housing vacancy and urban shrinkage processes. One new, unexpected urban development is that east German cities are becoming increasingly beset by empty housing. The main counterstrategy is urban restructuring, which includes various projects designed to strengthen the core city potential for better housing conditions and a higher quality of life to counteract out-migration. Current urban policy is directed towards razing both empty and nearly residential buildings in response to the dwindling population. Moreover, economic problems are forcing housing owners to demolish parts of their building stock. For the first time in German housing history, residents are witnessing the demolition of apartment blocks in quite a good state of repair in their neighbourhood. Furthermore, the decision to knock down an almost vacant block compels the remaining residents to leave their homes. There is hence an urgent need for instruments and mechanisms to create an atmosphere of understanding, involvement and co-operation among all the actors involved.*

*This research includes both residents and decision-makers. To obtain a deep insight into actors' situations and behaviour dynamics, in-depth interviews with experts and residents are indispensable coupled with more standardised methods which address a high proportion of the local population. The technique of an elaborated questionnaire survey is described which guarantees high quality results and an excellent response rate. Moreover, it has already been tested successfully in several cultural contexts abroad.*

**Keywords:** *Questionnaire Survey, Response Rate, In-depth Interview, Urban Restructuring, Housing Needs*

## 1 Introduction

Dealing with various issues in housing research always involves the consideration of complex, interdependent questions. In order to determine appropriate methods to analyse the research topic, hypotheses need to be formulated depending on the specific aspects addressed by a study. The most suitable methods for the investigation can then be decided.

Apart from this thematic background, the decision also depends on the stage of a research topic. If for instance a very new research field is being explored and there is no experience of dealing with it, mostly qualitative approaches such as in-depth or expert interviews based on certain guidelines are appropriate. The aim of such an explorative approach is to generate basic information about the issue. Attention also needs to be paid to the suitability of using quantitative methods such as questionnaire surveys.

In addition to these aspects, the decision is determined by the aim of the study itself. If it addresses an issue that does not allow quantitative methods to be used, the right qualitative methods have to be chosen. Finally, the selection of methods to use is also a question of capacities such as manpower, the financial budget and time scale. All these issues have to be taken into account within housing research, which currently faces new situations in housing and urban development.

The sociological research programme is focused on shrinkage and its counterstrategy **'urban restructuring' (*Stadtumbau*)** with respect to the key issue 'housing'. The understanding of urban restructuring as a specific catchword in the east German housing context includes comprehensive strategies to strengthen the core city potential for better housing conditions and a higher quality of life within the city limits to counteract ongoing land consumption on the urban fringes and out-migration. The aim is to develop solutions and policy recommendations to deal with the new challenges of urban and **demographic change** within the urban population and the phenomenon of 'shrinkage' in terms of the numbers of inhabitants, jobs and infrastructure facilities in many European agglomerations. Thus, work centres around investigating the attitudes and behaviours of the different groups of inhabitants, describing changing household patterns and lifestyles, and analysing supply and demand on the housing market in connection with residents' needs. The research addresses inhabitants in residential areas which are faced by problems of vacant housing and subsequent demolition, including when buildings are still partly occupied. An appropriate **methodological design** has to be developed and tested for this framework. The **methods** should then be **critically reviewed** to determine the best methodological ways to cover this new scientific issue - one that is frequently ignored in publications.

The following chapters start with a brief description of the housing situation in **east German cities**, which is shaped by housing vacancy and dwindling numbers of jobs and inhabitants. Strategies to counteract these phenomena under the heading of urban

restructuring are listed. This brief overview of the research field is followed by a discussion of the scientific approaches. The quantitative and the qualitative methodological designs are described. An elaborated questionnaire survey method, specified in several of the author's urban sociological research projects, is presented. To provide an impression of the concrete empirical field work, selected results of the author's current study on the residents' perceptions of **housing vacancy** and urban restructuring in the town of Weisswasser are introduced (KABISCH, et.al., 2004). Finally, the conclusions summarise the appropriateness of the mixed research design for different housing studies.

## 2 Urban Restructuring - The Challenge of Dealing with Vacant Housing

For the first time in German housing history, instead of a housing shortage, an **overspill of dwellings** has become a serious socioeconomic, political and urban problem. This new phenomenon leads to new correlations of forces and opportunities for real choices on the housing market. It creates a new paradigm in urban development based on the shrinking numbers of inhabitants combined with demographic change, economic decline and sharp socioeconomic differences between regions. Yet new constraints, obstacles and disadvantages in urban development have also emerged. The future existence of the urban body is in many cities uncertain. Thus, within urban restructuring, a completely new strategy has to be created in order to adequately respond to the problem of **shrinkage** instead of urban growth (KEIM, 2001; BBR, 2003; KABISCH, et.al., 2004).

To understand this situation from a sociological point of view and to work out practical recommendations, collaboration with local authorities, housing enterprises, developers, bankers and other practitioners is essential. However, the main focus is on the residents in housing districts facing urban restructuring in its current stage primarily as the **demolition of blocks**.

### 2.1 Massive Housing Vacancy - A New Phenomenon of Urban Development

The specific emphasis of the research is geared towards vacant housing as a huge untapped resource. In eastern Germany, more than 1.3 million apartments (17% of the housing stock) are empty. At present, there are grim predictions that the number of vacant dwellings will reach between 1.5 and 2 million by 2030 unless countermeasures are taken (BMVBW, 2000:12). Yet the problem of vacant housing is not restricted to east German cities; it is also increasingly emerging in old industrialised regions in western Germany in response to **growing unemployment** and the **aging population**.

Housing vacancy is first and foremost an unintended consequence of several economic, demographic and housing market processes in the course of **urban transition** "from the socialist

to the capitalist city" (HAEUSSERMANN, 1996:214). In contrast with many other East and Central European countries tackling the challenges of the transition of the political and economic system, housing shortage is not yet an issue (ANDRUSZ, et.al., 1996; MUSIL, STRUBELT, 1997; RIETDORF, et.al., 2001), although initial instances are now emerging in old industrial regions in the Czech Republic. Hence, dealing with the problems in eastern Germany may yield important results which can be used to develop problem-solving strategies in other European regions.

The consequences of housing vacancy and population decline for urban life are diverse and contradictory (KABISCH, 2002:38-43). At present, unoccupied dwellings are to be found not only in dilapidated buildings but also in well refurbished and new residential buildings, often in the vicinity of each other. Furthermore, both inner-city residential areas dating from the 19th century and prefabricated housing estates on the outskirts of big cities are beset by unoccupied apartments. The public debate (including the media) mainly revolves around the large prefabricated housing estates as a symbol of the communist housing policy that needs to be eradicated. However, serious analyses indicate that this type of housing is essential to meet the needs of several residential groups. Thus, intelligent projects designed to upgrade this housing type are required in order to improve the integration of these estates in the urban body (RIETDORF, et.al., 2001; HALLER, 2002). Nevertheless, if there is no continuation of housing refurbishment activities because of a lack of demand, the image of all of these areas will suffer: the out-migration process of city-dwellers away from these areas will continue, with whole **neighbourhoods deteriorating**.

Some of the inner-city bourgeois areas offer appropriate preconditions for gentrification, e.g. being located near the city centre, architecturally valuable buildings, quite good apartments at relatively low prizes etc. But, many blocks - in bad and in good state of repair - are empty or partly empty. In actual fact the number of urban dwellers who could reshape whole neighbourhoods in the sense of gentrification is too small.

Another serious outcome of oversupply is that housing companies and private housing owners find it difficult, to say the least, to cover all their costs and to continue refurbishment. As a result, the process of renewal has ground to a halt in many urban districts. Whenever leaving a neighbourhood and finding better housing conditions elsewhere are relatively easy, many households simply move out. The living conditions then deteriorate for those residents forced to stay because they are not mobile (e.g. the elderly, the handicapped, and those with strong ties to the quarter), with for example shops and other infrastructure facilities being closed down. Neighbourhood networks collapse. Consequ-ently, formerly stable residential areas fall into social and structural decay.

The new phenomenon of 'shrinkage' - too many apartments for too few households combined with demographic changes and post-socialist transition in a very short time period -

calls for innovative strategies in urban policy. At the moment, local councils are seeking new ways to stabilise the number of inhabitants at a lower level and ways of qualitatively changing the urban structure in order to improve the quality of life. Although urban players agree on the necessity of involving residents in the decision-making process, how these participation processes can be successfully organised is unclear.

## 2.2 The Initial Situation: Demographic Development and Changes in The Housing Stock

In the last part of the 20th century, eastern Germany lost 9 per cent of its population, which dropped from 16.7 million in 1988 to 15.2 million in 2000. Newest figures by the federal statistical office revolve around 13.8 million in 2003. This shrinkage is still underway and significant reversals are highly unlikely. In particular, the number of urban inhabitants has declined dramatically since German re-unification in 1989. There are two main reasons for this. The first is the **out-migration** of 1.35 million inhabitants (especially younger and well-trained people) to western Germany in search of employment after many businesses in eastern Germany collapsed. The lack of jobs and the shortage of economic alternatives compelled many people to leave their home and to migrate to prosperous regions. The second reason was a sudden **drop in the birth rate** to a very low level by international standards because of the future insecurity caused by careers and training courses suddenly being interrupted (KUCERA, et.al., 2000; BIRG, 2001).

As of the mid-1990s, a suburbanisation trend had prompted young families with children and other households with sufficient income to relocate to smaller communities adjacent to urban areas where the housing and living conditions appeared much better (cheaper housing, faster planning permission, and the availability of family houses with a garden). Blocks of flats for rent were also erected in these areas on the fringes of towns and cities, providing a standard of housing unavailable at that time in the core cities.

Consequently, apart from the decline in the number of inhabitants, the inner-city demographic structure shifted towards older age groups. Moreover, the social structure of the population changed, with the cities losing a large part of the population with stable incomes who were engaged in neighbourhood networks. These circumstances were bound to have an impact on the housing market, although the actual changes did not become apparent before the end of the 1990s.

## 2.3 Government Incentives and Changes on The Housing Market

Since the early 1990s, housing construction and refurbishment have been financially supported by the state. In 1990 there were half a million applications still pending for housing in eastern Germany, indicating a huge demand. Single-person households and young couples as well as new household types (e.g. patchwork families) in particular were looking for suitable

housing (or just even a dwelling of their own). The large number of new household types is the main reason for the increasing number of households (+ 300,000 in the 1990s) compared with the decreasing number of city dwellers. In response to this demand, the federal government introduced additional statutory regulations, tax relief and subsidies to promote housing construction and refurbishment. This made investing in the housing sector a very attractive proposition for investors from outside (mainly from western Germany).

Within just ten years, 690,000 new apartments were built. Additionally, about 75 per cent of the older housing stock was refurbished. The first positive result in several east German cities was the new appearance of many inner-city neighbourhoods. Another positive consequence from the tenants' viewpoint is the decline in average net rents, meaning that even lower income groups can afford to live in quite good apartments.

However, on the downside it is estimated that more than a million apartments were unoccupied by the end of the 1990s. Since the housing stock in eastern Germany comprises 7.5 million dwellings (compared to 30 million in western Germany), 17 per cent are therefore empty. Within just a few years, a huge mismatch between the number of households and the supply of apartments emerged. Thus, many housing owners and housing companies (including housing co-operatives) ran into trouble regarding the financing and managing of their services and the long-term preservation of their housing stock. The amount of housing vacancy has reached a threshold value entailing serious consequences, including insolvency. Housing owners are frequently unable to continue refurbishment schemes or complete restructuring projects. In the parts of the cities affected, the dilapidation combined with social erosion is becoming obvious.

In order to counteract housing vacancy, new alliances are necessary between local authorities, residents, developers, investors, etc. to identify and realise the potentials for the improvement of residential quality. This includes the combination of satisfactory housing and ecological conditions. There are different strategies for dealing with the phenomenon of housing vacancy: (a) razing empty buildings, (b) promoting the purchase of inner-city apartments instead of family houses on the urban periphery, (c) rebuilding according to the specific needs of residents, (d) preserving architecturally valuable buildings, (e) redefining of the use of residential buildings (KABISCH, 2002:46-50).

The strategies are regarded as both a requirement and an opportunity to upgrade residential areas. In urban reality, a mixture of different strategies is necessary to deal with the huge number of vacant housing units by exploiting new chances to stabilise and improve urban life. It is clear that not only construction measures (such as demolition) can solve the problem. This complex issue needs the consideration and integration of social aspects with respect to the perceptions and evaluations of the residents, economic aspects such as

financial conditions, legal aspects in the sense of homeownership, and responsibility for the future use of urban land following the demolition of apartment blocks.

### 2.4 Actors and Instruments in The Restructuring-Process

In order to determine appropriate recommendations and solutions for the new challenges in urban development geared towards restructuring, **co-operation** among experts from different fields and various decision-makers is indispensable. Local authorities, housing entrepreneurs, urban planners, architects, financing institutions and last but not least residents be involved.

In 2001, the German government decided to launch a programme entitled "Stadtumbau Ost" (Urban Restructuring East). More than €2.7 billion will be spent in 259 towns and cities to support restructuring processes based on a masterplan including the demolition of empty buildings and upgrading inner-city living conditions (BMVBW, 2003:8). Within this programme, scheduled to run from 2002 to 2009, cities are or have already worked out **"Integrated Urban Development Plans".**

One major point is consideration of the expectations and fears of inhabitants who experience the demolition of parts of their physical neighbourhood and who themselves will be affected by relocation should their residential building be condemned. **Relocation** not only means leaving behind a home and social networks (especially with neighbours), but may also comprise rising rents for newly renovated apartments and different social and infrastructural environment in a new residential area. Additionally, residents who live in the near vicinity of condemned apartment blocks are also affected, since they will have to deal with dust and noise during the demolition process. Moreover, an important **psychological component** needs to be mentioned. In prefabricated residential areas erected about 30 years ego, many present inhabitants still remember the construction phase. Over the past few decades, they have experienced the development of a new residential area with better housing and living conditions than they had before. Now they are faced by the decline and demolition of blocks of flats. These groups in particular find it difficult to understand the decisions for urban restructuring. For example, during the recent study in Weisswasser, a tenant described his feelings during the demolition of apartment blocks in the neighbourhood as follows: "I felt part of my life was being destroyed. It was like during a state of war. We found it to be a dreadful feeling. My flesh began to creep…." (interviewed tenant) (KABISCH, et.al., 2004:155)

A completely new view on housing satisfaction and place attachment is emerging. As AMERIGO and ARAGONES (1997:51) mentioned in their study on housing satisfaction, psycho-social aspects are stronger predictors than those relative to **physical features**, with primary importance being devoted to the built environment in a residential area facing demolition. This recalls and confirms the lesson from research tradition "that

the experience of home is grounded in the **built environment**. Through appropriation and personalization, people act upon and are influenced at once by their physical surroundings." (DESPRÉS, PICHÉ, 1996:6).

Apart from the residents, urban decision-makers also have to deal with these new problems and questions. In particular, the housing companies need new communication procedures in order to explain to their residents why apartment blocks need to be demolished. They have to offer incentives to encourage residents to move out voluntarily. The dissemination of reliable information and taking personal care of residents are indispensable. These are some of the new tasks arising, and the housing companies need psychological and sociological preparation to manage these challenges.

At the moment, no tried and tested rules and instruments exist. This is why scientific investigation is essential in order to observe and describe the whole process and to generate transferable knowledge on best practices.

## 3 Methodological Approach - Quantitative and Qualitative Design

Within this new research programme, it is crucial to combine qualitative and quantitative methods. The combined use of both method types may be advantageous for a variety of reasons. PHILIP (1998:271) stated among other things that "the use of more than one method of gathering evidence helps to minimise the risk of generating erroneous findings." The **combination of methods** allow the generation of empirical knowledge to explain new problem structures and constellations of actors, as well as to prove the theoretical assumptions. Ideally, the evaluation and interpretation of the results lead to the enlargement of both practicable, area-specific knowledge on the one hand and transferable, generally valid knowledge on the other. Furthermore, the improvement of scientific instruments and research strategies for gathering innovative research results can only be achieved by repeated critical review of the methodological design.

### 3.1 Experience in Carrying Out Quantitative Surveys

The empirical work mainly centres on **quantitative methods**. The favourite method is a **questionnaire survey**. The standardised questionnaires are distributed and collected by well-trained assistants, and completed by the respondents themselves. This survey technique guarantees a very high **response rate** of about 70-90%, which is the result of the efficient interaction between the high quality of the preparation of the research field, the design of the instrument and the survey procedures. In the Weisswasser survey, 666 questionnaires were distributed and 598 were collected and interpreted (90%). As a result, comparable studies on housing satisfaction and expectations which claim a response rate of 33% to be relatively high as in Vienna, Austria, conducted by POETZLBERGER, LECHNER (2002:58), have to be viewed critically.

### 3.1.1 Shaping the Instrument - The Questionnaire

Contents

The instrument must be constructed in line with the specific thematic objective of the study. The most important characteristic of the questionnaire is that it needs to be easily comprehensible. It must be borne in mind that the residents will usually answer the questions on their own, without the direct help of an interviewer. This feature is even more important than the length of the questionnaire. Both short and long versions (comprising 9-14 pages, i.e. 35-65 questions) can be used. Moreover, both open-ended and closed questions (multiple choice) are recommendable. For reasons of comparison, some selected well-tested indicators were used in all the housing surveys.

The questionnaire in the Weisswasser study starts with an explanation of the research project, instructions on how to answer the questions, and the addresses of the persons in charge of the project, as well as a local telephone number in the event of any queries and a friendly request for cooperation.

Afterwards, the questionnaire is divided into a number of main sections in line with the research-guiding hypothesis. Each section starts off with a brief introduction to the main subject. The first part covers the respondents' housing biography and their place attachment. It also addresses the residential environs, especially the ecological situation and outdoor facilities. Another part is dedicated to the nature and frequency of relations with neighbours, especially different ethnic groups. One main section focuses on the apartment, its fixtures and fittings, strengths and weaknesses, financial terms, and the relationship with the landlord. The next part deals with mobility intentions and with the **perception and evaluation of housing demolition** during the restructuring process. Finally, the respondents' socio-demographic structure is examined in detail. The final (open) question concerns assumptions and expectations regarding the future development of the residential area and the town as a whole over the next ten years.

The last page, which is kept separate from the rest of the questionnaire, asks respondents whether they would be interested in the results of the survey. A final question refers to their willingness to take part in an in-depth interview on housing to be carried out a few weeks after the survey. If they agree, they are requested to enter their address. In the surveys carried out so far, the rate of respondents giving their contact details was always unexpectedly high (around 25%), indicating both the high priority of the subject and low fears regarding the anonymity of the survey.

The questionnaire has to be piloted (pre-tested) in the field. This phase is very important to gauge its comprehensibility and applicability to the area concerned. About ten people living in the research area are usually asked to complete the questionnaire and provide feedback on whether any questions are difficult to understand. If necessary, the indicators and questions are subsequently revised.

**Figure 1**
Cover sheet of the questionnaire

Layout

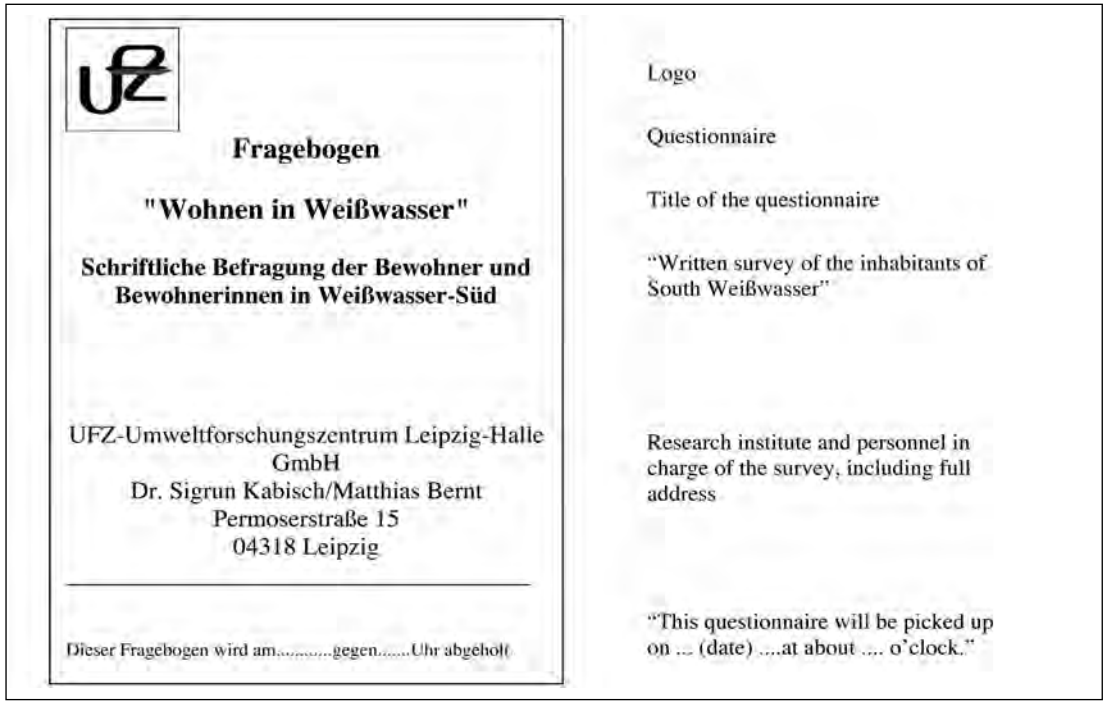
The cover sheet of the questionnaire is furnished with a memorable logo (preferably that of the research project and/or the institution carrying out the survey). At the bottom of the cover sheet, a line should be printed where the collection date can be entered (see Fig. 1).

The questionnaire should be professionally printed or photocopied. The preferred format is A3, with individual A4 pages. Colour printing can be used if the logo is in colour.

### 3.1.2 Preparation of the Fieldwork

The preparation of the fieldwork encompasses the training of the team and the preparation of the local research field. Regarding the **interviewer team**, assistants (e.g. social science students) have to be found for the empirical phase to distribute and collect the questionnaires within a two-week timeframe. The assistants have to be well trained and high motivated.

However, it is also advisable if the academics involved in the project participate themselves in order to get a sense of atmosphere and a feeling for the social circumstances in the research areas, as well as to obtain additional information not covered by the questionnaire. As a rule of thumb, each




1

assistant can be reckoned to distribute about 100 questionnaires if the area is not too big over three or four afternoons plus probably one additional morning (e.g. Saturday).

The assistants are informed: a) about the content and aims of the research project; b) about the structure and the content of the questionnaire; c) about the survey methodology. They need to be able to conduct an interview if a respondent is unwilling to (or for whatever reason cannot) complete a questionnaire on their own and to answer questions concerning individual indicators etc. The assistants are also instructed about their obligation to maintain confidentiality (data protection) and about how to act in critical situations to guarantee the safety of not only the respondents but also themselves (e.g. in the case of drunk occupants or dangerous dogs). Finally, they are provided with various materials:

- The printed questionnaires;
- Official credentials confirming that the assistant is a legitimate interviewer and that he/she has been instructed on data protection;
- A name tag including the logo used for the questionnaire and the information sheets (see Fig. 2);
- A map of the entire survey area with the exact part reserved for this assistant marked as well as a list of the names of the streets and the street numbers selected for him/her;
- Survey lists.

Details about the content, main aims and time schedule of the survey should be disseminated via the local media a few days beforehand. If possible the survey should be announced prominently in the main local newspaper, perhaps the district newspaper and the local authority's official gazette.

During the preparatory phase, key persons in the local community (the mayor, head of housing companies etc.) need to be contacted in order to explain to them the aim of research project and the nature of the results.

**Your building is part of the study area for the residents' survey "Housing and Urban Restructuring in Weißwasser" in March 2002.**

Dear Residents

As of Thursday, March 14, 2002, employees of the UFZ Centre for Environmental Research Leipzig-Halle will carry out a written survey dealing with housing and urban restructuring in Weißwasser.

The questionnaire contains questions on the following subjects: everyday life in the residential district, the residential environment and its changes during the last few years, housing satisfaction, moving intentions, and your views on the planned urban restructuring.

**Your views are needed!**
When one of our assistants rings at your door, he/she will want to give you a questionnaire. It will be collected again at an agreed time.

We kindly ask you to lend us your assistance and would like to thank you in advance for your support.

UFZ Centre for Environmental Research Leipzig-Halle
Permoserstr. 15, 04318 Leipzig
Contact: Matthias Bernt • Tel: 0341 235 2015

**Figure 2**
Translated information placard

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The aim is to obtain as much support as possible from the local decision-makers. The academics can then expect support in the distribution of information about the survey and a good response in the research area.

About one to three days before the questionnaires are first distributed, placards containing information about the research project including the time frame and procedure should be hung out (at the entrance of each building) and disseminated (in the letterboxes of detached houses) in the research area (see Fig. 2). These placards are very important because they act as the decisive 'door-openers'. Many residents remember them, they feel familiar with the project and their willingness to co-operate increases significantly.

### 3.1.3 The Concrete Field Work

During the concrete field work phase, the questionnaires are distributed among each household of the selected apartment blocks and areas of detached housing, respectively. The first problem in the case of multi-storey building is how to get inside. The assistants have to ring at the main entrance and ask one of the tenants through the intercom to let them in in order to distribute questionnaires. After getting inside, the assistants have to ring at every flat; in areas with detached houses they have to ring at every single house. Vacant flats/houses are noted in the survey list. If the occupant appears not to be at home, the assistant makes a note to revisit the dwelling before moving on to the next door. If the door is opened, the assistant introduces himself/herself and the project and asks the occupant to complete the questionnaire. Apart from acceptance, several other reactions are possible. The occupants may require further information, or be reserved and ask "Do I have to?" In this case the assistant tries to convince them with good arguments that their participation is very important. Of course, the assistant explains that nobody is compelled to take part.

If the occupant definitely refuses to participate, the name and if possible a reason for refusal are recorded in the survey list. This is important for two reasons: a) to prevent calling at this address again; b) non-completions of the survey (including direct refusals) need to be recorded to calculate the final response rate.

In fact most occupants agree to take part, and some are even expecting the questionnaire, which the assistant then hands over. An agreed collection date needs to be entered on the cover page; a period of from three days to a week is recommendable. This date and the name of the household are recorded in the survey list. In order to ensure a **strictly random sample**, a selection criterion has to be used such as the birthday or the Kish method (also known as the Kish selection grid; for a recent evaluation cf. BINSON, et.al., 2000:53-59).

Sometimes occupants choose to be interviewed instead of completing the questionnaire themselves. In these cases, the assistant fills in the form together with the interviewee.

At the end of the first day of the empirical phase, it makes sense for the assistants and those heading the project to meet up to share

experiences and information.

A few days later, the assistants return on the date agreed to collect the questionnaires. Both the completed forms as well as the refusals need to be noted carefully. If occupants are not at home, the assistants return a second or third time.

Once the questionnaires have been collected, all the information placards have to be removed.

At the end of the empirical phase, the interviewers submit all the questionnaires, the survey lists, a statistical overview of the number of households reached, the number of questionnaires distributed and returned, and a verbal summary of the work to the academics in charge.

The final point of the fieldwork itself is the presentation of the main results. All the actors can find out about the survey results and can discuss and comment on them at public meetings organised by the local authority or other practice partners. In addition, selected results are published in the local newspapers.

### 3.1.4 Strengths and Weaknesses of This Research Design

The strengths of carrying out this technique of questionnaire survey consist in:

- The very high response rate (about 70-90%), including the high quality of completed questionnaires;
- The close contact between the researchers with the area studied and the actors themselves;
- Thorough investigation on a small scale;
- The examination of communities and people-environment relations rather than atomistic individuals;
- It is cheaper than a postal survey;
- The respondents' direct experience that their work is appreciated, making them willing to support further surveys.

The weaknesses are:

- This kind of survey is limited regarding practicability, and can only be conducted in small-scale areas.
- The generation of a representative sample is only for the area selected.
- Gender and age representativeness are not always attained.
- The questionnaires are sometimes completed by more than one person in the household.

The performance of these surveys with 600-1000 questionnaires is realistic. It should be underlined that the strengths of this research design significantly outweigh the weaknesses.

### 3.2 Qualitative Methods - Strengths and Weaknesses

The **qualitative approach** is intended to provide a deep, extensive insight and a better understanding of a research topic. Qualitative work is indispensable if a relatively new research field is being explored and there is a lack of tried and tested methods (SCHNELL, et.al., 1995:352).

Two types of qualitative methods are useful in the empirical housing research dealing with

urban restructuring:

1. Expert interviews;
2. In-depth interviews with residents.

### 3.2.1 Expert Interviews

The **expert interviews** provide a detailed description of the research field from the viewpoint of an institutional actor at the beginning of an empirical research process. The term **'experts'** means men and women with a specific position in a decision-making process and with privileged access to information and knowledge about relevant projects and persons (BOGNER, et.al., 2002). They represent a specific institution or function closely involved in urban development and housing. These key persons work in different departments at the local authority, in regional and state planning bodies, and in the municipal and private housing enterprises. Furthermore, they may represent private housing estate developers, architectural and urban planning offices, financial institutes or infrastructure providers. Street workers, school directors and others representing the local public may belong to the circle of experts.

The expert interview is structured by written guidelines encompassing the main subjects regarding decision-making. The guidelines revolve around a fixed nucleus of questions depending on the expert's specific position.

The main subjects are the history of the emergence and recognition of the urban issue, the main problems and the current counterstrategies, the political and economic aims, specific interests, resources, and experience of co-operation with other institutions in the same field.

In the case of housing vacancy and the need for urban restructuring, the results of the expert interviews show both a deep understanding of the problem situation on the one hand and the urgent need for recommendations and problem-solving strategies on the other. There is a severe lack of tried and tested instruments and mechanisms, especially when dealing with tenants affected by relocation should their block be pulled down (KABISCH, et.al., 2004:141).

The interpretation of the results provides an overview of the local situation. That leads to the better definition of further steps in the research process and an appropriate contextualisation of the research results. An essential point is the knowledge of the type of population and their changes over years within the research field. Recent experience within the Weisswasser case study provides an example of unexpected facts which are very useful for further investigations. Apart from differentiation between tenants and owners as well as **socioeconomic and demographic indicators**, **ethnic features** are becoming increasingly important in east German towns. The mixed ethnic structure encompasses native Germans, foreigners and **ethnic Germans** 'returning' from abroad (*Aussiedler*). While the housing conditions and relations between native Germans and foreigners have been well investigated, knowledge of co-existence with ethnic Germans is limited (POTTER, et.al., 1998:235; KABISCH, et.al., 2004:117).

Although the ethnic Germans are Germans by law, since the majority of them have arrived during the past decade from states formerly part of the USSR, most native inhabitants tend to regard them as Russians. They often have a different lifestyle, they are competitors on the labour market, they receive different, more subsidies than the local population, and often their knowledge of German is limited, the younger ones tending to only speak Russian. This impedes integration into the local community, and the social atmosphere in their residential areas is conflict-ridden. Expert interviews provide basic information for the development of hypotheses for ethnic Germans' housing conditions and how they are perceived by others. This knowledge is essential for drawing up the questionnaire as the main instrument of the quantitative method.

Expert interviews can accompany the whole research process to improve additional information on the problem investigated. During interpretation, the expert interviews serve to reflect the empirical results so that realistic evaluations of current developments can be achieved.

### 3.2.2 In-depth Interviews with Residents

To obtain detailed information on the residents' perception of urban restructuring, structured in-depth interviews are useful. In contrast with a standardised survey, they enable a comprehensive description of the private housing circumstances and attitudes, and how interviewees respond to witnessing the reconstruction process and what they plan to do should their apartment block be condemned .

Selected subjects are explored on the basis of an interview guide. The themes include the housing biography, identification with the area, housing satisfaction, the willingness to move in the event of demolition, and the housing needs (including the surroundings). The residents describe the opportunities available for participation, conflicts, their fears and how they plan to react to the new situation.

Interviews allow complex situations to be explained by the residents. Additional information is given which provides an insight into the private sphere of the household and its perception of having to move out involuntarily, growing housing vacancy, the initial demolition of blocks, and the decline of the whole city.

Many residents are willing to take part in an in-depth interview to express their personal opinions on topics affecting their life profoundly. The addresses given in the questionnaires enable the preliminary selection of interviewees. The tenants selected receive a letter requesting an interview appointment and informing them of the remuneration for the one-hour-interview (about €10).

The in-depth interviews with residents are held when the questionnaire survey has been finished. The interviews are recorded by tape and then transcribed. The material is paraphrased, classified and analysed to identify typical expressions. To illustrate the empirical results, some typical quotations are integrated in the final report and in publications.

Thus, the in-depth interviews provide very useful additional information for the interpretation procedure of the questionnaire survey results. They are part of a comprehensive

analysis and evaluation of the urban restructuring process. These results underline the necessity to include the tenants' viewpoints and to seriously consider their specific interests, opinions and reactions. It became clear that the residents are important partners who can promote or hinder the urban restructuring process and that they expect to be treated on an equal basis by the decision-makers.

## 4 Conclusion

The new topics of research in housing and urban development which have arisen in connection with the processes of shrinkage and urban restructuring need to be researched in an appropriate manner. The aim is to deepen our understanding of the relationship between unexpected developments on the housing market affecting urban development as a whole. Housing vacancy and ongoing population decline are issues with high political importance - not just in eastern Germany, but gradually in other economically declining regions, too.

Exploring a new research field requires an appropriate combination of quantitative and qualitative methods. The methods proposed are recommendable for similar sociological research projects on housing. In particular, the technique of the questionnaire survey elaborated guarantees high-quality results. It has already been tested on a research project in the Czech Republic (STEINFUEHRER, 2004) and has also been used successfully in an ongoing EU-financed project dealing with re-urbanisation potentials in four European cities (KABISCH, STEINFUEHRER, 2004). The methods described are thus **appropriate for housing investigation in diverse cultural contexts** and different traditions of conducting questionnaire surveys.

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# 14 RESEARCHING DOMESTIC SPACE AND INCOME GENERATION IN DEVELOPING CITIES

*Peter KELLETT & Graham TIPPLE*

## Abstract

*In developing cities increasing proportions of low-income people are using the space of the dwelling to generate income as part of household survival strategies. This paper draws on data from a large international comparative research project which examined this phenomenon. It describes the combination of techniques employed to record productive and domestic space usage and discusses the relative value of the types of data generated, including quantitative, graphic and photographic data as well as oral testimonies. Finally it discusses the analytical techniques employed in attempting to understand the complex issues of space usage in constrained domestic and working circumstances.*

***Keywords:*** *Home-based Enterprises, Developing Cities, Domestic Space Use, Poverty Alleviation, Income Generation.*

## Introduction

Increasing numbers of households in **developing cities** are using their **domestic space** as a key resource to generate income in a variety of **home-based enterprises (HBEs)** as part of household survival strategies. For many, the HBE income is vitally important to their survival. Some of these productive activities appear to complement reproductive routines and requirements, whereas others create potential conflicts, particularly where dwellings are small and household sizes large. In all cases space is a key issue and one which requires further exploration.

As part of an international comparative research project examining the **environmental impacts** of home-based enterprises we carried out intensive fieldwork in **informal settlements** in four cities (Cochabamba, New Delhi, Pretoria, Surabaya). It was important for us to document all the resources and factors involved. Documentation of space usage proved particularly challenging.

We calculated the effects of HBE space on the dwelling from a sample in each settlement of 150 HBE operators and 75 non-HBE operators using quantitative techniques. These included measurement of the amount of housing space available and how much was used for the HBE, both exclusively and shared with **domestic activities**. In addition, for a sub-sample of 20-25 in each place, we produced detailed plans and diagrams to record dwelling layouts and plotted how the spaces of the home were used, indicating where particular activities took place and, where possible, how these changed at different times of the day. To complement the graphic data we carried out long **structured interviews** with householders to gain greater understanding about how space was used and how decisions were made regarding the location of activities, and the spatial implications of juxtaposing or combining potentially incompatible activities. More importantly, such data allowed us to gain insights into the range of conceptualisations regarding how boundaries are established and negotiated, and to identify the strategies employed to accommodate competing activities and resolve conflicts.

This essay will explain and reflect on the effectiveness of the combination of quantitative, graphic, photographic data, and structured interviews used and the analytical techniques employed in attempting to understand the complex issues of space usage in constrained domestic and working circumstances.

## Home and Space

'Space in itself may be primordially given, but the organisation and meaning of space is a product of social translation, transformation and experience' (SAMARASINGHE, 1997:135). In other words spaces are socially constructed through the activities which take place within them. This is a two way process, as *'social interaction is in part constituted by its spatial setting - where things happen is part of the explanation of why and how they happen in the way they do. (Giddens) uses the concept of 'locale' to refer to the spatial context of action.*

*... The routine reproduction of the social world through interactions is accomplished within settings which help to make such interaction meaningful and so to some extent predictable.'* (SAUNDERS, WILLIAMS, 1988:81-82). The spatial significance of where activities take place is expanded in the writings of RAPOPORT (1982) who uses the term 'behaviour setting'.[1] Within all cultures the **dwelling environment** is one of the most significant of all spatial settings. SAUNDERS and WILLIAMS (1988:82) identify home *'as a crucial 'locale' in the sense that it is the setting through which basic forms of social relations and social institutions are constituted and reproduced.'* Key relations including gender and age as well broader identities such as class and regional cultures are structured and reproduced. Similarly the **home** is where central cultural concepts such as **public and private** spheres are defined and reproduced. Economic relations must also be included here, particularly where the dwelling is a place of **production** as well as **consumption**. A focus on the home as a productive workplace is therefore helpful in casting light on some of these traditional binary categories: public/private spheres; male/female roles; **productive/ reproductive work**. In short the home is the site of numerous encounters and relations in which space plays a fundamental role.

Various conceptualisations about domestic space relate to how it is subdivided to reflect varying understandings about how different activities should be separated (FAQIH, 2004). Kent proposes a model which attempts to explain why some groups segment or partition their domestic architecture more than others, and links the way people organize their behaviour to the way they configure their built environment. Using data from a large cross-cultural study she concludes that *"the interrelationship of culture, behaviour, and cultural material is the causal agent behind the frequency of functionally restricted segmentation; [...] how society organizes or segments its culture will influence how it organizes its behaviour or use of space" (KENT, 1990: 149). This is similar to the position of Rapoport, who asserts that: "what finally decides the form of a dwelling and moulds the space and their relationships, is the vision that people have of the ideal life"* (RAPOPORT, 1969: 47).

Architecture **segmentation** helps distinguish functionally restricted use and multipurpose spaces. *"Functionally restricted areas are defined as loci at which related functions are performed in contrast to multipurpose areas where disparate activities take place"* (KENT, 1990:6). Functionally restricted areas are those used primarily for a single, or closely related, function. In this study we are especially interested in how groups have to cope with spatial circumstances which frequently do not fit their culturally constructed ideas about how the space should be segmented, i.e., spaces intended for single functions frequently have to cope with several functions.

This can lead to difficulties related to the potential incompatibility of different activities. This incompatibility may stem from the cultural need to regulate **privacy** which will lead in turn to varying forms of spatial organisation. Privacy can be defined as the *"selective control of*

*access to the self. Selective control means that people (individuals or groups), attempt to regulate their interaction and exchange with others or with aspects of the environment"* (ALTMAN, CHEMERS, 1980: 77). Hence space organisation is a manifestation of social interactions and territorial imperatives.

Territorial behaviour is closely related to the built environment. In common with other animals, humans have an impulse to claim, define and defend space. In this sense, marking a space and controlling its boundaries are crucial behaviours in fulfilling basic psychological needs. Driven by their individual psychological impulses, people arrange and create their built environment to mark and control their territory. In other words, they organise their built environment to regulate their social interactions. *"The ordering of space in building is really about the ordering of relations between people"* (HILLIER, HANSON, 1993:2).

This has led Hillier and Hanson to propose their space syntax method to analyse graphically the morphology of spaces, in which the interior space and the surrounding external space of a building can be represented. These two dimensional diagrams of building plans represent the structural spatial pattern which depicts the degree of inhabitant control and accessibility of each space. This model is powerful as it provides a straightforward graphical method to quantitatively compare, analyse and display the spatial information of built environments. The model tends to be deterministic, to overemphasise the graphical representation, and overlook other social research findings, particularly the theory of privacy and privacy regulation (LAWRENCE, 1990:75). Space arrangement is only one of various behaviour mechanisms in privacy regulation. In other words, the problem is the insistence that spatial form is a direct function of social relationships and in particular that these social patterns can be inferred from studying building organisation (PRICE, 1995:114, JOHNSON, 1993:29). Furthermore, to limit analysis of built form to a study of its configuration is misleading, because the meaning and the use of the space is not solely dependent on its form (LAWRENCE, 1987:53).

Space can also be understood in terms of power relations, and this is particularly relevant when attempting to understand potential conflicts between competing demands for space within the dwelling. However, as in other studies of housing behaviour, there are particular challenges when examining activities within the very private sphere of the home, where domestic power relations are sited. The study of the micro spaces of the dwelling environment therefore requires particular sensitivity, especially in cross cultural contexts. We recognise multiple ways of reading and interpreting space and space usage (LAWSON, 2001) which require a series of complementary methodological approaches to fieldwork, documentation and analysis.

## The Home Based Enterprise Research Project

Throughout the developing word increasing

numbers of householders are using the space of the dwelling and the labour of the household to generate income in a wide variety of ways. In most cities such enterprises conflict with planning norms and zoning regulations with regard to economic activities within residential areas and consequently are actively repressed or grudgingly tolerated. Rarely are such activities acknowledged as playing a positive role economically or socially. The growth of home-based enterprises (HBEs) is closely related to the weakness of the formal employment sector and the inability of the state to deliver in many areas of urban policy, but there is evidence to suggest that such informal household initiatives have a vital role to play both in **poverty alleviation** at household level as well as contributing to the vitality of neighbourhood and national economies (TIPPLE, 1993). There are numerous studies examining the phenomena from an economic perspective, but a paucity of studies which look at home-based income generation from a housing perspective. A key issue which inspired our study initially was the way that substandard housing conditions may be improved through the income-generating potential of HBEs even though their use of space and generation of externalities could be considered as harmful.

As a small multi-disciplinary research team based in GURU at Newcastle University[2], we obtained funding from the British Government's Department for International Development (DFID) to explore the environmental impacts of HBEs on the housing environment: in particular to assess using empirical evidence how potentially negative externalities could be accommodated within the residential environment and to produce recommendations to minimise health and safety risks and identify examples of good practice in the field (TIPPLE, et.al, 2001).

Following a funded pilot study in India to test the methodology (KELLETT, TIPPLE, 2000), we set up a four country international research study drawing on contacts in academic and official institutions in four countries: India, Indonesia, South Africa and Bolivia.[3] Drawing on local expertise, informal settlements with high levels of home-based enterprises were identified in each of four cities: New Delhi, Surabaya, Pretoria and Cochabamba. Throughout the project the close collaboration and communication between the local teams with local knowledge and skills and the Newcastle-based team who designed and co-ordinated the project was fundamental. This communication was not easy, not least given significant geographic, cultural and linguistic constraints. However the project funding allowed for a number of international flights in both directions to allow the local teams to visit Newcastle and for the British team to travel to the various sites. In addition a research associate employed full-time on the project spent several months in each city and played a key role in training the local teams. Unfortunately it was not possible for local teams to spend time in the other's research sites which would have been particularly beneficial. Indeed this project indicates the value of increasing the active involvement not only of local teams but of the potential for more directly participatory action research. A more recent DFID-funded

project exploring disability in informal settlements has developed this approach and team members from India and South Africa have spent time in both research sites and were involved in workshops in both countries.

## Methods: Numbers, Drawings, Words, Images and Observations

From the outset we recognised that given the complexity of the research subject no single methodological approach would be suitable to capture the various dimensions and aspects of the phenomenon. Instead, we opted to use a range of complementary approaches, each designed to elicit and record different aspects which we hoped when brought together would be able capture the richness and varied nature of the subject. In this paper we will briefly introduce each approach and focus on the issues related to understanding space usage.

## Numbers: Quantitative Measurement

We used stratified sampling to obtain a sufficiently representative population and range of activity in each settlement, using households as our unit of analysis: 150 HBE active households and 75 non-HBE operating households. A single **questionnaire**, with only slight modifications for cultural variations was translated into each local language and pre-tested. It was then administered to household heads in each case study area by a local researcher to obtain a broad range of quantitative data about the dwelling, household manager or head[4], household and HBE, including numbers of rooms, areas of rooms, occupancy rates (persons per room), space per person, areas used for HBE activities, shared spaces (HBE and domestic), dwelling improvements made, etc.

The quantitative data provides us with a solid empirical base onto which to add the richness of qualitative data. There were a few problems of interpretation which escaped our vigilance for comparability across countries. For example the concepts of pay and profit were not always clearly distinguished and in many cases were impossible to collect, as money for the house and business was completely intermixed. The concept of 'worker' was interpreted differently. We expected all those involved in HBE activities to be regarded as workers but, in South Africa, the proprietor was excluded. We later included proprietors during coding but missed much of the richness of data which could have been available. Apart from these problems, we have a rich data base which is allowing analysis in various ways over several years. On the space use issue, data collected includes measurement of the amount of housing space available and how much of that was used for the HBE, both exclusively and shared with domestic space. The surveyor discussed and then measured this rather than asking the respondents for their estimates which are liable to be inaccurate.

In the quantitative data analysis, we

made use of the spatial data by generating additional variables for net space use. In addition to the measures for exclusive and shared use, net HBE space was generated by adding half the shared space to the exclusive space. This was then deducted from the total space to generate net domestic space. We could then determine some of the effects on domestic life and the profitability of the HBE according to the total and net amount of space it occupies and what those represent as percentages. The most important finding from this was the crowding effect that even tiny spaces used for HBEs could have on domestic space when the dwellings are very small (as in our India sample where 15 square metres is common) and the relatively benign effect of HBEs on the spaces where dwellings are larger (above, say, 40 square metres).

## Drawings: Plans and Diagrams

A subgroup of 20-25 households in each settlement was selected for more detailed documentation including **plans**, photography, and interviews. Fundamental to this project was the preparation of detailed plans of dwellings. For each dwelling, a detailed plan was prepared at 1:100 indicating the physical configuration as well as the position of all furniture and fittings at the time of the survey Detailed notes and examples of plans were prepared to assist fieldworkers who were encouraged to record as much detail as possible. Annotation was encouraged,

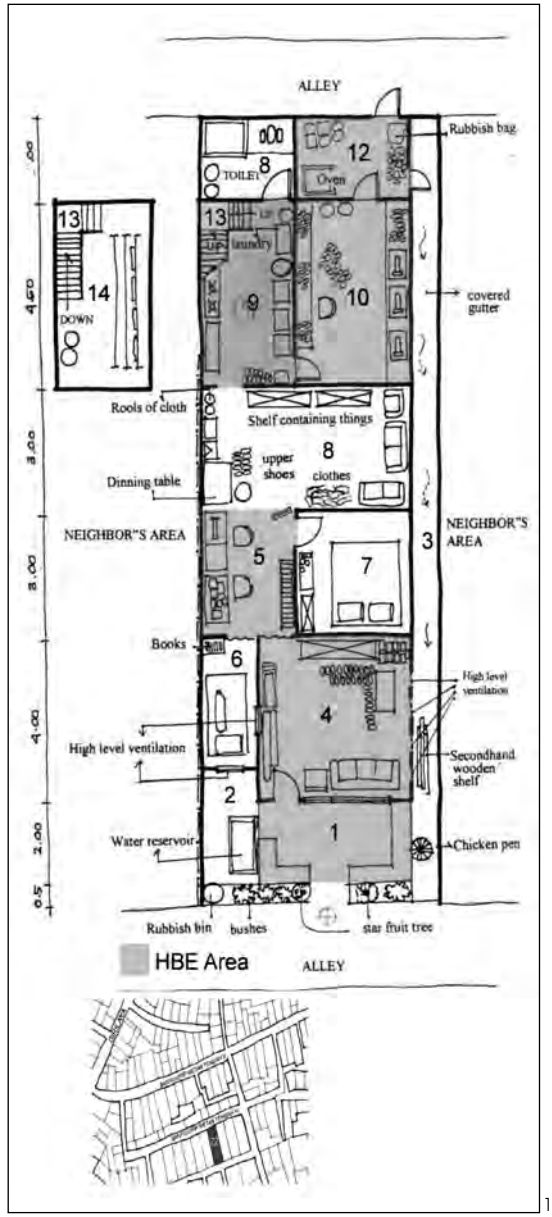


**Figure 1**
The house of Mr Kusnari the shoemaker (Indonesia)

**Figure 2**
Extract from Interview Schedule used to guide the qualitative interviews (right)

| Themes | Issues |
|---|---|
| 4) USE OF TIME | **a) The allocation of time to HBE and domestic activities**<br>- Describe the previous day referring to demands of the HBE and the home (also any other demands on time - such as community organisations, other income-generating work)<br>- Are there any conflicting demands on the interviewee's time? How does s/he resolve these? If they cannot be resolved, what does s/he do?<br><br>**b) Seasonal Activities**<br>- How do household activities change in the 'high' season as opposed to other times of year? Focus on issues of time and space. This question could also be asked of a particularly busy day of the week or time in the day. What happens on ritual occasions? |
| 5) USE OF SPACE | **a) Strategies are used to find space for domestic and HBE activities**<br>- methods of dividing space<br>- movement of furniture/equipment<br>- multiple uses i.e. sewing machine tables that become desks for children's homework in the evenings, bed that is used for stacking finished products during the day<br><br>**b) Conflicts concerning use of space**<br>- If family members are running more than one HBE within the home, do conflicts over space arise and how are they resolved? Which HBE(s) are given priority and on what basis?<br>- Difficulties/disagreements arising from domestic and HBE demands on space<br>- Shared space in the neighbourhood e.g. streets, alleyways, courtyards<br>c) Dwelling Modification<br>- Have changes to the house altered the way in which space is divided between domestic and HBE activities? (Note - only relevant to those households where changes have been made)<br>- If interviewee has moved HBE from one house to another - how has the change in space altered the way in which s/he organises the HBE? |

especially on a second sheet (or overlay) which was used to document the use of space, environmental conditions and supplementary notes: particularly critical was the location of HBE activities (including 'passive' spaces for storage), spaces shared with domestic activities, routes in or through the dwelling of customers, suppliers, waste collection etc, and location of any environmental issues (e.g. dampness, smells, hazards, ventilation or lighting problems). Shading was used to identify particular places or activities, and cross-referencing was encouraged to fieldnotes, qualitative interviews, photographs etc. The intention was to document as much as possible the physical and spatial characteristics of the dwelling and the activities within it (see fig 1).

However in common with photography such graphic techniques based on recording the geometry of the space are unable to capture the dynamic nature of space use, particularly where activities and spaces change diurnally, weekly or seasonally, and how they develop and change over longer periods, reflecting changing economic and household circumstances and priorities. Where possible additional notes were used to indicate where activities take place at different times, especially if not at the time of the survey. The time dimension was explored in detail in the interviews.

## Words: Qualitative Interviews

HBE operators, and when possible spouses, from the same subgroup were interviewed in

order to record their own interpretations of their circumstances and the strategies they employ to cope with a range of frequently conflicting demands on domestic space, labour and time. A detailed list of themes was prepared by the research team to help the fieldworkers structure the interviews in a flexible but focused way [see Fig 2]. The interviewers were trained to encourage the respondents to speak at length in order to explore in some depth the perspective of each individual and their response to their own particular circumstances. Oral testimony approaches such as this offer good opportunities to examine issues which are impossible to engage with in quantitative work, and in the case of space usage, complement and add substance to the physical and visual data. In particular we can obtain insights into what cannot be observed or questioned superficially. However such work is not easy, and local researchers adapted to the techniques with varying degrees of success. Firstly there are complex issues of language and personal communication with much hinging on the quality of the relationship between the two parties in the interview (KELLETT, 2000; KELLETT, et.al, 2002). Interviews were conducted in the local languages, which in India and South Africa meant the fieldworkers required fluency in four or more languages, and were then transcribed and translated into English. This is time-consuming and difficult: unless great care is taken some of the meaning and much of the subtlety and nuance of detail can be lost (SLIM, THOMPSON, 1994).

Some of the resulting transcriptions proved not only useful in terms of supplying factual information for the research project but also as powerful personal testimonies of the constraints and problems facing poor people attempting to improve their life chances in circumstances of poverty. The interviews from South Africa were especially compelling, perhaps partly because during Apartheid both housing and work activities were severely constrained by racist legislation with a strong spatial component. For many, the freedom to decide how and where to earn their living is still regarded very positively. Here is small extract from the testimony of a Mr Nkosi, who rears chickens and runs a small shop from his improvised dwelling in Mamelodi on the eastern edge of Pretoria:

*'Truly speaking I have said lots of things, the difference is that there was nothing painful like knowing something but being denied to do it. I believe that even if you cannot find a job there is nothing more important than being given the opportunity to do what you want, […] You can buy tomatoes and sell here without being arrested, you can sell chickens where ever you wish. And these people who say they want jobs I think they fail to understand the life we are living, this is wealth, my baby, just to say 'you can do what you can', just that. [...] now we are very rich, with the opportunity we have been given. My baby, we could not work before. When you tried business you would get arrested and tell you that you don't have papers, and when you go there to find papers they would tell you that you do not qualify. [...] You were supposed to have*

*worked for a white person for twenty years. [...] and that you should have a registered house. There were many conditions, I forgot some of them, but these two I cannot forget because no one qualified for those kind of things*[5].

## Images: Dwelling and Settlement Photographs

**Photography** can be particularly intrusive within the private sphere of the home, therefore special efforts were made to ensure that householders were comfortable about it. Express permission was always sought and where appropriate they were encouraged to place limits on what was photographed. A series of photographs were taken of all dwellings in the subgroups. The aim was to create a detailed record of the key spaces of the dwelling, particularly those where HBE activities were taking place, and to document HBE activities. External pictures were also taken of the dwelling, open spaces and plots as well as streets and alleyways, especially where economic activities were present. The resulting images were carefully collated and captioned to facilitate cross-referencing to the data sets. These images proved vital in helping to interpret plans and useful in recalling places and activities later.

3

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**Figure 3**
A women making papier mache masks in her one room dwelling. She is working in the space where she also prepares food. Completed masks are stored behind her on the bed (Indonesia).

**Figure 4**
A large pile of completed masks takes up a large part of the living area (Indonesia).

## Observations: Participant Observation

Although much HBE activity is visible and can be documented directly using plans and photographs, many of the activities and boundaries between them cannot be seen nor readily comprehended without a much closer involvement with the people and access to the more intimate spaces of their dwellings. All the fieldworkers were encouraged to prepare fieldnotes to record observations and insights gained whilst in the field, but with some exceptions it proved difficult to obtain much data of value in this way. Therefore in order to complement the main research data of the larger project, it was decided to draw on more personal and ethnographic approaches as typified by **participant observation**, which is regarded as the research method that most closely approximates everyday life (HAMMERSLEY, ATKINSON, 1983). At different times, the first author and two graduate students had the opportunity to live with a family in the case study kampung in Indonesia. This was a home of a well respected community leader whose extended family was involved in a number of HBE activities and their home in the study area provided an ideal base from which to experience life within the *kampung* and carry out a series of more detailed household case studies for lengthy periods, noting changes and cycles of activity. Recording of oral narratives combined with field notes and sketches were a key component of the data collected (KELLETT, BISHOP, 2003)[6].

In the next section we will use some of the data obtained to illustrate and explain the relative value of the different methodological approaches adopted.

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**Figure 5**
Painted masks are left to dry in a pedestrian alleyway (Indonesia).


6

**Figure 6**
A single room house which doubles as a shop selling kerosene fuel (India).

## Space Syntax

A basic **space syntax** analysis was carried out of all the dwelling plans from three of the four case study settlements in order to clarify the sequence and linkages between spaces and the location of particular activities. Given the relative simplicity and small size of the dwellings, particularly those from India, the resulting analysis proved to be of limited value, although it certainly highlighted patterns of spatial use. For example with the Indonesian data it was clear that, in over 80% of dwellings, the HBE activities were located in such a way as to make it necessary to pass through spaces where HBE activities took place in order to access the exclusively domestic spaces (GILBERT, 2002). This even occurred in three dwellings with more than one entrance: both entrances were dominated by HBE activity, and this is clearly visible in the gamma diagrams. This can be largely explained in practical terms: for both

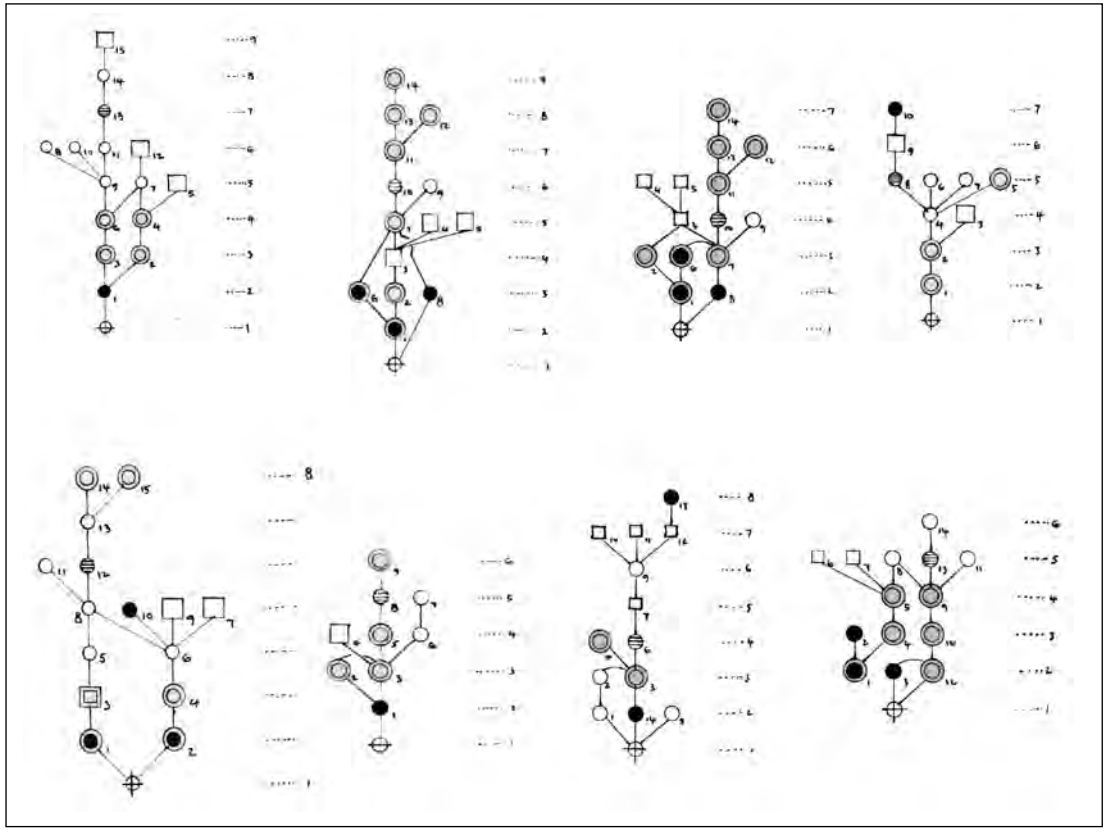

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**Figure 7**
Space syntax (gamma) diagrams of seven dwellings (Indonesia).

access and environmental comfort reasons (light and ventilation), most HBE activities take place towards the front of the dwelling. Typically the HBE activity will occupy the front third of the dwelling area.

## Shared Space: Conflicts and Problems

Although a conceptual distinction is clearly made in most western cultures between 'home' and 'work' usually reflected in spatial separation, we believed it important not to presuppose that this would be the case in our study sites. However, in all of them, such a conceptualisation was clearly articulated in the interviews and, where possible, expressed in the dwelling layout and use of space. It was regularly underlined in the interviews when future plans were discussed, and the issue of how dwellings could be improved, if resources were available.

In Cochabamba, Senor Chambi who makes clothes has managed to build incrementally to obtain more space:

> *"Before we only had the one workshop, right there… plus the kitchen. Right there we would sleep too… it was tiring and you couldn't rest properly for work […] When we were working the small children would keep picking up one thing or the next. Our idea was always that the workshop should be completely separated."*

Not only does he create separation of activities within the dwelling, but the high boundary walls, typical of dwellings in this context, separate the inhabitants from neighbours to create very private realms within. The enclosed spatial arrangement which separates the inward looking dwellings from outsiders appears to reflect the largely autonomous and self-reliant household arrangement. In all cases it was clear how the economic unit of production maps very closely on to the extended social structure of the household.

This contrasts markedly with the pedestrian alleyways in the Indonesian case study which are important for a number of HBE activities. Activities which do not require fixed

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**Figure 8**
Women sewing shoes in the pedestrian alleyway outside their dwellings. The woman on the left holds two bags of shoes. This work is combined with caring for children (Indonesia).

equipment (such as hand sewing of shoes) frequently take place in the lanes where the light and ventilation make it more comfortable but also where there are increased opportunities for social interaction. A shoe-sewing enterprise, run by a woman at the end of one the lanes, has at its core a group of related family members augmented by a broader network of friends from the same lane. As they sit chatting in small groups outside their houses, their sewing may be seen to symbolise the social act of knitting together and consolidating the social relationships between them.

The three generation Karminfamily inIndonesia make their living producing brightly painted papier mâché masks, but experience difficulties with their limited space. Mrs Karmin explains:

*"There are no special rooms for family and for business. We have furniture [..] for the guestroom and for the dining room. But it doesn't just function as the dining room or the guestroom, because [both] are also used to work in. So it all gets very untidy. [...] Sometimes we must move some furniture when we have a lot of orders. The dining table even sometimes functions as the place to put the masks on. To eat we don't have to use the dining table: we can eat wherever we like. For instance, sometimes when we have many masks, when we work the masks are placed on the bed then we cannot sleep on it. So my small daughter sleeps with me here [in the living room]. There are usually three or four peoplewho sleep here. We provide mats for them, sometimes they use it and sometimes they don't. […] where we sleep is not important. [...]. We have plans but the resources aren't available. [...] We have dreams; we want to raise the back part of the house to make two rooms specially for making masks. There are more plans but we don't have the money."*

In this case we were able to record their everyday space use in detail using plans and interviews. With their neighbours, also mask makers, participant observation was used to find out how space use changed when the dwelling (and street) was used to host a wedding. Although the HBE work had to stop to allow this, a wedding is a significant opportunity for other HBEs: these included cake-making, food preparation, personalised gift making and packaging, make-up and hire of costumes, equipment hire (e.g., sound systems and lighting), furniture hire (chairs, tables, stage), photography, etc. The marriage ritual underlines the use of the house for key social events and reinforces the role of the home as a significant 'locale' for reproducing social values. In addition to co-existing or integrating with 'ordinary', everyday domestic activities, home-based enterprises must also respond to 'special', ritual occasions when the normal routines within the house change. These occasions usually require furniture and equipment to be moved and space re-configured to cope with large numbers of guests. In many instances HBE work must inevitably be curtailed for a limited period with consequent impacts on income generation. Therefore, although this potentially reflects a greater sacrifice, the flexibility and control

available to those who run their own businesses underlines one of the key advantages of HBEs. These understandings and insights were only possible through the use of a variety of research techniques.

## Gendered Space and Activities

Gender of both HBE operator and customers can influence the spatial arrangements. In South Africa security and control appear to be more critical for activities with exclusively male customers (such as beer drinking). In contrast, HBEs dealing only with women are less concerned with security or access to intimate spaces within the home. For example, Mrs J sews and sells clothes from a bedroom deep within the large dwelling. All her customers are women to whom access to bedrooms and other private areas is perfectly acceptable.

Members of a household may have differing opinions as to what constitutes an acceptable or appropriate use of domestic space. One respondent in the South African case study moved his fried fish business out of the home because he found it too difficult to combine his HBE food preparation with domestic food preparation. Clearing away after domestic food preparation cut into his work time, and his business activity impinged on the domestic space by damaging the furniture with spitting fat,

> *"...What made me to shift from home is the fact that the place was not really meant for the food I am selling, and it was for domestic purposes. So I realised that I was disturbing them in the kitchen and I could not manage time for my business because of other domestic tasks. I found that there were other domestic tasks that I had to do. I had to wash [dishes] if they are not washed, sometimes you will find that I had to give them time to cook and eat, sometimes when they have finished you will find that they [his children] have not cleaned the way I want … So you will find that I have to start by washing dishes, fetching water, and cleaning and … I am running out of time, and the space is too limited, and … fats from food get all over the furniture because of the space and … I get shouted at!" [laughter].*

For this respondent, the problem is not just one of combining different activities in one space. By running a business from the kitchen, he also transgresses gendered divisions of space in the home; he enters a space that his wife considers to be her own. He explains that many of the arguments with his wife arise out of his using cooking utensils that she considers to belong to her, and over whose responsibility it is to clean the kitchen. He feels that, because the business helps the whole family, divisions of male and female property are not valid and that cleaning the kitchen should have been equitably divided between HBE and domestic users. Because of this conflict, he separated the HBE spatially into a kiosk in the front of the plot.

The final examples illustrate how religious values impact on space usage. For

traditional healers (sangomas) in South Africa, tradition demands that certain activities should be separated. However, limited space may make this impossible, as Mr. S. explains,

*"According to the rules where we grew up, where we learned traditional healing, salty food is not allowed in the 'ndomba' [medicine room]. …You can only put medicines, and only you and your patients can enter in the 'ndomba'. …We don't have a space, that is why we mix up things, but it is not the rule … I sleep there, I read peoples' lives in there, and I put all my things in there. But it is not allowed; only ancestors belongings should be put in there."*

Limited space also impacts on domestic religious activities. For example Mr Kusnari, a shoe maker in Indonesia, works in the main living area and has to accommodate the regular Koran readings of his wife.

*"It's never been a problem because I think all of them are willing to understand our conditions. It's true that sometimes the living room is needed for reading the Koran and I also use this room for working, so my family members which are many will clean this room and in a short time it can be used. When the reading of the Koran is finished so work activity will be back as usual. Reading the Koran also doesn't take a lot of time, so it's no problem for us to let this room be used first for other needs like that. It's never been a serious problem in this case."*

Of significance here is the importance of cleaning the room before the religious activity can begin. It reminds us how activities regarded culturally as dirty, polluting or profane must be accommodated within the clean and sacred spaces of the home. The cleaning is much more than a practical action, it is a basic ritual which helps to establish the conceptual boundaries which organise the social behaviour within the dwelling.

## In Conclusion

A complex international research project with teams in five countries and four continents is not easy to co-ordinate, and we certainly experienced frustrations and problems. However we have been encouraged to see how it is possible to generate high quality data using a number of complementary methodological tools. We found it appropriate to combine quantitative techniques with qualitative ones and to closely integrate them especially during the analysis. We believe such an approach can go beyond simple geometric descriptions of space to engage with culturally constructed patterns of spatial behaviour, motivations and meanings. In retrospect greater integration of visual and word based techniques during the fieldwork could have been especially rewarding, and ironically was picked up during the pilot study, where we identified the potential for the greater use of visual prompts such as photographs and plans of the dwellings as aids to more focused discussions. Such participatory

approaches could be particularly valuable in teasing out changing spatial locations of activities, priorities and alternatives considered by householders.

This paper has only managed to sketch an outline of the work carried out and to offer a few short examples, but we believe it demonstrates the value of a multi-method approach and also the potential for deepening our understanding how spaces are used and conceptualised in situations of severe resource constraint. It is precisely the juxtaposition of usually separate activities and categories which allows us sharpen our insights about space and its multiple uses and meanings.

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## Notes:

[1] ALEXANDER'S (1977) 'pattern language' also attempts to link activities to particular spatial or typological configurations which form the basic building blocks of built environments.

[2] The team were based in CARDO which now forms part of a new research grouping, GURU: Global Urban Research Unit.

[3] We are indebted to Johan Silas and Dewi Septani (ITS Surabaya); Mark Napier and Mary Mothwa (CSIR, Pretoria); Subir Saha and Alpana Bose (SPA, New Delhi) and Maria Ester Pozo and Maggie Anderson (Cochabamba), and Justine Coulson (Newcastle).

[4] Mostly we interviewed the (usually female) household manager but in South Africa, for cultural reasons, we had to interview the household head who was more often male.

[5] The original interview took place in a mixture of Sotho and Zulu, with a some phrases in English and Afrikaans. For a full version of this testimony see KELLETT, MOTHWA and NAPIER (2002). For other examples in the Southern Africa context see EWING (2004).

[6] The graduate student's fluency in Bahasa Indonesia greatly facilitated this work.

# 15 Connecting welfare state regimes, tenure categories and dwelling types[1]

*Joris HOEKSTRA*

## Abstract

*Based on the work of Kemeny, a close relationship between the nature of a society (represented by its welfare state regime) and the share and status (housing quality and housing satisfaction) of the different tenure categories and dwelling types within this society can be assumed. This exploratory contribution tests whether or not this assumption is supported by the data of the European Community Household Panel (ECHP). The ECHP is a large survey that provides comparable information across European-Union member states on indicators such as income, work, social relations, health and housing. In order to grasp the differences in the nature of societies, the countries of the European Union are classified on the basis of the (extended) welfare state typology of Esping-Andersen. In this typology, four different welfare state regimes are distinguished: social democratic, corporatist, liberal and Mediterranean.*

*Two different statistical techniques are used throughout the contribution. First, the relationships between welfare state regime type on the one hand, and the share and status of the different tenure categories and dwelling types on the other hand, are described by means of a cross table analysis. Subsequently, two cluster analyses are conducted: one for the variable 'tenure category' and one for the variable 'dwelling type'. The clusters that result from these cluster analyses are interpreted and compared with the typology of the four welfare state regimes. Conclusions are drawn based on the results of the statistical analysis, and some directions for further research are outlined.*

**Keywords:** *Welfare State Regimes, International Comparative Housing Research, Housing Quality European Community Household Panel, Cluster Analysis.*

## 1. Introduction

The work of the housing researcher Jim Kemeny serves as the theoretical starting point for this contribution. In his theoretical work, Kemeny draws a distinction between societies with a collectivist social structure and societies with a privatist social structure. He states that there is a relationship between the 'nature' of a particular society (the ideology that is dominant within the social structure of that society) and the organisation of its welfare system. Although exceptions occur, highly developed welfare states tend to possess collectivised social structures, whereas poorly developed welfare states tend to be characterised by privatised social structures (KEMENY, 1992:110).

The differences in ideology and social structure do not only affect the welfare system, but they are also strongly related to the organisation of the housing system. In this respect, a housing system is defined as a system of interrelationships between all the actors (individual and corporate), housing units and institutions involved in the production, consumption, and regulation of housing (HOEKSTRA, 2003:58). Within the housing system, the tendencies towards collectivism and privatism are manifested in two important respects: the social forms which emerge around the ownership of housing and the socio-spatial consequences of the dominance of one or more dwelling types (KEMENY, 1992:125).

The first aspect, the relationship between the type of welfare state and tenure, has been heavily debated in international comparative housing research circles. Nevertheless, empirical research on this issue is rather scarce. SCHMIDT (1989:83-110) is one of the few researchers who have conducted such research. Based on data from 18 advanced industrial countries, Schmidt concluded that that there is a strong negative correlation between the rate of owner-occupation and the development of the welfare state (measured by the degree of government welfare expenditure). However, in his statistical analyses Schmidt only paid attention to the share of the different tenure categories. Various researchers (for example RUONAVAARA, 1993:3) have argued that this is a rather narrow way of looking at tenure. Therefore, this contribution not only deals with the distribution of each of the tenure categories, but also with housing quality and housing satisfaction issues.

The second aspect, the socio-spatial consequences of the dominance of one or more dwelling types, has remained almost un-researched. This is rather curious because according to Kemeny, there is a close relation between the share of the various dwelling types and the social organisation of a society '...The single difference between societies in the predominance of one dwelling type over another is an important index in the organisation of everyday life and perhaps the provision of welfare. This fact alone could possibly constitute the basis for understanding some important differences between industrial societies' (KEMENY, 1992:124).

This article aims to test whether Kemeny's assumptions are supported by empirical data: is there is a relationship between the nature of a particular society (represented by the

characteristics of its welfare state), and the share and status (represented by the housing quality and the housing satisfaction of the residents) of the various tenure categories and dwelling types within this society? The welfare state typology of Esping-Andersen is used to grasp differences in the nature of societies. The share and status of the different tenure categories and dwelling types are measured with the help of the housing variables in the European Community Household Panel (ECHP).

## 2. Typologies of Welfare States

Kemeny's typology of societies and welfare systems does not provide a comprehensive classification of the EU-countries, thus making it less suitable for conducting EU-wide comparative research (which is the aim of this contribution). Therefore, the **welfare state typology** of Esping-Andersen is used as an alternative. Esping-Andersen argues that the differences between advanced, industrial, countries can be reduced to three ideal typical welfare states: social-democratic, corporatist, and liberal. These differ fundamentally from each other in aspects such as the 'degree of **decommodification**', '**social stratification**' and the '**mix between the state, the market and the family**'. Although they focus on different aspects, and have a slightly different vision on some concepts, Kemeny's work has many things in common with Esping-Andersen's welfare state typology. However, the latter typology has one major advantage in comparison to the work of Kemeny. Whereas Kemeny's work is mainly of a conceptual nature, Esping-Andersen has empirically underpinned his typology. On the basis of statistical analysis, he has classified a number of Western countries according to the characteristics of their welfare state. The remainder of this section deals with the welfare state typology of Esping-Andersen (with the addition of a fourth regime type: the Mediterranean welfare state regime).

### 2.1 Four Welfare State Regimes

In ***social-democratic welfare state regimes***, the state is the dominant provider of welfare services. These services have a high standard and are accessible to a large proportion of the population. Because of the re-distributive effects of the welfare state, the income differences are relatively low. Sweden is the classic example of a social-democratic welfare state, although the other Scandinavian countries and the Netherlands[2] also belong to this regime type.

In ***corporatist welfare state regimes***, the State is also fairly active in the provision of welfare services. However, this does not lead to income redistribution, since the preservation of the existing hierarchy in society is the starting-point for the welfare policies at State level. As a result of this, the welfare provision is segmented; different groups are entitled to different welfare services and the nuclear family is often explicitly privileged. Furthermore, the State is definitely not the only provider of welfare services. The family and private non-profit organizations (churches, trade unions, and so on) also play an important part. Austria, Germany, Italy and Belgium are representative

corporatist welfare state regimes.

The ***liberal welfare state regime*** is characterized by little State interference and a strong market orientation. Most welfare services are provided by private companies and the State only provides help for a limited group of people with really low incomes (safety net). Consequently, the society is characterized by dualism. There is equality (but also poverty) under the recipients of State welfare, whilst there is a differentiation in income in the rest of the society. The United States, Australia, and, to a somewhat lesser extent, the United Kingdom and Ireland represent liberal welfare state regimes.

In the original typology of Esping-Andersen, Southern Europe was not taken into consideration. As a reaction to this, some extensions to the Esping-Andersen typology have been proposed. Inspired by the welfare systems of the Southern European countries, BARLOW and DUNCAN (1994:29) have formulated a new type of welfare state regime type: the ***Mediterranean welfare state regime***[3]. In Mediterranean welfare states, there is no right to welfare and no history of full employment policies. In this respect, this regime type is similar to the liberal model, stressing residualism and forcing entry into the labour market. However, in contrast to liberal welfare states, the provision of welfare services is not dominated by market parties but by the family. Greece, Portugal and Spain are examples of Mediterranean welfare state regimes (BARLOW, DUNCAN, 1994:30). In his later work, Esping-Andersen has also acknowledged the particular welfare state characteristics of the Southern European countries. However, he prefers to consider the Mediterranean welfare state regime as a kind of sub-regime of the

**Table 1**
Four different welfare state regimes.

| | Liberal welfare state regime | Social democratic welfare state regime | Corporatist welfare state regime | Mediterranean welfare state regime |
|---|---|---|---|---|
| **Decommodification** | low | high | relatively high | low |
| **Stratification** | high, mainly based on income | low | high, mainly based on social status | high |
| **Arrangement between state, market and family** | dominant position of market parties | dominant position of the state | important position for the family, considerable influence for private non-profit organisations | dominant position for the family |
| **Countries (EU-countries only)** | United Kingdom, Ireland | The Netherlands, Denmark, Sweden, Finland | Belgium, Germany, France, Italy, Austria | Greece, Portugal, Spain |

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corporatist welfare state regime (ESPING-ANDERSEN, 1999:94).

The most relevant features of the welfare state typology that is used in this contribution are shown table 1. The classification of countries in this table is derived from the work of MATZNETTER (2002:269). It is important to recognize that the typology is of ideal typical nature. Most countries will only correspond to the welfare state regime in which they are classified to a certain extent. Therefore, the typology should not be seen as an exhaustive classification system. It is merely an analytical device that is used to make sense of the differences between countries (HOEKSTRA, 2003:59).

## 3. Research Approach, Methods and Data

### 3.1 Research Approach

In classical **deductive research**, using a particular theoretical framework also means formulating hypotheses. This implies that the welfare state typology of Esping-Andersen should be applied to the field of housing, which should, in turn, result in a number of hypotheses that indicate how the share and status of the different tenure categories and dwelling types are expected to differ between welfare state regimes. However, this article follows a more **explorative approach**, for the reasons, which are outlined below.

According to RAPOPORT (2001:145), it is not very fruitful to directly connect a general and abstract concept, such as a welfare state regime, to something rather concrete like the quality of a dwelling or the degree of satisfaction of residents with their housing. Rapoport argues that one should follow a **step-by-step** approach instead. First, one should investigate how the nature of a particular society is reflected in both physical and non-physical concepts such as values, specific institutions, policies, rules, lifestyles, meanings etc. Subsequently, these intermediate concepts should be related to concrete aspects of the built environment. In respect of this contribution the share, the housing quality and the appreciation (housing satisfaction of the residents) of the different tenure categories and dwelling types is considered.

Rapoport's approach can only be followed if one has some theoretical notions concerning the relevance and nature of the various steps. Which concepts at the intermediate level adequately reflect the differences between welfare state regimes? How can these concepts be linked to international differences regarding the share and status of the different tenure categories and dwelling types? Unfortunately, such theoretical notions are not available. Consequently, hypothesizing on the possible connections between welfare state regime, tenure category and dwelling type would be a very complex and probably also very speculative activity.

Hence the reason for a more exploratory and inductive approach being taken. This article merely attempts to investigate whether the share, the housing quality and the appreciation (housing satisfaction) of the different tenure categories and dwelling types,

differ between welfare state regimes. Do the welfare state characteristics of a particular society really matter? Only if the answer to this question is positive, the relations between welfare state regime type on the one hand, and tenure category and dwelling type on the other hand, need to be investigated in more detail, following the step-by-step approach advocated by RAPOPORT (2001:149).

### 3.2 Research Methods

Two different statistical techniques are used to check whether there is a relationship between welfare state regime type on the one hand, and tenure category and dwelling type on the other hand. First, a **cross table analysis** is conducted. Based on the results of this cross table analysis, the EU-countries are subsequently classified in a **cluster analysis**. Two separate cluster analyses were carried out: one for the variable tenure category and one for the variable dwelling type. The clusters that result from these cluster analyses are interpreted and compared with the typology of the four welfare state regimes.

### 3.3 Data

All the data used in this contribution come from the **European Community Household Panel** (ECHP). In the ECHP-survey, residents from all the EU-countries are interviewed about their work, their economic situation, their health and their accommodation. Since, this is carried out in a uniform way (the same questions are asked in all EU-countries), the introduction of the ECHP has opened up new possibilities for international comparative housing research. The sample size of the ECHP ranges between 1.760 households in Ireland and 5.680 households in Sweden. The ECHP data used in this contribution applies to the years 2000 (data on housing satisfaction for the United Kingdom) and 2001 (all other data).

## 4. Results

This section provides a number of cross tables that indicate how the share, the housing quality and the appreciation of the different tenure categories and dwelling types differ between the four welfare state regimes that were described in section two.

### 4.1 The Distribution of Tenure Categories and Dwelling Types

Table 2 gives an insight into the distribution of tenure categories and dwelling types in thirteen of the fifteen EU-countries. Luxembourg was not included in this table since this country cannot be classified on the basis of the welfare state typology of Esping-Andersen. Sweden was excluded because the Swedish respondents did not answer the accommodation questions in the ECHP.

#### Tenure Categories

As far as the distribution of tenure categories is concerned, one can observe that the highest **rates of home-ownership** can be found in the Mediterranean welfare state regime. The rate of home ownership is 85% in Greece and Spain but somewhat less in Portugal, where 68% of the stock is owner- occupied. The countries of

the liberal welfare state regime also have relatively high rates of homeownership: 83% in Ireland and 72% in the United Kingdom. Within the corporatist welfare state regime, the picture is rather diverse. Most corporatist countries have a fairly high rate of homeownership although Germany and, to a lesser extent Austria, also have a very substantial rental sector. Notwithstanding the fact that the social-democratic welfare state regime is often associated with a large (social) rented sector, the majority of the dwellings in this regime type is owner-occupied as well, with homeownership rates ranging from 57% in the Netherlands to 69% in Finland.

One may conclude, therefore, that the above results basically support the conclusions of Schmidt; welfare states with relatively little government intervention (Mediterranean welfare state regime, liberal welfare state regime) tend to have a higher share of owner-occupied dwellings than welfare states with a comprehensive welfare system (corporatist welfare state regime, social-democratic welfare state regime). Nevertheless, there are also substantial differences within each of the welfare state regimes. The corporatist welfare state regime is especially characterised by large internal variations.

## Dwelling Types

Concerning the distribution of dwelling types, table 2 shows that the countries within the liberal welfare state regime (United Kingdom, Ireland) have a higher **share of single-family dwellings** than the countries that belong to one of the other three welfare state regimes. In the latter group of countries, the differences within the various welfare state regimes are bigger than the differences between these regimes. Especially within the corporatist and the Mediterranean welfare state regime, there are considerable differences between the countries that belong to these regime types.

## The Relationship Between Tenure Category and Dwelling Type

Table 2 also shows that there is a clear correlation between tenure category and dwelling type. In all EU-countries, single-family dwellings are more often owner-occupied than are apartments. A **CHI-square test** indicated that this relationship is statistically significant ($p < 0.01$) for all countries in the table, which is not surprising given the large sample sizes in the ECHP. However, the table also demonstrates that the strength of the relationship between dwelling type and tenure category differs between countries and welfare state regimes. In order to quantify this relationship, the so-called **'Proportional Reduction of Uncertainty'** (PRU) has been calculated. The PRU is a bivariate **measure of association** that indicates the proportional reduction in error when values of one variable are used to predict values of the other variable (BLALOCK, 1981:309). For example, a PRU-value of 0.25 indicates that knowledge of one variable reduces the error in predicting values of the other variable by 25%. Unlike CHI-square, the value of PRU is not dependent on the number of cases.

A closer inspection of the PRU-values shows that there is a clear division between Spain, Portugal, Greece and Italy (PRU-values

**Table 2**
The distribution of tenure categories and dwelling types in 13 EU-countries, %of all dwellings and column percentages (in paranthesis)
Source: European Commission, Eurostat, European Comminity Household Panel (ECHP), 2001 (UDB).
* Due to the small number of cases, Eurocast does not allow publication of these figures. (right)

are lower than 0,05) and the other EU-countries[4] (PRU-values range between 0,11 and 0,30). In the four Southern European countries, with the exception of Italy all belonging to the Mediterranean welfare state regime, the percentages of owner-occupied and rental dwellings do not differ very much between single-family dwellings and apartments (table 2, see the column percentages that are indicated in parenthesis). In the rest of the EU, however, apartments are mainly rented, whereas single-family dwellings are predominantly owner-occupied. As far as this is concerned, there are no clear differences between countries belonging to the social-democratic, the corporatist and the liberal welfare state regime. In fact, the differences within each of these regime types are bigger than the differences between the regimes.

| | Single-family dwelling | Apartment | Total |
|---|---|---|---|
| **Denmark** (PRU=0.261) | | | |
| Owner-occupied | 59 (86) | 9 (28) | 68 |
| Rented | 10 (14) | 22 (72) | 32 |
| Total | 69 (100) | 31 (100) | 100 |
| **Finland** (PRU=0.142) | | | |
| Owner-occupied | 49 (86) | 20 (46) | 69 |
| Rented | 8 (14) | 23 (54) | 31 |
| Total | 57 (100) | 43 (100) | 100 |
| **The Netherlands** (PRU=0.152) | | | |
| Owner-occupied | 50 (70) | 7 (22) | 57 |
| Rented | 21 (30) | 22 (78) | 43 |
| Total | 71 (100) | 29 (100) | 100 |
| **Belgium** (PRU=0.172) | | | |
| Owner-occupied | 69 (84) | 6 (33) | 75 |
| Rented | 13 (16) | 12 (67) | 25 |
| Total | 82 (100) | 18 (100) | 100 |
| **France** (PRU=0.193) | | | |
| Owner-occupied | 53 (81) | 11 (31) | 64 |
| Rented | 12 (19) | 24 (69) | 36 |
| Total | 65 (100) | 35 (100) | 100 |
| **Italy** (PRU=0.026) | | | |
| Owner-occupied | 33 (85) | 44 (70) | 77 |
| Rented | 5 (15) | 18 (30) | 23 |
| Total | 38 (100) | 62 (100) | 100 |
| **Austria** (PRU=0.304) | | | |
| Owner-occupied | 44 (84) | 11 (22) | 55 |
| Rented | 8 (16) | 37 (78) | 45 |
| Total | 52 (100) | 48 (100) | 100 |
| **Germany** (PRU=0.261) | | | |
| Owner-occupied | 34 (72) | 8 (15) | 42 |
| Rented | 13 (28) | 45 (85) | 58 |
| Total | 47 (100) | 53 (100) | 100 |
| **United Kingdom** (PRU=0.114) | | | |
| Owner-occupied | 66 (80) | 6 (36) | 72 |
| Rented | 17 (20) | 11 (64) | 28 |
| Total | 83 (100) | 17 (100) | 100 |
| **Ireland** | | | |
| Owner-occupied | 82 (84) | * | 83 |
| Rented | 15 (16) | * | 17 |
| Total | 97 (100) | 3 | 100 |
| **Spain** (PRU=0.013) | | | |
| Owner-occupied | 36 (90) | 49 (82) | 85 |
| Rented | 4 (10) | 11 (18) | 15 |
| Total | 40 (100) | 60 (100) | 100 |
| **Portugal** (PRU=0.022) | | | |
| Owner-occupied | 48 (73) | 20 (57) | 68 |
| Rented | 17 (27) | 15 (43) | 32 |
| Total | 65 (100) | 35 (100) | 100 |
| **Greece** (PRU=0.049) | | | |
| Owner-occupied | 47 (93) | 38 (76) | 85 |
| Rented | 4 (7) | 11 (24) | 15 |
| Total | 51 (100) | 49 (100) | 100 |

2

## 4.3 Housing Quality

The concept of **housing quality** has many dimensions (LAWRENCE, 1995:1655). In this article, however, housing quality only refers to the measurable characteristics of a dwelling, such as the number of rooms or the presence of facilities. The ECHP contains a number of variables that can be used to measure these dwelling characteristics. The most important of these housing variables have been integrated into a **housing quality index**. Table 3 shows how this index has been constructed. It should be noted that the variables in the housing quality index are based on subjective, self-reported data (answers of the respondents). Since cultural differences can result in differing interpretations of the same questions and answer categories (HEALY, 2003: 414), this may have an affect on the reliability of the housing quality index. However, this is inevitable in any kind of survey-based international comparative research.

Table 4 shows the average scores on the housing quality index for the different tenure

| Aspect | Points |
|---|---|
| number of rooms | 1 point for every room, maximum 6 points |
| presence of a bath or shower | 1 point if present |
| presence of an indoor flushing toilet | 1 point if present |
| presence of heating | 1 point if present |
| presence of place to sit outside | 1 point if present |
| lack of light | 1 point if there is no lack of light |
| condition of the roof | 1 point if there is no leaky roof |
| presence of humidity problems | 1 point if there are no humidity problems |
| presence of putrefaction | 1 point if there is no rot in window frames and floors |

3

**Table 3**
The construction of a housing quality index.

**Table 4**
Average score on the housing quality index for the different tenure categories and dwelling types in 12 EU-countries, and the ratios of these averages. Source: European Commission, Eurostat, European Comminity Household Panel (ECHP), 2001 (UDB).

categories and dwelling types. Based on this table, one can conclude that there are important differences between countries with regard to the overall level of housing quality. Irish dwellings have the highest housing quality, whereas the lowest overall score can be found in Portugal. However, the focus of this contribution is not on absolute housing quality differences between EU-countries, but on differences between tenure categories and dwelling types within each of these countries. Hence the reason why a ratio has been calculated for both the variables tenure category (owner-occupied dwellings / rental dwellings: RTC-HQ) and dwelling type (single-family dwellings / apartments: RDT-HQ). A closer inspection of these ratios leads to the following conclusions.

First of all, it is clear that owner-occupied dwellings generally have a better housing quality than rented dwellings. In relationship to this concept, there is no clear relationship with the welfare state regime type to which a country belongs, although two countries of the Mediterranean welfare state regime (Spain and Greece) have slightly lower RTC-HQ ratios than the other EU-countries.

Second, table 4 illustrates that in most

| | Owner-occupied dwellings | Rental dwellings | Single-family dwellings | Apartments | Column 1 / column 2 (RTC-HQ) | Column 3 / column 4 (RDT-HQ) | Total |
|---|---|---|---|---|---|---|---|
| Denmark | 12.33 | 10.55 | 12.34 | 10.48 | 1.17 | 1.18 | 11.77 |
| Finland | 11.44 | 9.70 | 11.66 | 9.91 | 1.18 | 1.18 | 10.90 |
| The Netherlands | 12.94 | 11.51 | 12.81 | 11.10 | 1.12 | 1.15 | 12.32 |
| Belgium | 12.06 | 10.56 | 11.95 | 10.46 | 1.14 | 1.14 | 11.68 |
| France | 11.93 | 10.09 | 11.99 | 9.90 | 1.18 | 1.21 | 11.26 |
| Italy | 11.30 | 10.27 | 11.45 | 10.81 | 1.10 | 1.06 | 11.06 |
| Austria | 12.44 | 10.31 | 12.48 | 10.39 | 1.21 | 1.20 | 11.48 |
| United Kingdom | 12.34 | 10.78 | 12.28 | 10.12 | 1.14 | 1.21 | 11.92 |
| Ireland | 12.67 | 11.21 | 12.45 | 11.22 | 1.13 | 1.11 | 12.42 |
| Spain | 11.32 | 10.44 | 11.46 | 10.99 | 1.08 | 1.04 | 11.18 |
| Portugal | 10.43 | 8.61 | 9.80 | 9.88 | 1.21 | 0.99 | 9.83 |
| Greece | 10.36 | 9.97 | 9.93 | 10.69 | 1.04 | 0.93 | 10.30 |

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countries, the housing quality of single-family dwellings is better than the housing quality of apartments (RDT-HQ ratio). Portugal and Greece are exceptions to this rule. In these countries, the average housing quality of apartments is higher than the average housing quality of single-family dwellings. In Spain and Italy, there are only limited housing quality differences between single-family dwellings and apartments. Thus, as far as the RDT-HQ ratio is concerned, the Mediterranean welfare state regime distinguishes itself from the other three regime types.

## 4.4 Housing Satisfaction

In order to get insight into the relationship between the welfare state regime type on the one hand, and the **housing satisfaction** of residents in the different tenure categories and dwelling types on the other, the scores on the ECHP-variable 'satisfaction with the housing situation' have been analysed. This variable has values that range from 1 (not satisfied) to 6 (fully satisfied). Table 5 shows how the average satisfaction with the housing situation differs between the various tenure categories and dwelling types. In respect of this aspect, two ratios (RTC-HS and RDT-HS) were also calculated.

With regard to the tenure type related ratio (RTC-HS), one can conclude that residents in owner-occupied dwellings are generally more satisfied with their housing situation than residents in rental dwellings. In this respect, there doesn't seem to be a strong relationship with the type of welfare state regime, although Ireland clearly has the highest score.

The scores on the dwelling type related ratio (RDT-HS) on the other hand, show a rather clear distinction between the Mediterranean welfare state regime and the other three welfare state regimes. In Portugal and Greece residents in apartments are generally somewhat more satisfied with their housing situation than residents in single-family dwellings (ratios lower than 1). The third country of the Mediterranean welfare state regime, Spain, has a RDT-HS ratio that is only marginally higher than 1 (1.01),

**Table 5**
Average housing satisfaction for the different tenure categories and dwelling types in 12 EU-countries, and the ratios of these averages. Source: European Commission, Eurostat, European Comminity Household Panel (ECHP), 2000, 2001 (UDB).
1. The figures for the United Kingdom refer to the year 2000 instead of 2001.

| | Owner-occupied dwellings | Rental dwellings | Single-family dwellings | Apartments | Column 1 / column 2 (RTC-HS) | Column 3 / column 4 (RDT-HS) | Total |
|---|---|---|---|---|---|---|---|
| Denmark | 5.27 | 4.76 | 5.26 | 4.76 | 1.11 | 1.11 | 5.10 |
| Finland | 4.99 | 4.46 | 4.96 | 4.65 | 1.12 | 1.07 | 4.82 |
| The Netherlands | 5.21 | 4.67 | 5.12 | 4.62 | 1.12 | 1.11 | 4.98 |
| Belgium | 5.06 | 4.39 | 4.98 | 4.48 | 1.15 | 1.11 | 4.89 |
| France | 4.93 | 4.32 | 4.85 | 4.46 | 1.14 | 1.09 | 4.71 |
| Italy | 4.40 | 3.69 | 4.43 | 4.10 | 1.19 | 1.08 | 4.23 |
| Austria | 5.35 | 5.05 | 5.33 | 5.08 | 1.06 | 1.05 | 5.21 |
| United Kingdom[1] | 5.29 | 4.78 | 5.22 | 4.78 | 1.10 | 1.09 | 5.14 |
| Ireland | 5.14 | 4.12 | 4.99 | 4.17 | 1.25 | 1.20 | 4.96 |
| Spain | 4.56 | 4.12 | 4.52 | 4.48 | 1.11 | 1.01 | 4.50 |
| Portugal | 4.29 | 3.54 | 3.96 | 4.20 | 1.21 | 0.94 | 4.04 |
| Greece | 4.00 | 3.71 | 3.82 | 4.09 | 1.08 | 0.93 | 3.95 |

which indicates that there are almost no differences in housing satisfaction between residents in apartments and residents in single-family dwellings. In the countries that belong to the other three welfare state regimes, residents in single-family dwellings are generally more satisfied with their housing situation than residents in apartments. As far as this is concerned, there does not seem to be any major differences between the social democratic, the corporatist and the liberal welfare state regime. However, also here, the highest score is found in Ireland.

## 5. Cluster Analysis

Cluster analysis is a classification method that can be used to reduce the number of cases (in the case of this paper, the number of countries). The aim of such an analysis is the grouping of similar cases, in order to identify clusters, which are both internally homogeneous and different from other clusters. A cluster analysis can show which EU-countries 'cluster together' with respect to the share and the status of the different tenure categories and dwelling types. If this clustering somehow corresponds with the welfare state regime clusters that were distinguished by Esping-Andersen (section 2), one can conclude that there is a relationship between the welfare state regime type on the one hand, and the share and status of the different tenure categories and/or dwelling types, on the other hand. Since there are two housing variables involved, that of tenure category and dwelling type, a separate cluster analysis was carried out for each of these variables.

### 5.1 A Cluster Analysis for The Variable Tenure Category

The following variables were included in this analysis.

- % of owner-occupied dwellings (table 2)
- The ratio (owner-occupied dwellings/ rental dwellings) of the average scores on the housing quality index: RTC-HQ (table 4)
- The ratio (owner-occupied dwellings/ rental dwellings) of the average satisfaction with the housing situation: RTC- HS (table 5)

The scores on these variables for 12 EU-countries (no data was available for Sweden, Germany and Luxembourg) were imported in a separate database and standardised to Z-scores. Subsequently a cluster analysis was carried out. This analysis followed a hierarchical cluster method; Ward's method (using the squared euclidean distance as a

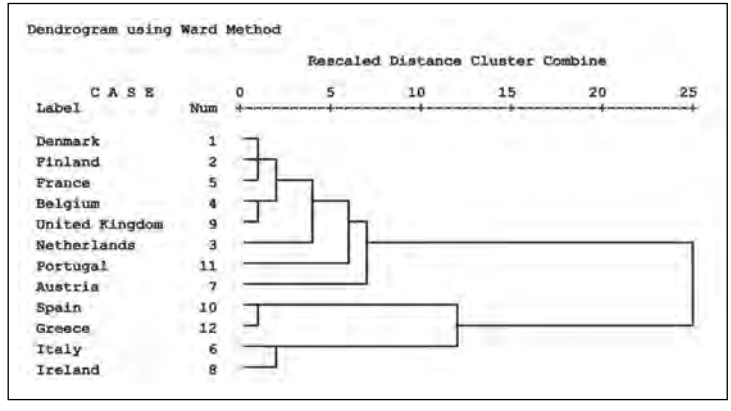


**Figure 1**
Dendogram of the cluster analysis for the variable `tenure category`.

distance measure). This method attempts to minimize the loss of information when two cases are grouped together (ALDENDERFER, BLASHFIELD, 1984:43). Ward's method normally results in rather compact and homogenous clusters.

Figure 1 shows the dendrogram (countries on the X-axis, loss of information on the Y-axis) of the cluster analysis for the variable tenure category. From this dendrogram, one can conclude that it is logical[5] to stop the clustering process when there are two clusters left: one 'small' cluster with Italy, Ireland, Spain and Greece, and one 'big' cluster with the other EU-countries. If these two clusters are compared with the welfare state typology of Esping-Andersen, only the Mediterranean welfare state regime partially stands out. After all, two countries of this regime type are included in the small cluster (together with Ireland and Italy) and only Portugal, (the third country of the Mediterranean welfare state regime) belongs to the big cluster.

Within the big cluster, countries that belong to different welfare regime types all mix with each other. In the first steps of the clustering process Denmark, Finland (social-democratic welfare state regimes), France, Belgium (corporatist welfare state regimes) and the United Kingdom cluster together in one group. At a later stage, this group is joined by the Netherlands (social democratic welfare state regime), Portugal (Mediterranean welfare state regime) and Austria (corporatist welfare state regime). Table 6 shows how the big cluster and the small cluster differ from each other.

The table makes clear that there are statistically significant differences (analysis of variance, $p < 0.01$) between the clusters with regard to the variables 'percentage of owner-occupied dwellings' and 'ratio of the average scores on the housing quality index' (RTC-HQ). In the small cluster, the percentage of owner-occupied dwellings is significantly higher than in the big cluster. At the same time, the RTC-HQ ratio is lower in the former cluster. The differences between the small cluster and the big cluster on the variable 'ratio average scores on housing satisfaction' (RTC-HS) were not statistically significant ($p=0.67$) when a Mann-Whitney test was applied.

## 5.2 A Cluster Analysis for The Variable Dwelling Type

The following variables were included in this analysis.

- % of single-family dwellings (table 2)
- The ratio (single-family dwellings / apartments) of the average scores on the housing quality index: RDT-HQ (table 4)
- The ratio (single-family dwellings / apartments) of the average satisfaction with the housing situation: RDT- HS (table 5)

**Table 6**
Characteristics of the two clusters that result from the cluster analysis for the variable `tenure category`.
Source: European Commission, Eurostat, European Comminity Household Panel (ECHP), 2001 (UDB).
* Statistically significant at the 95 % - level in an ANOVA-analysis.

| | big cluster | | small cluster | |
|---|---|---|---|---|
| | mean | std. deviation | mean | std. deviation |
| % owner-occupied dwellings * | 66% | 6.97 | 83% | 3.79 |
| Ratio on housing quality index (RTC-HQ) * | 1.17 | 0.03 | 1.09 | 0.04 |
| Ratio on housing satisfaction (RTC-HS) | 1.13 | 0.04 | 1.16 | 0.08 |

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The cluster method for the variable 'dwelling type' was exactly the same as the cluster method for the variable 'tenure category'. Figure 2 shows the dendrogram.

Also here, it seems logical to stop the clustering process when there are two clusters left: one small cluster with the four Mediterranean EU-countries, with the exception of Italy all belonging to the Mediterranean welfare state regime, and one big cluster with the countries of the other three welfare state regimes. If figure 1 is compared with figure 2, one can conclude that for the variable 'dwelling type', the two clusters emerge with considerably less loss of information (represented by the x-axis) than for the variable 'tenure category'. This implies that the differences between the two 'dwelling type related' clusters are bigger than the differences between the two 'tenure category related' clusters. Table 7 shows that this is indeed the case. Based on this table, the following conclusions may be drawn.

- The Southern European EU-countries (small cluster) are characterised by a considerably lower share of single-family dwellings than the other EU-countries (big cluster).
- In the Southern European EU-countries (small cluster), there are no significant housing quality differences between single-family dwellings and apartments. In the rest of the European Union (big cluster), single-family dwellings generally have a higher housing quality than apartments.
- In the Southern European EU-countries (small cluster), there are no significant differences in housing satisfaction between residents in single-family dwellings and residents in apartments. In the other EU-countries (big cluster), residents in single-family dwellings are generally more satisfied with their housing situation than residents in apartments.

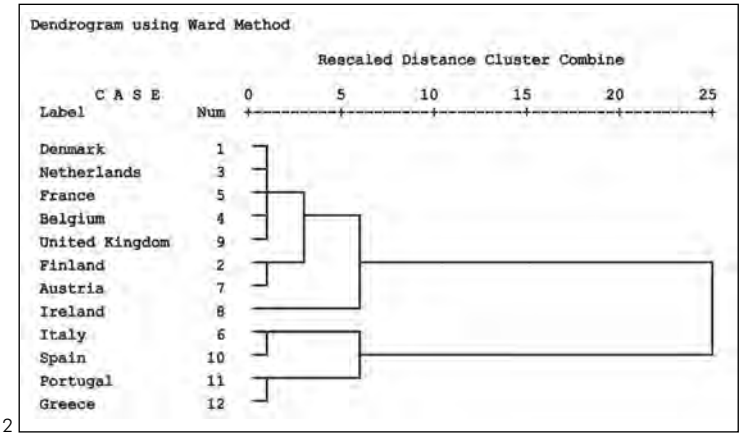


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**Figure 2**
Dendogram of the cluster analysis for the variable `dwelling type`.

**Table 7**
Characteristics of the two clusters that result from the cluster analysis for the variable `dwelling type`. Source: European Commission, Eurostat, European Comminity Household Panel (ECHP), 2001 (UDB). * Statistically significant at the 95 %- level in an ANOVA-analysis.

| | big cluster | | small cluster | |
|---|---|---|---|---|
| | mean | std. deviation | mean | std. deviation |
| % single-family dwellings * | 72 | 0.04 | 49 | 0.06 |
| Ratio on housing quality index (RDT-HQ) * | 1.17 | 0.04 | 1.00 | 0.06 |
| Ratio on housing satisfaction (RDT-HS) * | 1.10 | 0.04 | 0.99 | 0.07 |

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## 6. Conclusions and Directions for Further Research

### 6.1 Conclusions

This contribution has been explorative and should merely be considered as a starting-point for discussion and further research. The contribution aimed to test a general hypothesis of the housing researcher Jim Kemeny, who postulates that there is a close connection between the nature of societies on the one hand, and the share and the status the different tenure categories and dwelling types, on the other hand. In order to grasp the differences in the nature of societies, the EU-countries were classified according to the (extended) welfare state regime typology of Esping-Andersen. The data on housing quality and housing satisfaction came from the European Community Household Panel (ECHP). A cross table analysis and two cluster analyses were carried out to test whether Kemeny's assumption is supported by empirical data. Based on these statistical analyses, the following conclusions can be drawn.

#### The Relation Between Welfare State Regime and Tenure Category

The relationship between welfare state regime and tenure category is not very clear. Although the cluster analysis for the variable 'tenure category' resulted in two separate clusters, these clusters only came about after a significant loss of information. Moreover, the tenure category related clusters do not correspond completely with the welfare state regime types of the typology of Esping-Andersen, although the countries of the liberal and the Mediterranean welfare state regime dominate the small cluster (see figure 1).

Furthermore, it should be noted that the differences between the two tenure category related clusters are not very big. Only the share of owner-occupied dwellings clearly differs between these two clusters (see table 6), with the highest homeownership rates in the small cluster. At the same time, the housing quality differences between single-family dwellings and apartments are relatively limited in the small cluster. This is a surprising result that appears to be in contradiction with the common assumption that a low percentage of rental dwellings will lead to a residual rental sector, in which the dwellings have a relatively low quality (compared to the owner-occupied dwellings). Therefore, this issue definitively merits further research.

#### The Relation Between Welfare State Regime Type and The Share and Status of The Different Dwelling Types

The statistical analyses in this contribution showed that the relationship between welfare state regime and dwelling type is stronger than the relationship between welfare state regime type and tenure category. Nevertheless, in respect of the variable 'dwelling type', no substantial differences between the social-democratic, the corporatist and the liberal welfare state regime were found. However, there are clear differences between these three welfare state regimes on the one hand, and the Mediterranean welfare state regime on the other hand. Compared to the other three

welfare state regimes, the Mediterranean welfare state regime is characterised by the presence of a high percentage of apartments, and few housing quality and housing satisfaction differences between single-family dwellings and apartments. In this respect, it should be noted that Italy, a corporatist welfare state regime according to the Esping-Andersen typology, has a lot in common with the other Southern European EU-countries, all belonging to the Mediterranean welfare state regime type. BARLOW and DUNCAN (1994:30) have also acknowledged the peculiar position of Italy. According to these authors, Italy can be seen as straddling the Mediterranean and corporatist regimes, both socially and geographically. While the north of Italy is part of the central corporatist core of the EU, the south retains many of the features of Mediterranean welfare states.

### Final Conclusion

Based on the above observations, one can conclude that especially the relationship between the welfare state regime on the one hand, and the share and status of the different dwelling types on the other hand, deserves more research. This relationship clearly distinguishes the Mediterranean EU-countries from the rest of the European Union. Nonetheless, this issue has hardly been explored in international comparative housing research. This implies that many questions still have to be addressed before more valid conclusions can be drawn about the nature of the differences that were described in this contribution. In the second part of this section, five such issues are dealt with, and some possible directions for further research are outlined.

## 6.2 Directions for Further Research

### The Causal Relations Between Welfare State Regime and Dwelling Type

This contribution has connected a rather broad and abstract concept (welfare state regime) to something quite concrete (housing quality and the appreciation of single-family dwellings compared to apartments). When making this connection, the causal relationships that play a role at the intermediate level (through which aspects and causal relations do differences between welfare state regimes result in differences in the share and status of the different dwelling types?) have not been taken into consideration. However, now that it has become clear that there is, indeed, a relationship between type of welfare state regime and the share and status of the different dwelling types, it is, in fact, very relevant to analyse this relationship in more detail, by dissecting it into relevant intermediate concepts. To mention just two important research questions:

- Does the ***meaning*** of single-family dwellings and apartments differ between the Southern European EU-countries and the rest of the European Union? The results of this contribution clearly point in that direction. However, the concept meaning is much broader than the aspects that have been discussed in this contribution (housing quality and housing satisfaction). Therefore, further research on this topic is required.

- To what extent are the differences between the Southern European EU-countries and the rest of the European Union related to differences in **value orientations** and/or **lifestyle**? Does the Southern European way of life, with its intense social street life and many intra-family relations, lead to a relative preference for apartments?

## The Importance of The Variable 'Tenure Category'

In the cross table and cluster analysis, 'tenure category' and 'dwelling type' were mainly seen as two independent variables. Nevertheless, table 2 has shown that for most EU-countries, there is a rather strong relationship between these two variables; single-family dwellings tend to be more often owner-occupied than apartments. However, this relationship is less strong for the Mediterranean EU-countries, the small cluster in the cluster analysis for the variable dwelling type, than for the other EU-countries (the big cluster). This suggests that 'tenure category' might be an important intervening variable in the relationship of welfare state regime - share and status of the different dwelling types. It's very probable that the differences that were found between the Southern European EU-countries on the one hand, and the rest of the European Union on the other hand, can be partly traced back to differences in the relationship between tenure category and dwelling type. Therefore, it is very relevant to study this relationship and its effects in more detail, both statistically (for example with log linear analysis) and with respect to content. Why are Southern European apartments more often owner-occupied than apartments in the rest of the European Union? And how does this influence the housing quality and the housing appreciation?

## The Influence of Phase Differences in The Modernisation Process

The theoretical framework that was applied in this contribution belongs to the so-called **divergence approach**. Theories within this perspective typically use typologies of housing systems derived from cultural, ideological or political theories as the basis for understanding differences between groups of societies (KEMENY, LOWE, 1998:162). An equally important perspective in international comparative housing research is the so-called **convergence approach**. A basic assumption of studies within this perspective is that all modern societies are developing in the same direction. In the convergence approach, the development of housing systems is often connected with general trends, such as the development of industrialism (logic of industrialism) and capitalism (logic of capitalism). This means that differences in housing outcomes are primarily related to 'phase' differences in the modernisation, industrialisation and urbanisation process.

It would be interesting to examine whether the convergence approach can be used to explain the differences that were revealed in this contribution. To what extent is there a relationship between the economic development of a particular country and the share and status of the different dwelling types

within this country? What is the role of urbanisation? Will the suburbanisation process, which has only recently started in the Southern European EU-countries, lead to an increasing share and status of single-family dwellings in this macro-region?

### The Role of Social Housing

Actually, **social rented housing** can be considered as one of the concepts at the intermediate level that were discussed in the first paragraph of this subsection. However, since it is such an important topic in housing research, this issue is dealt with in a separate paragraph. Just as the share and status the different dwelling types, the role of social rented housing clearly differs between Southern Europe and the other EU-countries. In Spain and Greece, less than 1% of the housing stock consists of social-rented dwellings, while this percentage is 5 in Portugal and 6 in Italy. In the other EU-countries, the percentage of social rented dwellings is considerably higher, ranging from 7% in Belgium to 40% in the Netherlands (ECHP, 2001). Thus, there seems to be some kind of correlation between the percentage of social housing and the share and status of single-family dwellings compared to apartments. This issue definitely merits further research (is it just a statistical correlation, or is it a reflection of a causal relationship?).

### Differences within The Dwelling Type Categories and Differences in Location

This contribution did not pay attention to housing quality differences within the two dwelling type categories (single-family dwellings and apartments). However, these differences definitely play an important role. Detached dwellings for example, tend to have a higher housing quality than terraced houses. Luxury penthouses are in no way comparable to small apartments in multi-storey concrete blocks. In this respect, the age of the dwelling is important as well, since new dwellings tend to have a higher quality, and probably also a higher appreciation, than older dwellings. Thus, if one wants to refine the analysis, one should also look at the variation within each of the dwelling types.

Moreover, the location of the dwelling is important as well. Households do not only choose a particular dwelling type, but also a particular living environment (urban, suburban, etc.). Because single-family dwellings and apartments are usually not evenly distributed among the various living environments, it might well be that the choice of a particular dwelling type is, in fact, the choice of a particular living environment. Future international comparative research on the housing quality and appreciation of the various dwelling types should take these aspects into account.

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## Notes:

[1] This publication is a result of the research program Sustainable Urban Areas by Delft University of Technology.

[2] The Netherlands is a hybrid case since this country has both social-democratic and corporatist characteristics.

[3] Barlow and Duncan use the term 'rudimentary welfare state regime' instead of 'Mediterranean welfare state regime'. However, since this welfare state regime type only refers to the Southern European countries, the term 'Mediterranean welfare state regime' is used in this contribution.

[4] Due to the small number of apartments in the Irish sample, a reliable PRU-value for Ireland could not be calculated.

[5] This is always a subjective decision in which various aspects can play a role (loss of information, theoretical considerations, composition of the clusters etc.)

# 16 ASSESSING THE ENVIRONMENTAL EFFICIENCY OF BUILDINGS

*Mauritz GLAUMANN & Tove MALMQVIST*

## Abstract

*Buildings should serve certain functions without jeopardizing the health and well-being of their users. Furthermore, the goal ought to be to fulfil these wishes with the least possible impact on the external environment. Planners, architects, developers, as well as managers of existing buildings, have to balance internal and external requirements simultaneously to create* ***environmentally benign buildings****.*

*Using a building might harm the user if it for example is noisy or emits radon. It might also later harm people elsewhere due to* ***emissions*** *of, for instance, $CO_2$ or $SO_2$ from heating, which may contribute to climate change and acidification. The immediate relative harm to humans could be measured by so-called disability weights, which subsequently facilitate comparisons of a variety of* ***building-related problems****. A disability weight is generally used to characterize a certain* ***health status*** *of a disease. Panels of physicians set them. For comfort and other building-related problems, disability weights are generally not available. Most of these problems are well known, so appropriate disability weights need not necessarily be set by physicians. This paper presents a simplified method to generate disability weights through classification of* ***health states****. The intent is to establish environmental indexes for buildings/estates that may be used by professionals in decision-making and follow-up of environmental objectives.*

*When wishing to establish a comprehensive environmental assessment method for buildings, it is necessary to find a consistent methodology for comparing different environmental problems. The idea of using disability weights for this purpose was inspired by work in social medicine dealing with how the quality of life of an individual is affected by different diseases. The scope of the assessment of health and well-being in the indoor environment of buildings is closely related to the area of understanding of housing qualities in general.*

**Keywords:** *Environmental Efficiency, Buildings, Weighting, DALY, Indoor Environment*

## Introduction

Today a number of simplistic tools exist that can be used for environmental assessment of buildings, for example BREEAM[1] (BRE, 2003), LEED[2] (USGBC, 2003) and Miljöstatus (MFB EKONOMISK FÖRENING, 2002). They normally focus on a number of selected issues without giving a comprehensive picture of the **environmental impact** of an assessed building. In order to get a more comprehensive understanding of the environmental performance of buildings, the term ***environmental efficiency* of a building** is introduced. This concept is meant to be used by practitioners as a means to minimize direct negative impact on people using a building (internal impact) and future impact on people elsewhere (external impact) as a consequence of it use (emissions from heating etc), Figure 1.

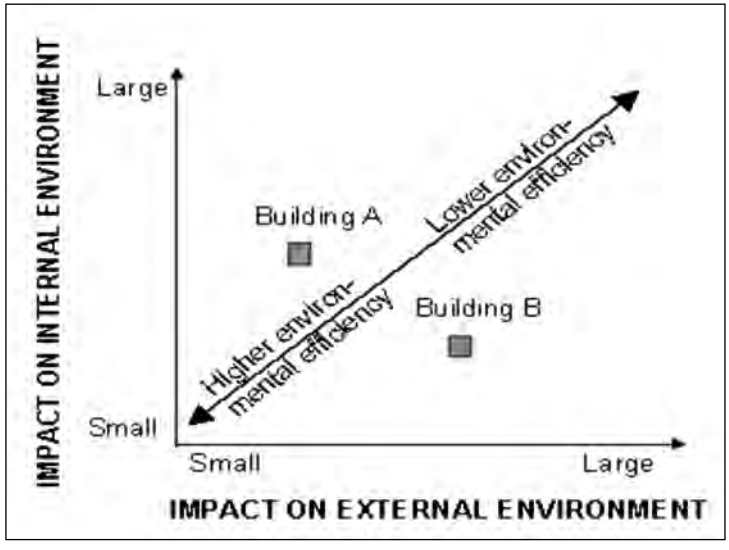


Figure 1
Illustration of how the environmental efficiency of a building can be presented.

The term *environmental efficiency* is inspired by the broader concept of *eco-efficiency* developed by WBSCD[3], which combines a range of economic and ecological values to increase service and minimize the environmental impact of products. The general definition reads:

> Eco-efficiency = product or service value / environmental influence (VERFAILLE, BIDWELL, 2000:2)

The primary value of buildings is their usability, which can be measured by the satisfaction of their users, for instance through a questionnaire. The core of satisfaction can be interpreted as the absence of experienced dissatisfaction or the risk of being negatively affected in the future by the built environment (for example, by radon). In Figure 1, this is referred to as *impact on internal environment*. Soft values, such as positive feelings about the architecture, light etc. are intentionally not captured by this concept. Economy, construction, safety, aesthetics and so forth are treated in the usual design process.

To ascertain the environmental efficiency of a building, both a comprehensive ***internal load index***, ***ILI***, representing impact on people using a building or a property, and an ***external load index***, ***ELI***, representing the potential impact on the external environment caused by using the building, need to be calculated. When ***ILI*** and ***ELI*** have been calculated for a certain build-ing, they may then be compared with corresponding values for other buildings in order to find potential improvements.

The environmental efficiency of a building increases if the internal impact decreases and the external impact remains constant. Environmental efficiency will also increase if a certain level of internal impact is reached with less external impact. Note that there is no clear relation between the internal and external impact from buildings. For example, a certain level of thermal comfort can be attained in different ways, by focusing either on mechanical means or on passive means (insulation, solar shading devices, thermal mass, etc), which lead to a very different impact on the external environment.

Can then, indexes be created that are comprehensive enough to be meaningful and transparent enough to be useful when looking for improvements. To explore the possibility of developing such indexes is a part of a larger project called **EcoEffect** (GLAUMANN, 1999), which aims to develop a general method for the environmental assessment of buildings and building estates. In this paper, advantages and shortcomings together with possible methods of calculat-ing the internal load index for *existing buildings*, $ILI_e$, are discussed[4].

It is difficult or even impossible to measure or objectively describe some **properties of buildings**. Choices that may lead to bias or incompleteness have to be made. Nonetheless, the hypothesis here is that it is possible to find sufficient measurable kinds of impact to calculate environmental efficiency in a way that is both credible and practicable. Even if this goal is not fully achieved, the review of impact related to health, well being and the environmental impact from buildings still serves as a starting point for further research and conceptualisation within this field.

## Weighting - A Prerequisite for Indexes

To arrive at single indexes, the impact categories included need to be weighted according to their significance. In the EcoEffect method the proposed weighting system is based on the *risk* of people being negatively affected by an environmental impact, which can be understood as the *probability* that an environmental impact may affect a person and the potential harm it may cause her/him if it occurs, denoted ***severity***, Eq. 1.

$$R = P * S \qquad \text{(Eq. 1)}$$

R= the risk for a person to be negatively affected
P = probability that an impact will harm a person
S = severity for a person if the impact occurs

For internal kinds of impact, the problem refers to the individual risk for a user of a building to be affected negatively because of the surrounding environment. The severity experienced by a person affected by a certain impact is measured through an *individual damage value*, idv.

In regard to external types of impact, like ozone depletion, the problem refers to the risk

to a number of people of being negatively affected and the average harm each individual would experience denoted the societal severity. This problem, i.e. the potential number of people affected by an environmental impact multiplied by the average severity for each of them is here called the *societal* ***damage value***, sdv.

The impact indexes are meant to include all major measurable kinds of impact on people to-day and in the future. They are calculated as the sum of the risks associated with each problem taken into account, Eq. 2 and 3. The external risk is calculated by impact category. The severity of an impact category is measured as the sum of the societal damage values for all the problems handled within the category.

$$ILI = \sum_{i} (P_i * S_i) \approx \sum_{i} (P_i * idv_i) \quad \text{(Eq. 2)}$$

$$ELI = \sum_{c} \sum_{i} (P_i * S_i) \approx \sum_{i} (L_C * \sum_{i} sdv_i) \quad \text{(Eq. 3)}$$

$P_i$ = Probability that the problem i of the impact category C will affect a person
$S_i$ = Severity for a person if the problem i affects her/him
$idv_i$ = Individual damage value for problem i (see Eq. 4)
$L_C$ = Contribution to the impact category C from a building
$sdv_i$ = Societal damage value for the impact category C (see Eq. 5)

In this context, the probability that a problem will occur depends on an environmental load - LC. The larger this load is, for example, the greater the noise level or the amount of $CO_2$ emit-ted due to the heating of a building, the greater is the probability that the related problem will harm people immediately or in the future. The harm caused by an impact might either be experienced physically as disease symptoms, e.g. pain, decreased mobility, or psychologically, e.g. as anxiety, irritation or depression. Both kinds of harm will lead to restrictions in the activities (functions) we are able to perform. In social medicine the term *disability* is used to describe the consequences of a negative impact on a person.

The probability factor in Eq. 2, $P_i$, is associated with the properties of the assessed building while the severity factor, $S_i$, is related to the potential **degree of harm** each kind of environmental problem may cause a person. The internal impact index represents the **risk of being negatively affected** by any internal problem, i.e. it can be constituted either by small risks of being affected by many problems or larger risks of being affected by a few problems. To be able to counteract a poor ***ILI*** score, every individual risk has to be scrutinised to find out what causes it.

The load factor in Eq. 3, $L_C$, is related to emissions caused by the use of energy and materials throughout the life cycle of a building. Although it is known by how much different emissions contribute to different impacts, the consequences in terms of the number of affected persons per amount of emitted substance is not known. The number of potentially harmed people is estimated from what is known about the size and distribution of

each environmental problem. In calculating the external load index, the contribution by a building to an environmental load acts as the probability that the problem will occur, and the societal damage value acts as a weighting factor based on the number of affected persons and the severity of the impact on each of them.

The severity of a specific impact on man can be measured in the unit DALY[5] (MURRAY, LOPEZ, 1996). It is a unit developed with support from WHO and the World Bank for meas-uring the total burden of diseases in a region. The background is the need for tools to support decisions concerning resource allocation in the field of health care. The individual DALYs for a specific disease are calculated as the number of years a person with that disease statistically is sick multiplied by a disability weight for the disease. The burden of a specific nonmortal disease in a geographical area for a period of time is the number of person registered with the disease multiplied by the individual DALYs per person for that disease. For mortal diseases the number of lost healthy years due to premature death is also included, Figure 2. The disability weight has a scale where 0 means no impact and 1 means mortal impact. The scale corresponds to the degree of disability an affected person may experience. The average convalescence time and the years lost for different diseases are taken from health statistics.

As shown in Figure 2, the damage values for a certain impact or disease (end point problem) can be calculated as:

idv = YLD + YLL = dw* dt + yl DALYs/pers (Eq.4)

sdv =? (YLD + YLL) = (n* dw* dt) + (nl * yl) DALYs (Eq. 5)

YLD = Years Lived Disable

YLL = Years Lost Life

n = Probable number of persons disabled for a period by a health problem

dw = Disability weight for the health problem

dt = Average disability time for the health problem, years

nl = Potential number of persons subjected to premature death due to the health problem

yl = Average years lost due to premature death by the health problem, years

An important task when setting disability weights for a disease is to define the health status, which it should represent, since the health status varies during the convalescence period and different people are affected differently. For this reason several disability weights can be set for the same disease representing the different degrees

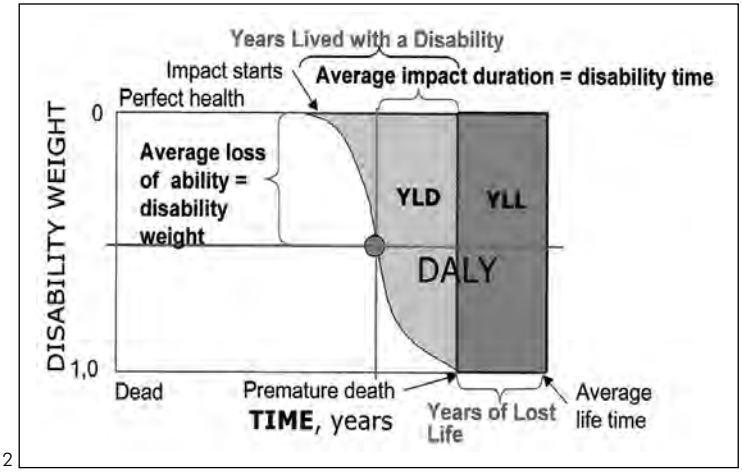


**Figure 2** Illustration of the DALY concept. The shaded area represents the number of DALYs for a person with a specific mortal disease expressed in the unit years (based on MURRAY, LOPEZ, 1996).

of disability associated with ages, sexes, etc. or different stages of the disease. Thus, a thorough description of health status is crucial to arriving at a representative disability weight.

The disability weights used for calculating DALYs have been set by panels of physicians, mainly through the **PTO[6] technique** (MURRAY, LOPEZ, 1996). It is important to remember that such disability weights not only show the harm caused by a specific disease. They also reflect the outcome of allocations of resources to cure it, so as to serve as a basis for health policies. Disability weights used for DALY calculations have been set for hundreds of diseases and other health problems (INTERNATIONAL BURDEN OF DISEASE NETWORK, 1999). Thus, if disability weights can be found for building-related problems, comparisons can be made between such problems and a wide range of other human health problems.

## Calculating The Internal Load Index for Existing Buildings, $ILI_e$

To be able to calculate an internal impact index for buildings, $ILI_e$, the probability factor and the severity factor for all problems included in the index, need to be found. The probability factor can be derived from the users' judgements through a standardised **questionnaire**. Eco-Effect uses a questionnaire which is a further development of the ***Stockholm Questionnaire*** (ENGVALL, et.al, 2002) that has been used in over 10 000 dwellings in Stockholm. The questionnaire includes questions like whether a user of a building is satisfied or dissatisfied with the thermal comfort, air quality and light conditions. Complementary technical measurements are carried out to measure the kind of impact that usually cannot be perceived, for instance, the occurrence of radon gas.

The severity factor, $S_i$ (Eq. 2), corresponds to the risk of an individual may be suffering due to the properties of a building or estate. In (Eq.4) the degree of harm experienced is expressed as the individual damage value, *idv* with the unit in DALYs per person. For an individual, the potential number of other persons suffering from the same impact is irrelevant.

Furthermore, the internal impact is rarely mortal. For those kinds of impact which are not mortal *idv* is simplified to only *dw*dt*. The potential disability time for a comfort problem that can be perceived, like noise, is the same as the potential exposure time throughout a life time. Average disability time and years lost for different diseases are taken from health statistics. The disability weight for a problem, which has not been addressed within social medicine, is not accessible from literature. Thus, such a disability weight needs to be set on the basis of a thorough description of the degree of disability associated with the problem when a person is exposed to it. Disturbance by noise, for instance, may mean either low noise levels occurring frequently, or high noise levels occurring occasionally. Most building-related problems are not mortal. They often occur regularly, e.g. noise varies throughout the day

and heat and cold vary by season.

The problem, of ranking and weighting building-related problems, is related to the valuation of housing quality in general, questions which have been studied extensively within the field of Architecture and Real Estate Economy in Sweden. It has been debated whether general values about housing qualities, such as aesthetics, can be found at all. After reviewing a number of studies in the field, WERNER (2000) however concludes that general perceptions about housing qualities, like aesthetics, can be found.

Many questionnaire surveys have been carried out in Sweden in order to obtain general values on housing qualities as expressed by users of dwellings. Two approaches are common. In the first, values are captured by asking people about their willingness to pay for different qualities (for example, FRANSSON, et.al, 2002). In the other, people are directly asked to rank different qualities according to their importance as experienced by the respondent (for example, WERNER, 2003; LIND, BERGENSTRÅHLE, 2003).

In the field of architecture, a common approach to evaluate quality is to use classifications made by experts. The appropriateness of such classifications, however, depends on the reference material of the evaluation, which was the subject of JOHANSSON's (1997) dissertation. He emphasizes that when evaluating housing qualities in the usage phase, the users' judgements and experiences are of utter importance. If using classifications, KAIN and QUIGLEY (1970) state that in the case of qualities, many evaluators should be doing this together. At the same time, a series of studies in Sweden has shown that when looking at housing qualities, experts' judgements and users' experiences, in many cases, tend to be in accordance (WESTERBERG, ERIKSSON, 1998; BJÖRKLUND, LIDMAR, 1991). One reason may be that, in the role of a user of a building for housing, we all tend to be experts.

Parallel to this discussion, both user questionnaires and panel classification were tried, with the aim of finding out how building related problems can be valued, in order to use this information as disability weights in the internal impact index, $ILI_e$.

## Disability Weights Derived from A Questionnaire

With the aim of finding general differences in valuation of common building related problems such as noise, draught, chilliness, etc. a questionnaire was constructed. The respondents were required to imagine a situation where he/she had the opportunity to freely choose an apart-ment in a multifamily building and a work-place in an office. They were asked to rank and weight predefined problems/ shortcomings related to the housing and office environments plus some building related health problems. The problems were presented in groups as shown in Table 1. The weights were set according to an inconvenience scale, Figure 3. It was possible to choose weights between

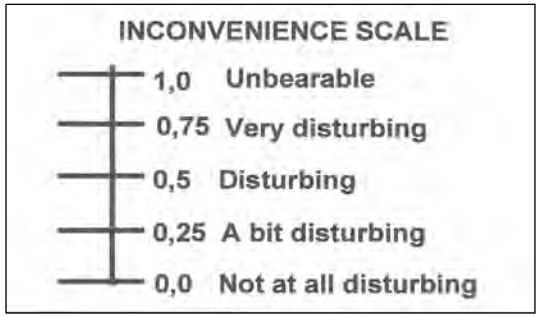


**Figure 3**
**The inconvenience scale** used in the questionnaire.

**Table 1**
Means and standard deviations for building-related problems sorted by degree of inconvenience . 0 = no impact, 1 = unbearable.

0,0 to 1,0 with intervals of 0,05. The weights set by the respondents were expected to reflect a general judgement of an evidently disturbing level of each problem.

It should be noted that since the inconvenience scale includes expressed end and midpoints, respondents tend to choose these values more frequently than others.

The questionnaire was designed to be answered in an Excel document. In total, around 200 questionnaires have been analysed. Because of the character of a pilot study, no randomised sample was collected. The sample was based on two different collection procedures. 50 % were gathered from questionnaires sent out to friends and colleagues of the research group. These persons were asked to answer the questionnaire and forward it to other people prefera-bly differing in age and profession. In the second

| Problem/deficit | Mean, $w_q$ | St. dev. |
|---|---|---|
| ***Indoor problems*** | | |
| Ventilation – you can often feel smoke and the smell of cooking from your neighbours | 0,78 | 0,21 |
| Thermal comfort – the residence is unusually cold in wintertime | 0,68 | 0,22 |
| Ventilation – the indoor air is often stuffy | 0,66 | 0,22 |
| Noise – you can easily hear your neighbours' voices, and noise from the staircase | 0,64 | 0,22 |
| Light – the residence is dark (little daylight) | 0,61 | 0,25 |
| Noise – sounds from installations are evident (for instance ventilation, fridge, pipes) | 0,6 | 0,21 |
| Thermal comfort – the residence is unusually warm in summertime | 0,59 | 0,25 |
| Noise – sounds from traffic are apparent | 0,58 | 0,24 |
| Light – the sun seldom reach the kitchen and the living room | 0,53 | 0,25 |
| Outdoor problems | | |
| Smells often enter the balcony or private yard (for instance from industry or restaurants) | 0,6 | 0,24 |
| Noise enters the balcony or private yard (for instance traffic or industry) | 0,58 | 0,24 |
| The balcony or private patio is usually shady | 0,55 | 0,24 |
| The balcony or private patio is windy | 0,51 | 0,26 |
| The balcony or private patio becomes dirty (for instance by traffic dust) | 0,49 | 0,24 |
| **Health problems** | | |
| You have a headache (migraine) | 0,82 | 0,21 |
| You have problems with breathing (asthmatic symptoms) | 0,76 | 0,23 |
| You have aching ears (ear inflammation) | 0,7 | 0,23 |
| You have itching, red or irritated eyes | 0,64 | 0,23 |
| You have a fierce cold | 0,57 | 0,23 |
| You have pain in muscles and joints | 0,57 | 0,23 |
| You have itching rashes | 0,52 | 0,25 |
| You have an irritated, clogged-up or running nose | 0,46 | 0,25 |

procedure two groups of students at The University of Gävle collected nearly 100 additional questionnaires. In addition to a direct fal-ling off of around 15 %, several replies in the Gävle sample were rejected due to incomplete or inconsistent answers. In the end, around 150 replies were used as the total sample. There was an even distribution between women and men. The most important distortion in the sample is age distribution, with a preponderance of younger people, which reflects the student sample and the fact that the questionnaire had to be answered digitally.

Means, standard deviations and confidence intervals were calculated. The results indicate that preferences can be discerned even though the spread is quite large, Table 1.

The means give a general idea of how these problems are valued by the 150 people in the sur-vey. Consequently, these means could be used for weighting internal impact, i.e. serve the same purpose as the disability weights used in DALY. Although not directly comparable, since the scales and the scope differ, the questionnaire values will be referred to as questionnaire weights, $w_q$. Ideally, the ranking should coincide if the scales were adjusted to each other.

It can be concluded that the spread in data is relatively prominent and the credibility of the data can be discussed. Two important problems with using this questionnaire were evident. Firstly, an insufficient definition of the magnitude and exposure time of the problems in the questionnaire has most likely led to different interpretations of the size of each problem. In spite of the fact that a lot of time was spent on questionnaire construction, it afterwards became clear that the problems included were not described clearly enough. This is always a serious challenge when constructing questionnaires. The requirements for simplicity to get enough answers and complexity to really measure what one is after, have to be balanced. Secondly, the inconvenience scale was not used consistently for all groups of problems.

A natural spread in responses due to different experiences of the problems is obvious and is confirmed by the size of the standard deviation. A bad experience of, for instance, ventilation noise, will be reflected in a response with a higher weight. Aside from personal preferences, the answers reflect common problems of the built environment. Although there are deficien-cies, an important finding is that common values can be traced from the questionnaire, at least for a majority of the indoor and health problems. However, the questionnaire weights, $w_q$, will reflect an overall perception, with both the magnitude and exposure time of each problem taken into account intuitively.

## Weights Derived from Classification

Questionnaires like this pilot study could serve as a basis for drawing general conclusions about qualities and deficits in housing environments. Nevertheless, the intention was

to find a system for generating disability weights for more precisely defined problems. For the purpose of being able to calculate indexes like $ILI_e$, for which disability weights are needed, a more simplified procedure than large surveys is to be preferred. For this reason, classification, as a method of finding out how building-related problems affect quality of life, was also tried.

So called quality of life indicators have been developed within social medicine for persons with different kinds of diseases. An indicator that combines morbidity and mortality is called CHOM (Composite Health Outcome Measure). Examples of CHOMs are QALYs[7] (HAYWARD MEDICAL COMMUNICATIONS, 2003), DALEs[8] and DALYs. They differ mainly in their way of evaluation and the procedure adopted to set weights. In Europe a sys-tem to classify health status has been developed and called EuroQol (STOUTHARD, et.al, 1997). It facilitates classification with regard to both physical and psychological effects. In a recent variant, the EuroQol5D+ system, problems are classified in three classes (1, 2, 3) according to six different impact categories reflecting different aspects on life quality, Table 2. In the Dutch study (STOUTHARD, et.al, 1997) an attempt was made to calculate disability weights directly from the means of the classification scores with fairly good results. However, a conclusion in this study was that the scale was too rough and that the results would probably

**Table 2**
Proposed extension of scale and descriptions of the EuroQol5D+ system. Class 1 and 3 are new. Class 0 corresponds to former 1 and class 4 to former 3. (Plain text from STOUTHARD, et.al, 1997, text in italics is the extended proposal).

| | Disability class | | | | |
|---|---|---|---|---|---|
| **Impact category** | **0** | **1** | **2** | **3** | **4** |
| | **No problem** | ***Small problems*** | **Some problems** | ***Large problems*** | **Very large problems** |
| **Mobility** *function, e.g. stand up, move around, climb a staircase, fine motor ability* | No problems in walking about. *Can write with ease* | *Some problem with staircases. Some problems with writing.* | Some problems in walking about | *Can walk short distances with support.* | Confined to bed |
| **Self-care** *e.g. manage personal care, dressing, cooking* | No problems with washing or dressing self | *Small problems with some clothes* | Some problems with washing or dressing self | *Need help with washing and dressing* | Unable to wash or dress self |
| **Usual activities** e.g. work, study, housework, family and leisure activities. *Take into account other activities that are not performed due to the impact.* | No problems with performing usual activities | *A few less important usual activities are not performed due to the impact.* | Some problems with performing usual activities. *Some usual activities are not performed due to the impact* | *Most usual activities are not performed due to the impact* | Unable to perform usual activities |
| **Pain/discomfort** *Physical impact* | No pain or discomfort | *Occasionally little pain, feeling cold or warm* | Moderate pain or discomfort | *Permanent pain or other physical problem* | Extreme pain or discomfort |
| **Anxiety/depression/ *Irritation*** *Psychological impact* | Not anxious, depressed or *irritated* | *Occasionally anxious or touchy* | Moderately anxious, depressed or *irritated* | *Often very anxious, depressed, touchy or irritated* | Extremely anxious, depressed or *irritated* |
| **Cognition** e.g. memory, concentration, coherence, IQ) | No problems in cognitive functioning | *Occasionally distrait and some difficulty in concentrating* | Some problems in cognitive functioning *Often difficulties in concentrating* | *Often forget and problems in communicating* | Extreme problems in cognitive functioning *Forget immediately and can hardly communicate* |

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improve with a finer scale. Since building-related problems generally are of a less severe character when compared to the range from no impact to mortal impact, a finer scale to distinguish between the problems is preferable. Consequently, an extension of the EuroQol5D+ disability classes is proposed here, and shown in Table 2.

To investigate the correlation between disability weights calculated from a standardised classification and the questionnaire weights, the same problems as in the questionnaire were clas-sified according to the proposed system (Table 2) and disability weights were calculated, $wc$. This procedure was carried out several times using different approaches. For instance, the procedure was carried out both by individuals and during discussion in groups. In addition, the experiences of sensitive groups were taken into account once and for different exposure times, all resulting in different classification scores. An important conclusion was that a detailed description of the health problem is a prerequisite when making such classifications or when designing questionnaires about these issues.

It can be discussed whether the EuroQol categories designed for measuring quality of life are appropriate for characterising building-related problems. Some categories may overlap. For instance, the category of selfcare depends on mobility, which in turn can be affected if one has pain when one moves. This scale is, however, verified and widely used, so we kept to it.

## Comparing Disability Weights From Different Sources

### Classification Weights versus Weights from The Questionnaire

The classification weights, $w_c$, were compared to the questionnaire weights, $w_q$. Since the size of the problems regarding magnitude and exposure time were not very well defined in the questionnaire, the classification could be done differently and still correspond with the general description of the problems. The classification of matching questionnaire results may be re-garded as an attempt to find a suitable description, in quality of life terms, to what the respon-dents expressed in their answers to the questionnaire. With reasonable matching it was possi-ble to reach a high correlation. Yet, when taking the vague problem descriptions into account, it was also evident that the classification did not consistently fit in with the general values elicited by the questionnaire.

A general question is how temporary health problems are assessed compared to more endur-ing ones, i.e. what influence considerations of time have on the valuation. Consequently, less use of outdoor spaces compared to indoor spaces could be an explanation of why outdoor problems were systematically valued as less disturbing by respondents to the questionnaire. Thus, in the classification procedure it is possible to sort out and only consider the magnitude of the problem which corresponds to disability weight, $dw_i$, whereas the questionnaire results are more likely to correspond to an overall judgement

that includes both magnitude and exposure time, i.e. the answers represent severity values, $S_i$.

### DALY Weights versus Classification and Questionnaire Weights

As described in the introduction of this paper, a starting point was to find a way of being able to compare building related problems with health problems of a more severe character for which disability weights used in DALY calculations were accessible. However, disability weights used in DALY calculations are derived from PTO-techniques and will therefore not be the same as those set without considering the effects of interventions. Instead of the PTO-technique, a VAS scale (Visual Analogue Scale) may be used, which means that the problems are just ranked and the weights set on a linear scale. For the purpose of calculating an $ILI_e$, disability weights set according with a VAS scale are more appropriate than a PTO assessment, since the weights should represent the average harm experienced by affected people. In the Dutch study (STOUTHARD, et.al, 1997) mentioned earlier, PTO-weights were compared with VAS-weights, revealing a systematic difference, and a correlation equation was calcu-lated from their data. Therefore PTO-weights can be recalculated and converted into VAS weights, and the large number of disability weights produced for use in DALY calculations can also be used for comparing indoor problems with all sorts of other health problems.

The correlation between PTO weights and classification weights performed on the Dutch data (STOUTHARD, et.al, 1997) gave an R2 value of 0,84. Since basically the same scale (Euro-Qol5D+) but with a slightly higher resolution (5 steps contra 3) was used in the classification presented in this paper, one can anticipate a corresponding or, more likely, a better fit between classification weights and PTO weights.

It is obvious that setting disability weights represents no exact science, and results depend on differences in the interpretation of health status, and the values and methodology used. It is clear that if one wants to compare disability weights derived from questionnaires with those produced in other ways, the health problems have to be defined and formulated in another way than has been done here. Further, it is not evident that general opinions coincide with values derived from a certain set of classification categories, although they are intended to reflect general qualities of life.

## Application

To give an example of how an internal load index for existing buildings, $ILI_e$, can be calcu-lated, the residential housing unit "Oskar" in Örebro has been chosen as an example. An Eco-Effect questionnaire investigation was conducted in 2002. In EcoEffect, $ILI_e$ includes both the indoor and outdoor environment of a property. In this example we chose to include only the indoor part $ILI_{e,indoor}$. The calculation proceeded according to Eq. 2 and 4. The probability values are the fraction of users who

are either dissatisfied/very dissatisfied with a condition or are often disturbed by a condition in the building. This corresponds to the degree of distur-bance that the users experience.

First the disability weights for the included kinds of impact were calculated through classification according to Table 2. The potential disability time, ***dt***, were estimated. For thermal comfort, the fraction of estimated time people are awake in their homes in May-August and November-March, for summer and winter conditions respectively, was used as the disability time. For ventilation and noise, the fraction of estimated time people are awake in their homes was used. For daylight, the fraction of estimated time people spend in their homes when it is daylight outdoors was used, and for sunlight the fraction of time with average sunshine was used. The results are shown in Table 3 together with a summary by problem area.

The disability weight is simply calculated as the sum of the classification scores divided by 24 (max. score). Other persons may well give the problems different scores and arrive at a differ-ent result. Since the dissatisfaction of the users is reflected in the results, it is not likely that the rank will change. The advantage of classification for arriving at disability weights is that the scores clearly reveal which aspects contribute to the disability and by how much. This transparency makes the results open to arguments and change. The corresponding calculation using questionnaire weights gave the same rank.

Note that if the indoor impact index is to be used for comparisons with other buildings exactly the same disability weights need to be used.

## Conclusion

The aim of this paper was to introduce the concept of environmental efficiency of buildings and to present a principle for how to calculate one of the needed indexes, the internal load index $ILI_e$ for existing buildings. It is natural to oppose such an extensive aggregation of a complex problem. Nevertheless, many

**Table 3**
Indoor load index for the housing unit "Oskar" based on the extended EuroCol5D+ classification (Table 2) and a user questionnaire in the housing unit.

| | Classification category | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mobility | Self-care | Usual activities | Pain/discomfort | Anxiety/depression | Disability weight through classification, $dw_c$ | Fraction of dissatisfied users in the building, $p_i$ | Duration factor, $dt_i$ | $I_{e,i} = p_i * dw_i * dt_i$ detailed | $I_{e,i} = p_i * dw_i * d_i$ by problem area | Problem area | Rank regarding disturbance | Relative disturbance |
| **Indoor problems** | | | | | | | | | | | | | |
| Thermal comfort - the residence is unusually warm in summertime | 0 | 0 | 0 | 1 | 2 | 1 | 0,17 | 0,05 | 0,09 | 0,001 | 0,004 | Thermal comfort | 3 | 8% |
| Thermal comfort - the residence is unusually cold in wintertime | 1 | 0 | 0 | 2 | 2 | 0 | 0,21 | 0,15 | 0,12 | 0,004 | | | | |
| Ventilation - the indoor air often is stuffy | 0 | 0 | 0 | 0 | 3 | 1 | 0,17 | 0,05 | 0,25 | 0,002 | 0,019 | Air quality | 2 | 34% |
| Ventilation - Smell of cooking or cigarettes are frequent | 0 | 0 | 1 | 2 | 3 | 2 | 0,33 | 0,20 | 0,25 | 0,017 | | | | |
| Noise - sounds from traffic are apparent | 0 | 0 | 1 | 0 | 3 | 1 | 0,21 | 0,10 | 0,25 | 0,005 | 0,030 | Noise | 1 | 55% |
| Noise - sounds from installations are apparent (for instance ventilation, fridge, pipes) | 0 | 0 | 0 | 0 | 3 | 1 | 0,17 | 0,45 | 0,25 | 0,019 | | | | |
| Noise - you can easily hear your neighbours and noise from the staircase | 0 | 0 | 0 | 0 | 3 | 1 | 0,17 | 0,15 | 0,25 | 0,006 | | | | |
| Daylight - the residence is dark | 0 | 0 | 0 | 1 | 3 | 0 | 0,17 | 0,05 | 0,13 | 0,001 | 0,001 | Natural light | 4 | 2% |
| Sunlight - the sun seldom reaches the kitchen and the living room | 0 | 0 | 1 | 0 | 2 | 0 | 0,13 | 0,00 | 0,13 | 0,000 | | | | |
| Sum =Indoor impact index = $I_{e,\,indoor}$ | | | | | | | | | | 0,054 | | | | |

3

practitioners take decisions about maintenance and changes to buildings every day without reference to any comprehensive goals containing both environmental building performance and user satisfaction. Knowledge about the proposed indexes and what they contain could increase awareness of which environmental kind of impact different decisions might evoke. Decision makers ask for simple advice, like environmental labels, without questioning the assumptions and criteria lying behind. This is reasonable, since they normally have no time and/or ability to penetrate problems in detail. They have to rely on professionals and experts. Aggregated indexes may help considerably in certain decision-making processes if trustworthy, which they only can be if they are clear and transparent in a way that makes them open for dispute and change. This is the reason for proposing both internal and external impact indexes. However, to be able to reach that point it has been necessary to move into the controversial field of weighting.

How to define and find disability weights for building related problems is the key question dealt with in this paper. There is an obvious need for a systematic and accurate system to de-fine, preferably by classification, the health status for which disability weights should be set. If a system for describing building related problems had been designed from scratch, it would probably have looked very different from EuroQol5D+ system, which has been used here because it is well established in social medicine. By adopting this system, a wide range of possibilities for comparing building related problems with all kinds of impact on people are opened. In the housing context it is especially valuable to deal with psychological aspects. However, the appropriateness of using the impact categories of the EuroQol system for build-ing-related problems has to be discussed further.

The advantage of starting from this classification seems to be large. This method makes it easy to review exactly what a disability weight is based on. It is easy to change classification scores and generate new disability weights or make a sensitivity analysis of the underlying assumptions of certain scores. If some classification categories seem to overlap or are less appropriate for a specific application, weighting them in relation to each other can further develop this system. However, the greatest advantage will be that it is easy to obtain disability weights for different kinds of problems, even outside the environmental field.

Conclusions about the relation between weights derived by experts who have taken a number of aspects into account and the spontaneous valuation of the same problems made by the general public, is not captured by the pilot study, which contained only a few, not very well described health questions. Further research on the relation between disability weights used for different purposes and arrived at in different ways would broaden the exchange and understanding between disciplines.

Lastly, it is important to bear in mind that disability weights and environmental indexes calculated from them are approximations.

There is a natural deviation in health status caused by the same impact and in opinions expressed about building problems and qualities. Although calculations may give an impression of a high degree of accuracy, this is false. The results can never provide anything other than general guidance which, however, is an important matter in itself.

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## Notes:

[1] Building Research Establishment Environmental Assess-ment Method.

[2] Leadership in Energy and Environmental Design.

[3] The World Business Council on Sustainable Development.

[4] Procedures have been developed within the EcoEffect project for calculating both an internal impact index for a building at the design stage, Id, and the external environmental index, E, based on life cycle assessment (LCA). Further reading can be found in the summary at www.ecoeffect.tk.

[5] Disability Adjusted Life Years.

[6] Person Trade Off.

[7] Quality Adjusted Life Years.

[8] Disability Adjusted Life Expectancy

# 17 MODELLING SOCIAL PROCESSES -A NEW TOOL IN THE FIELD OF HOUSING RESEARCH

*Inga Britt WERNER*

## Abstract

*This paper discusses the pros and cons of computational simulation of processes within a society, with special attention to housing issues. The aim is to give an introductory overview of techniques and concepts and to discuss the use of this approach within the field of housing research. Modelling a process, where many agents act according to their circumstances in a certain environment, gives a dynamic view of the studied issue. Bottom up models of processes is a way to study how actions and events on micro- level will affect the society in all, i e the macro- level.*

*Simulation of processes as a research methodology is discussed. Caution about the predictive power of simulation is suggested. It is better suited for comparing theories or exploring scenarios, creating new theory. Different steps of replication can test validity of models. The internal validity is also dependent upon the technical specification and architecture of the model. It is important to construct a model as clear and simple as possible, to avoid unin-tended complexity and thus making the interpretation of results difficult.*

*Computerised simulation is a rather new methodology within the social sciences. To carry out simulations of high quality it is necessary to have an inter-disciplinary approach, where computer science and housing research cooperate. Combining the two fields of research has a great potential to create more effective tools for studying social and spatial processes within the field of housing.*

**Keywords:** *Simulation, Agent, Process, Explore, Scenario*

## Introduction

The aim of this chapter is to give an overview and discussion of the use of computer aided simulation within housing research. Computerised simulation of physical environments for testing different designs of built structures is one implementation that has grown to be widely used in architects' bureaus or planners' offices. This kind of simulation is not the main issue here, although is touched upon. Instead, simulation of social processes is in focus. It is presented as a possibility to bridge the gap between micro and macro scale, or between the individual and societal levels, in the study of a society. The chapter is divided into three main parts;

- a presentation of the techniques of simulation and its use today,
- a discussion of simulation and multi agent based modelling as a research methodology and structure
- concluding remarks on the use of simulation of processes within housing research and examples of what research problems to address.

## Housing Research- A Complex Field

Many research problems within the field of housing can be regarded as an interaction between macro and micro level. Every individual has got his / her own point of view and makes choices and decisions accordingly, but individuals cannot stay unmoved by circumstances in their environment. The result of the accumulated actions of different individuals will have effects upon the future decisions of others, through effects upon their environment. The relationship between society's investments in infrastructure and households' choices of residence is an example of such research fields. The demand and supply of residential units of different quality at a certain location, the supply of commercial and other services, the price of dwellings in the specific area and the chances of finding work and education within the studied community are all attributes of the environment. The decisions of many individuals will in turn influence the qualities of the environment, leading to higher or lower real estate prices, the status and character of the area and so forth.

A substantial part of research in housing and urban studies is carried out by the use of quantitative methods. Different types of regression or logit models are used to assess parameters for relations between variables or for maximum likelihood of an outcome. The resulting models are static descriptions of the situation at one special occasion. Adaptive interactions between systems on different levels are too complex to study through the use of linear relationships in mathematical models. Effects from such a network of interactions are not possible to predict by for example regression models, even more so regarding that effects are reversible. The interplay between actions on different levels will result in emerging effects, impossible to de-duce from rules of

behaviour from each level. Up to the last decades it has been very difficult to study such dynamic effects.

Many research questions within housing research can be addressed as studies of processes, in a spatial setting, employing many different agents in interaction among themselves and with their environment. The interaction of many agents within for example a regional housing market has got a geographic aspect. The distribution of housing units, communication links, service centres and green areas could in a model world be seen as a fixed background for the doings of the agents. In a real society this background will change slowly over time, either by development of new built environments, adapting to a growing and more demanding population, or, on the contrary, getting partly abandoned due to a declining or impoverished population. There are reversible influences from the environment upon the individual and from the decisions and choices of individuals upon their environment. It would also be helpful if relations between micro and macro level could be made explicit, in the form of visualized, distinct and replicable sociogeographic patterns. To obtain this, new research tools are needed.

## A Short Introduction to Simulation of Social Processes

### History

**Simulation of social** dynamic **processes** has been discussed for a long time within social sciences. As a result of the development of computer technology, such techniques have been developed and tested in growing extent since the 1980'ies.

Dynamic **micro - simulation** is an approach much used in physics and technical science. It has also successively got applications within social science (HARDING, 1993:1). The main fea-ture of micro-simulation is that individuals, or agents, always behave according to prediction by set probabilities. The studied individuals are not aware of their environment, nor do they interact with other individuals. This technique is used for building very simplified models of social processes.

Another type of model, which has a basic capacity for handling interaction between elements, is Cellular Automata. It was developed in simple form in the 1940'ies. It has an inherent spatial structure and is also a part of many geographic models of today (SHALIZI, 2001:66; TORRENS, O'SULLIVAN, 2001:163).

**Artificial Intelligence**, AI for short, is an attempt to model in computerised form the abilities of the brain, such as learning and adapting to new environments using experience from other circumstances. With the development of AI possibilities arose to model real **agents**, that is individuals with the capacity of interacting with others as well as with an environment (SÉROR in GILBERT, DORAN, 1994:26).

During the 1990'ies these approaches have been worked together into a range of agent- based models for the study of transport systems, urban sprawl and other processes of complex social and spatial interaction with

implications for the study of housing. Before going further into these, some frequently used concepts will be explained.

## Key Concepts in Simulation Techniques

The discussion of simulation is here attached to processes. A temporal aspect is crucial for the concept of process. A process is something that starts in one state and stops in another state, going through changing states over the time from start to goal. The term **'self-organised process'** gives an intuitive notion of what is going on. According to SHALIZI, 2001:6 'organisation' is defined by the interconnections of its states and 'pattern' is a representation of an object that has got the ability to predict something about this object. **'Pattern'** in this sense is something else than a mere visual pattern, which rather should be called configuration (SHALIZI, 2001:12). The definition of self-organisation is based upon measures of complexity, and so is the method of finding and comparing patterns resulting from self-organising processes.

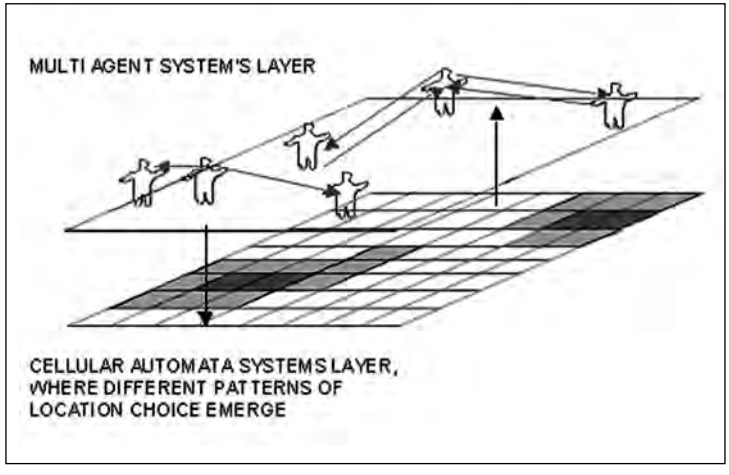


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**Figure1**
Visualisation of a two-dimensional CA with a multi-agent system operating upon it.

**Cellular Automata**, CA for short, is a phenomenon having grown with computerisation to be an operational tool in many kinds of simulation of processes. Its main components are:

- A lattice of cells imagine a checker-board, where the squares are the cells
- A (finite) number of states the cells can take on imagine two colours the squares could have
- A transition rule, applying for all cells and depending on the states of each cell's neighbours imagine every square simultaneously "looking" around, seeing if among its nearest neighbours at least 50 % are white. Adhering to the transition rule all cells with this kind of neighbours changes to white or stays white
- A discrete time manager, that is a clock that is ticking along, marking every new change of states, according to the transition rules.

**Multi agent systems**, MAS, are formed of different agents with the ability to gather information from different locations, not just from a pre-defined set of neighbours or locations. These agents are mobile in their surroundings and they are not compelled to adhere to global rules of transition based on the state of their neighbours. They can also interact with and adapt to other agents.

In figure 1 is illustrated the design of a model of urban clustering, where different

layers of MAS and CA are used. Agents act on a landscape of CA. The CA layer shows emerging patterns of built up areas, as a consequence of the agents' choices. There is a reversible flow of information from agents to the CA layer and from the CA layer, the environment, back to agents. Agents will adjust to the patterns of built environment as well as the environment will adjust to the acts of agents. A process is modelled, not just a state.

At the start of a simulation of a process the individual agents and their setting have to be described in detail. These properties and behaviours are called **elementary properties**. An example of an elementary property is agents' range of vision, see figure 2, which is the range from which they can gather information or other resources in a MAS model.

**Emergent properties** are more difficult to define. A discussion of the concept is carried out in SHALIZI, 2001:115. Emergent properties are there described as arising from the interactions of lower level entities but not displayed by these entities themselves. First, the variables de-scribing emergent properties should be fully determined by lower level variables. Second, higher level properties should be called emergent only if they are explaining something about the lower levels. The latter statement could be interpreted as a condition that there should be a plausible correlation between emergent properties and the processes involving specified vari-ables on lower levels. The concept of emerging properties is an intricacy though. If the relations between lower and higher levels in a system are possible to describe as a stable entity, a property, the epithet "emergent" is open to discussion. Emergence happens once. After the first emergence the property is defined and in some ways predictable.

## Examples of Simulation Techniques Today

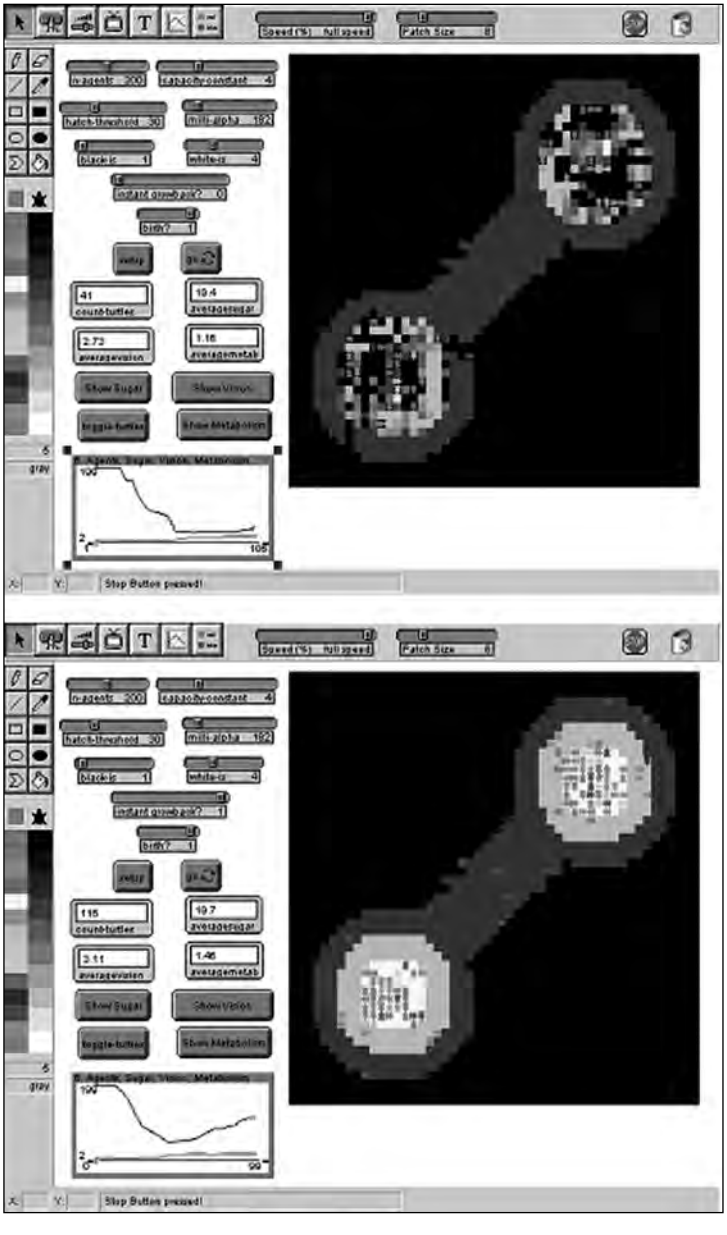
A comprehensive overview of the use of simulation concerning interaction between man and **environment** gives this definition of 'simulation'. It is described as a concept with many con-notations:

> "Simulation refers broadly to the experimental modelling or representation of particular environments and events. Examples of simulations include computer models of molecular structure, laboratory studies of small group processes, role playing and gaming analogues of social situations, scale models and sketches of architectural and urban design projects." (MARANS, STOKOLS, 1993:3)

The anthology gives a good overview of the use of simulation in design and planning proc-esses. The main topic is discussion of how a physical environment can be replicated and this replica used in evaluating the design of a building or landscape, to predict the user value.

As mentioned above, one use for simulation is **roleplay** and **gaming**; a field often connected to management and education. There are several websites discussing webbased games for educational use[1]. Roleplay is a learning technique, where students take on the

**Figure 2**
Examples of resulting patterns from Sugarscape, StarLogo, demofiles, when the pa-rameter "growback" of sugar, the main resource for the agents, is changing. Above grow-back rate is set to 0, no sugar is reproduced, and below it is set to 1, all sugar is repro-duced. The effects on population growth are clear, but the circum-stances also cause the characteristics of individuals to change, regarding metabolism (averagemetab) and visual range (aver-agevi-sion).(right)



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roles of different stakeholders in an organisational setting, and carry out negotiations or problem solving under given prerequisites. Gaming could be seen as an intermediary step between roleplay and agent based modelling. Human players take on the roles of agents, acting in a model world, which changes adhering to the rules of the game. The players are adjusting to the changing circumstances in the model. Yi-Cheng Zhang, University of Fribourg, (BUCHANAN, 2004:35), has modelled human behaviour on the stock market in the form of an interactive web game attracting thousands of players. The results are an illustration of the restricted rationality of human decision strategies. When players were forced to make deci-sions based upon increasingly complex information, they gave up rationality and often just repeated their former predictions based on simpler patterns of causality. This kind of trying out the boundaries of human thinking and behaviour is an important part of constructing more complex models. If modelled agents' behaviour is to be realistic, it is necessary to know more about how humans actually make decisions.

There are now several computer applications modelling societies, where as well the agents as their environment are virtual. "Sugarscape" is one example. The researchers have given the actors of their model world different preferences, needs and abilities in an environment with certain resources. The model has, among other things, been used to illustrate theory on market economy. For illustration of the use of "Sugarscape", see figure 2, showing

the results from rather simple simulations of processes within an ant society. Two runs of "Sugarscape" with different starting conditions are showed.

The approach of simulating **urban systems** has developed rapidly during the last decade, see for example LONGLEY, BATTY, 1996; BENENSON, 1999; O'SULLIVAN, TORRENS, 2000. CASA (Centre for Advanced Spatial Analysis), University College London, has a wide range of research on urban geographic models going on. Here the city is seen in parallel as a spatial and a social phenomenon, and the spatial outcome of many independent actors in a certain environment is discussed and modelled (DE ALMEIDA, et.al., 2002:6-7; TORRENS 2001:166). SprawlSim is a project at CASA, developing simulation of urban growth. The project has two principal aims. The first is to investigate how urban sprawl can be described in quantitative terms and the second to simulate the dynamics of sprawl, using cellular automata and agent based modelling techniques. The model holds actors with different characteristics and preferences. They choose between dwellings and locations of different types, in a life like context of geographic models of cities. The simulation is going forward in steps of iterated cycles of the actors' searching, finding or building dwellings. The result is shown in maps of urban sprawl, resulting from simulated processes.

SCATTER (Sprawling Cities And TransporT: from Evaluation to Recommen-dations) is a project within EU:s fifth program, on sustainable transport in European metropolitan areas. Land use and transportation in three European cities shall be simulated. Preliminary results of simulations are reported in GAYDA, et.al., 2003:22. Different strategies to prevent **urban sprawl** have been simulated for the case of Brussels. Such strategies were for example different modes of increasing costs of caruse, investment in regional express railways or different fiscal measures applied to households. The preliminary results did show that comparisons between policies were possible:

> "...in the case of Brussels, the "indirect" effects (on households) of measures directly attracting employment appear to be higher than the "indirect" effects (on employment) of measures directly attracting households." (GAYDA, et.al., 2003:29)

The long term goal was to develop the simulation technique to an operational tool for deci-sion making and evaluation of alternatives.

In this example of simulation the perspective is top down and the target of study is how society's institutions influence activities on the individual level. At a workshop on agent based modelling, social and political influences on decision making posed interesting conceptual questions (PARKER, et.al., 2002:84). Three layers of cross scale interactions were defined. On the first, sociopolitical factors exert a top-down influence on individuals. On the second, these emergent influences define units of interactions between individuals and groups of indi-viduals. On the

third, both upward and downward linkages are potentially active. Modelling complex cross scale relationships with different temporal scales was regarded a challenge. Many researchers were interested in the question of modelling how norms and rules emerge from interaction of groups, and how these norms become institutionalised. One proposed way to handle this was to represent such a created institution as a new agent.

Today there is a quick development of simulation techniques and the range of applications is growing. As with all new methodologies simulation has gained a lot of interest from researchers, hoping for new possibilities. As simulation has been tested in different projects and with different aims, shortcomings and problems naturally arise. Some of these implications will be discussed in the following.

## What is The Use of Simulation of Processes?

### Advantages of Modelling by Simulation

Simulation is used when an experiment in reality would prove to expensive or operationally difficult to carry out. Other reasons for simulation are that real **experiments** could be dangerous or morally suspicious to participants. As human societies do not easily lend themselves to study by full scale experiments, simulation often is the only tool to compare different scenarios.

A model where every single agent uses his/her own strategies in accordance to changes in the environment will contribute to the knowledge upon the outcome of part random, part causal processes. Such chains of events have a resemblance to real life processes of a society. Thus many social processes can be studied in a relatively cheap and easy way. Following the discussion on emergent properties and interaction between micro and macro scale, it is also an advantage to be able to discover patterns that have not been possible to study by other methods. It is important though to hold in mind what kind of results simulation of processes can actually yield.

### Prediction, Explanation or Exploration

In an overview of current research by simulation of social processes simulation is discussed as a third way of doing research, in relation to deduction and induction (AXELROD in CONTE, HEGSELMAN, TERNO, 1997.b:24). He states that simulation is similar to deduction as it starts from a set of assumptions. The aim is not to prove theorems though, but to use the simulation process for creating data. These are in turn analysed to explore possible patterns, and thus by induction deduce causal relationships. Axelrod concludes that simulation is a way of doing research through thought experiments, where simple assumptions can lead to surprising consequences (AXELROD in CONTE, HEGSELMAN, TERNO, 1997.b:25). To draw a bit further on this statement, the simulation of social processes could be seen as an **explorative** method, mainly deductive, as also the data generated by simulation ought to be

treated as assumptions. The analysis of these data could very well use inductive techniques, but the interpretation of results must be based upon awareness of the hypothetical nature of any relationships.

Given that simulation of processes is based upon several levels of assumptions, it is vital to define the aim of the actual simulation and also to discuss the value of **predictions** based upon results. Some authors are cautious about the predictive power of simulation in social sciences, stating that it is not possible to model complex processes accurately enough to claim that results could have any predictive power (SRBLJINOVIC, SKUNCA, 2003:3). A paradox is that the more sophisticated and the more realistic agent based models are, the more complicated and hard to follow are the chains of effects. This in turn makes it increasingly difficult to evaluate results. To explain how processes develop is a more obtainable goal. The experiment with the web based game, where people demonstrated the restrictions of human rationality, is an example.

When simulation of processes is looked upon as a thought experiment, its main aim often is to compare **scenarios**. Using different theories to define the behaviour of agents and the rules of the model world gives a possibility to test which theory best explains the outcome. In this respect it resembles case study methodology. Both methods are quasi experimental and are suited for comparing or developing theory. Simulation of processes can also be a way to create new theory, for example if emerging properties tell something new about a chain of events in the model world. In that way simulation can be an explorative method.

## Validity

In the afore mentioned anthology on environmental simulation the discussion on the validity of simulation research designs is focused on discrepancies between mock up environments and real environments, as the simulated environments always are abstractions to a varying degree( MARANS, STOKOLS, 1993:283). As such they do not certainly give results that are possible to generalise to the real setting. This is true for the modelling of social processes as well. It is not always easy to define what is really modelled, as the object of study is the proc-ess and its results over a certain period of time. To validate whether emerging properties resulting from a process within a system really have explanatory power can be hard.

The **validity** of a thought experiment is anyway possible to discuss as well as that of an experiment in reality. To validate simulations of social processes Axelrod recommends the replication of simulations:

> 1 If there are random elements in the initial conditions, by multiple runs of the same model to get a distribution of results (AXELROD in CONTE, HEGSELMAN, TERNO, 1997.b:28)
>
> 2 By simulation of the same processes and systems in different models and comparison of results (AXELROD in CONTE, HEGSELMAN, TERNO, 1997.b:31)

To make the latter alternative possible, models should preferably not be too complicated according to assumptions and conditions, as this enhances the risk of low internal validity. If the model and its programming code is very complicated, it is hard to know if surprising results are due to bugs in the programme, to wrong assumptions or to effects of the studied process,.

The comparison of different models' results could be made on three levels (AXELROD in CONTE, HEGSELMAN, TERNO, 1997.b:32-33):

1. "Numerical equivalence", with exactly reproduced results. This under condition that same random number generator and seeds are used in every run.
2. "Distributional equivalence", where results have similar distributions around mean values, and differences in mean values and standard distributions are stochastic.
3. "Relational equivalence", where internal relationships between variables are the same between the models.

Testing for these levels of equivalence are suitable for different purposes. The first level is the most demanding and the third the least. If the goal is to assess quantitative measures of for example the size of a specific group of agents resulting from a process within the models, numerical or distributional equivalence is called for. If the simulation in question is aiming at exploring qualitative aspects of a process, such as "does a certain group of agents decrease or increase due to this process in this system?", the relational equivalence would be a sufficient condition.

Following this discussion it is essential to make simulations replicable. Even if the scientific society has got access to software and data, effects of random events in the processes will yield differing results from different runs. If the used "seed of randomisation" is saved together with results of the simulations, any user can feed this information into a new simulation and get an identical process.

## Opacity of Models

When complicated systems and processes such as urban areas and the doings of their inhabitants are simulated, the cautions by Axelrod et al are well worth considering. Torrens and O'Sullivan discuss urban simulation with spatial aspects, assessing it critically. They hold that many urban models are too complicated, without specified reason for its complications. There is a risk that too complicated models will have neither scientific nor **operational value**:

> "Launching enthusiastically into dramatic modification of models, without a full appreciation of the system dynamic implications, may produce simulations that we do not fully understand. Such elaborated models may have little operational value [--]." (TORRENS, O'SULLIVAN, 2001:165)

They are also concerned about the lack of **theory** in the construction of urban models:

> "Research on urban modelling is just that: research in modelling, and not on urban

dynamics and theory." (TORRENS, O'SULLIVAN, 2001:166)

As a measure against these problems they suggest cooperation between urban modelling re-searchers and researchers from different social sciences, to put theory back in models. They also put forward the importance of developing new types of models, hybrids between estab-lished forms of models such as Cellular Automata and Multi Agent Systems (TORRENS, O'SULLIVAN, 2001:167).

## Concluding Remarks

### Research Questions to Address

The simulation techniques discussed here, modelling social and spatial processes together, are useful for investigating certain kinds of research questions. Such topics are complex, involving many agents and system levels and also including interaction between them. The examples mentioned in this chapter display differences according to the roles of human participants or modelled agents acting in the modelled environments. The main types of simulation dis-cussed are:

- Simulation of physical environments for the study of human perception and behaviour.
- Roleplay or gaming in a computerised setting, where human actors interfere with a modelled world and its virtual agents.
- Simulation of social processes among virtual agents in a modelled spatial setting.

The first type of simulation could be used for educational purposes, such as the training of air pilots in aircraft simulators. It is also useful for comparisons between different proposals of how to design **built environment** or other artefacts. It is a way of communicating the picture of a not yet realised building or other environment, to use as a tool in the design process. Such simulations have a strong connection to the design of housing, which is a research area of interest to architects and planners.

The second type, where human actors get the opportunity to act on different options in a model world, trying out different outcomes and modifying their **behaviour** to the gains or losses they experience, is a way to study how human decisions are made. This approach is useful for testing and comparing detailed hypotheses on human behaviour. The results can in turn be used as input in models of the third type, where all levels of the system are simulated. Gaming on choice of **residential location** or on willingness to pay for different housing qualities are examples of applications within housing research. Another field of use is educational purposes. A housing company could for example simultaneously test strategies of housing **management** and train personnel, by letting them take part in a computerised game with carefully formulated rules.

In the third type of simulation everything is virtual. This poses particular demands on the specification of models. Agents' properties and the rules of their behaviour must be very clearly stated and the causal relationships underpinned

by theory and empirical findings, to give useful results. Stochastic elements must be controlled and specified. All that said, there are many fields of research on housing and planning issues where such simulations could be useful. A growing field is the study of urban sprawl or, in a broader sense, land use. Modelling impacts of different transportations systems or land use policies are under way. How new technologies will affect residential location or how people's moving will provide a dispersion of free dwelling units are other examples of research problems suited for simulation.

## Interdisciplinary Approaches Needed

Combining computer science and housing research will hopefully lead to a development of more effective tools for the study of social processes, but caution is needed. With easy access to computer power and software for doing multi agent modelling, ill informed research migth be a problem. In an article by Shalizi et al, (SHALIZI, TOZIER, 1999:2) is ironically proposed a model with several steps, wherein a physicist, knowing nothing about biology, happily uses "a mathematical model which is simple, neat, and contains a great many variables of the same sort" to model the evolution of life on earth. As his paper is reviewed only by other physicists, knowing nothing of biology, he will be published. Other physicists read it and think it is very interesting, as it is on a to a physicist new and fascinating topic. Other physicists are then tempted to try their luck as evolutionary theorists. They refer to each other and get further publishing. The process starts over.

The referred article is written in a mocking tone, but its point is clear. It is essential that the modelling of complex realities is truly multidisciplinary. All research projects where experts try to combine their skills rather than to venture into to them unknown fields, must seek the comments from discussants with deep understanding of the involved fields. To facilitate this detailed description of models and assumptions is vital.

## A Difficult but Promising Method

The problems of the method are quite challenging. The paradox of the increasing complexity in models to achieve increasing realism is hard to negotiate. The complexity makes it hard to evaluate results of the simulation. If complexity is driven far enough the model will get almost as chaotic as the real world. The balance between simplifying to obtain clarity and mimicking the interactions of many system levels to obtain realism is delicate.

Despite the problems, simulation of processes is a thrilling opportunity in social sciences as well as in design and planning. Today there are several interesting examples of such simulations, where individuals make decisions, adapting to each other and to their environment. Simulation makes it possible to create scenarios resulting from processes in a social system, based on different prerequisites. The possibility to discover and visualize previously hidden explanations for the outcome of complex processes is fascinating.

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http://www.nasaga.org/

## Notes:

[1] For example http://www.towson.edu/absel/, http://www.insead.fr/CALT/Encyclopedia/Education/Advances/games.html, http://www.nasaga.org/

# 18 Internet based methodologies in housing research

*Martin EDGE & Tony CRAIG*

## Abstract

*Methodological leaps often follow advances in technology, and the internet has proved to be no exception, with the number of internet surveys being carried out increasing almost daily. This paper outlines the various advantages and disadvantages of internet based experiments and surveys compared with traditional pencil and paper methods, and discusses the similarities and differences between the two approaches. Using a case study carried out by the authors looking at reactions to various financial packages offered to potential house-buyers, this paper demonstrates some of the ways in which internet based methods can be used not only to give comparable results to traditional methods, but also to enhance the research process itself. In particular, the study presented is innovative insofar as it automatically re-calculated the parameters within a particular survey based on the responses of previous participants in the study. Whilst there is still a need to validate this technique, it is thought to offer considerable potential for future studies. This approach is methodologically innovative especially insofar as it suggests a new way of overcoming a problem well known within the field of environmental economics - namely that of 'starting point bias'. Implications both for the case study presented and beyond are discussed.*

**Keywords:** *Housing Choice; Internet; Perception; Finance*

## Introduction

Looking back through time, it is clear that a large number of methodological leaps in social science research have come about as a direct or indirect result of technological advances. Examples include: the telephone, without which large sample verbal interview **survey**s could not take place; the ability to record sound, without which note-taking and independent verification would be a much more stressful task; the computer, which has enabled among other things, the ability to analyse statistically very large data sets with much greater ease and more recently the **internet** and email, which have rapidly become the main medium for communication amongst academics and others.

The fact that we can use the communicative capacity of the **internet** to great advantage within the social sciences is beyond doubt. We can search for long-lost references at the press of a search engines submit button, we can communicate with colleagues from various countries simultaneously and can share information in a manner which was not possible before - at least not with the same capacity and speed. Indeed, the web and the **internet** have impacts not only on people's ability to access information, but also on people's relationships to a wide variety of physical and social **environment**s (see STOKALS, MONTERO, 2003:661-675). That said, it is important not to get carried away with awe and wonder for the technology - there are ongoing tensions between the various advantages and disadvantages of this technology for society, similar to those played out regarding television in the last few decades. Whilst this paper will not attempt to document all of the background and issues of interest in this wide ranging field (see NAUGHTON, 1999 for an interesting historical overview of the **internet**), it is arguably true that one of the most common uses of this technology (after email) is to carry out 'research', in the broadest possible sense - be it someone looking for information about healthy eating, or someone carrying out a **survey** on the world wide web. It is this side of the **internet**, particularly its use to carry out **survey**s in housing research - that will be the focus of this paper. The issues will be illustrated with reference to a particular case study carried out by the authors.

## Issues in Internet Based Methodologies

As mentioned above, **innovation**s and developments in social science methods have long been tied to both advances in technology and cost considerations[1] The introduction of telephone interviewing in the 1970's and more recent advances in computer assisted interviewing are two good examples of this (DILLMAN, 2000). The past few years have seen a growing interest in the use of both E-mail **survey**s and Web-based **survey**s, primarily concerned with administering simple **questionnaire**s. DILLMAN (2000) has laid out a comprehensive series of guidelines for

designing such **internet** based **questionnaire**s.

Whilst **questionnaire survey** techniques can be useful for making statements about groups of people, they can also be used (although are not often) for experimental or quasi-experimental investigations (BREAKWELL, et.al., 1995:100). There is a growing interest in the use of the **internet** for experimental investigations in psychology (see for example BIRNBAUM, 2000; REIPS, 2003b).

Delivering what are arguably fairly standard research instruments using the **internet** carries with it a variety of advantages and disadvantages. Whilst these considerations are written with standard research instruments in mind, they also hold true for experiments which might be described as innovative. The various advantages and disadvantages will be dealt with in turn here. Unless otherwise stated, the following list is adapted from REIPS (2001):

Advantages:

- **Access to demographically and culturally diverse population.** This is one of the oft-cited reasons for deciding to use the **internet** over pen and paper based methods. The over-reliance on students in psychological experiments is well documented[2], and the ability to gain access to an **internet** population which more closely resembles the population at large is very appealing. Although replication studies tend not to be the most favoured by academics, there is arguably a demographic 'generalisability vacuum' which needs filling for many studies in the social sciences. Such studies would benefit from the potential sample offered by **internet** based experiments. It is also the case that gaining access to very specific populations is made easier by the **internet** (e.g. certain special interest groups, or people with a specific medical condition).
- **Ability to bring the experiment to the participant.** In terms of motivational power, the very fact that participants do not need to come into a laboratory or testing situation to take part is likely to increase both the motivation to participate, and the level of comfort whilst participating. By and large, members of the **internet** using population are familiar with the situation of sitting at a computer and navigating their way through web pages, so the usability of such a **survey** should not pose too much of a problem.
- **High statistical power due to potentially large samples**. Arguably this is also true for postal **survey**s (notwithstanding cost considerations), although the ability to **customise survey**s for **regional**, national and potentially international samples makes for a powerful argument in terms of the potential to achieve very large sample sizes. This has been used to great advantage by research teams carrying out projects spanning several countries.
- **Cost and Time savings.** One of the clearest initial advantages for using the **internet** as the means of data collection is the simple fact that large scale paper **survey**s tend to be very time-consuming and costly in terms of materials. Once an

internet survey or experiment has 'Gone Live', the results can come back to the researcher in a format ready for analysis, with little or no intervention, thereby eliminating the need to type in data. Although there are costs associated with running internet based studies (e.g. costs of reliable servers), these can be managed and minimised. A great advantage of the internet in the pilot stages of research is the ability to respond to issues arising without the need to re-start the pilot from scratch (from simple spelling errors to serious navigational issues).

Disadvantages:

- A certain level of 'technical know-how' is required. Although internet studies can reduce costs in terms of both finances and time, there is a time investment needed initially in order to learn how to carry out such studies technically. However, it should be noted that this is also the case for numerous other research techniques such as telephone interviewing, or the design of postal surveys. Once learned and practised, specific technical know-how becomes less of an issue. REIPS (2003.a) notes that if conducted carefully, the advantages of web-based research can far outweigh the disadvantages, although there is an *'alarming potential for configuration errors'* which can lead to bias or misleading results.
- Potential for multiple submissions. This is often mentioned as a concern for web experiments, although it appears that incidences of such behaviour are very rare apart from for technical or interface-based reasons (e.g. participants are not sure whether they have submitted the form or not, and therefore do the survey again). Most of the worries regarding multiple submission can be controlled for and guarded against by close inspection of the data (e.g. checking IP address), or the inclusion of some kind of identity check (e.g. email address).
- Lack of experimental control. While it is true that there will be a level of uncontrolled variation due to technical set-ups and participant surroundings, in most situations careful experimental design can control for such issues if they are particularly important for the study being carried out.
- Self selection. This is related to the manner in which people find out about the study in the first place. If the study is picked up by someone searching for "Web Experiment", it is likely to yield different results to a passing web-surfer clicking a link on housing website, for example. Targeting potential samples in multiple ways will go some way to reducing this problem.
- Respondent drop out. While this is inevitably a problem, one advantage of internet surveys over paper surveys is that, if designed correctly, it is possible to find out at what point a respondent decided to drop out. This might have implications in terms of respondent motivation, or even something as simple as question wording.

- **The 'digital divide'.** Broadly speaking, **internet** users tend to be younger, more highly educated, and richer than non users (GARDNER, OSWALD, 2001:159-173). This is important insofar as it underscores the importance of checking the demographic characteristics of samples relative to the population being researched. Whilst there is nothing a researcher can do to change the existence of this divide between those who do and those who do not use the **internet**, efforts can and should be made actively to seek out a greater number of people known to be under-represented in the **internet** population (e.g. older people with a low income) by for example targeting newsgroups or websites of interest to that population, or carrying out a non-**internet**-based study for these people to complement the **internet** findings.

Given its methodological importance, it is surprising that there are few studies that have set out to compare **internet** and 'pencil and paper' **surveys**. BUCHANAN and SMITH (1999:125-144) found that **internet survey**s were more reliable for the administration of personality testing than pencil and paper **survey**s. A recent study by PRECKEL and THIEMANN (2003:131-138) however, demonstrated a high degree of comparability for both types of **survey** in relation to intelligence testing. MCNALLY (2001), O'HANLON, COLEMAN (2001) and CRAIG, et.al. (2002) have also carried out similar comparisons and found few differences. There are however various issues regarding things like navigation (see NORMAN, et.al., 2001: 37-45; OLSON, OLSON, 2003: 491-516) which need to be considered in making a comparable experience for the participants of an online study.

## Introduction to the Case Study

The methodological research reported on here to illustrate some issues and opportunities in **internet**-based research was not carried out in a vacuum but was part of a major research commission. The project was funded by the UK Department of Trade and Industry (DTI) and Engineering and Physical Sciences Research Council (EPSRC) and entitled "Overcoming Client and **Market Resistance** to **Prefabrication** and **Standardisation** in Housing". It involved looking at public, consumer and industry **attitude**s to many different types of **prefabrication** and **standardisation** in UK housing. It was instigated as a result of Government and industry concern that changes in housebuilding deemed necessary by EGAN (1998) and others, towards greater affordability, efficiency and sustainability, might be prevented or slowed by an innate conservatism in housing **market**s.

Aspects of **prefabrication** and **standardisation** which are not essentially to do with the physical form or appearance of the house may be of concern to the house buyer and property professionals. In the UK **market**, dominated by owner occupation, many of these more abstract concerns relate to the **price** of

housing and the house as a financial product. For example, if an innovative new house is perceived to be different to 'normal' houses, however well it may perform physically, this may create uncertainty as to long term capital value and reselling potential.

The way these issues are perceived by house buyers was investigated in a web based study which used some innovative techniques to garner information about preferences for a number of different financial products linked to house purchase. The study aimed to be creative in not merely trying to identify resistance, but suggesting and testing ways of overcoming that resistance, primarily by offering different hypothetical financial packages.

At the core of this project lay the idea of the changing nature of the house, not just as an environment for living, but as a 'consumer good' - a 'financial product' of ever-increasing sophistication whose role includes the provision of a level of financial, as well as physical, security. It was argued that the apparent desirability of solidity and permanence in the home is as much a response to the desire for long term financial security as it is driven by structural and functional criteria. In the UK people commonly talk about investing in 'bricks and mortar'.

Although this project was a complex one involving a number of distinct studies, the current paper concentrates on the authors' web-based study of value in alternative types of housing. Three key characteristics of this study helped to generate the methodology for the web-based study:

1. The study was about preferences towards certain attributes in housing, including environmental goods.
2. The study used quantitative, financial measures to gauge the attractiveness of different options.
3. The study used as its main quantitative measure the price of house purchase. It gathered meaningful data about the kinds of transactions which most respondents will make at some point in their lives. In this respect it differed from a lot of studies which try to allocate financial measures to non-market environmental goods through, for example, surrogate pricing.

## Method

The 'financial packages' chosen to be assessed by prospective purchasers were designed to reflect a number of different potential characteristics of prefabricated and standardised housing. Some packages acknowledge the possibility that there may be concerns about increased risk of high future maintenance bills. Others reflect possible concerns about resale value. Others offer direct capital cost savings. Still others take advantage of both potential cost savings and technical advantages to offer improvements in specifications and environmental performance.

The packages on offer begin with the assumption that there are, as has been shown by other research carried out by the authors, significant cost advantages to be realised by

adopting **prefabrication** and **standardisation** techniques. The savings in this case are gained by using a fairly conventional built form, but with some sheet cladding materials which are not standard in UK mass housing. The potential cost advantages can be passed on to the house buyer in a number of different ways, such as through guarantees and insurance policies. The design also offers the possibility of greatly enhanced **environment**al performance and the flexibility to provide part-build solutions and future extension.

In developing the **methodology** for this study the authors took advantage of the fact that people were being asked to make judgements on the sort of things which they are called to make judgements on in reality. That is, unlike a lot of more theoretical, academic constructs, choosing mortgage products and homes is something that most people do at some time in the course of their lives. In an effort to optimise the study and give respondents realistic scenarios on which to make **financial** judgements, the researchers sought to generate realistic **price** data to suit the region in which respondents are based and the sort of home they might be in the **market** for. Thus if a respondent selects which region they are from, the **financial** packages offered can be automatically adjusted to reflect **regional market price**s.

A **survey** form was designed for on-line use. The on-line **survey** first established the kind of **price** which respondents might be in the **market** at, then offered a series of potential '**financial** packages', or ways of buying a type of house using a relatively innovative construction system and unconventional cladding materials. Where respondents rejected certain options, at the end of the **survey** an explanation was sought and people were asked to specify entry level costs at which they might be persuaded to accept packages.

Following the theme of encouraging good design through **prefabrication**, respondents were shown a series of images of a particular design. The images used were those of two affordable, sustainable, highly energy efficient houses, both built by Deveci Architects and developed from designs which arose from the Affordable Rural Housing research project for Scottish Homes and Gordon District Council

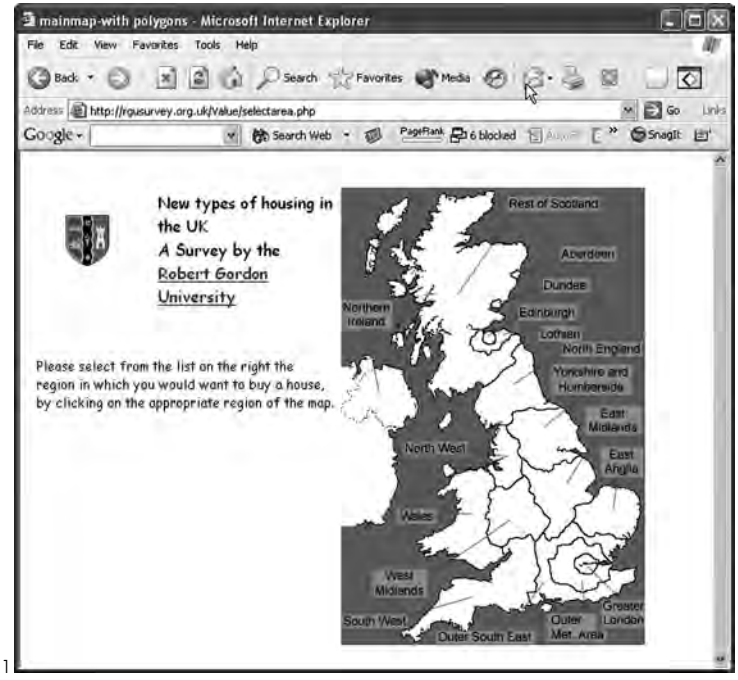



**Figure 1**
Selecting the region on which to base house prices.

(EDGE, 1998). These houses are proven solutions which have won a number of design awards and can deliver cost savings over more 'conventional' designs. It should be noted that these designs are not fully prefabricated, modular buildings, but use **standardisation** in the form of manufactured timber 'I' beams as part of a lightweight framing system.

Respondents were asked to select a region (Figure 1) and a house size (number of bedrooms). Because the research was interested in people from across the whole of the UK, it was felt to be important to have **regional**ly specific data in each **survey**. As the **survey** would be dealing with house **price**s, and house **price**s fluctuate **regional**ly to a certain extent, this was reflected this in the survey itself. Regionally specific house prices were then extracted from an online database, to be used in calculations for each respondent. Each **questionnaire** is therefore **customise**d for the particular circumstances of the respondent.

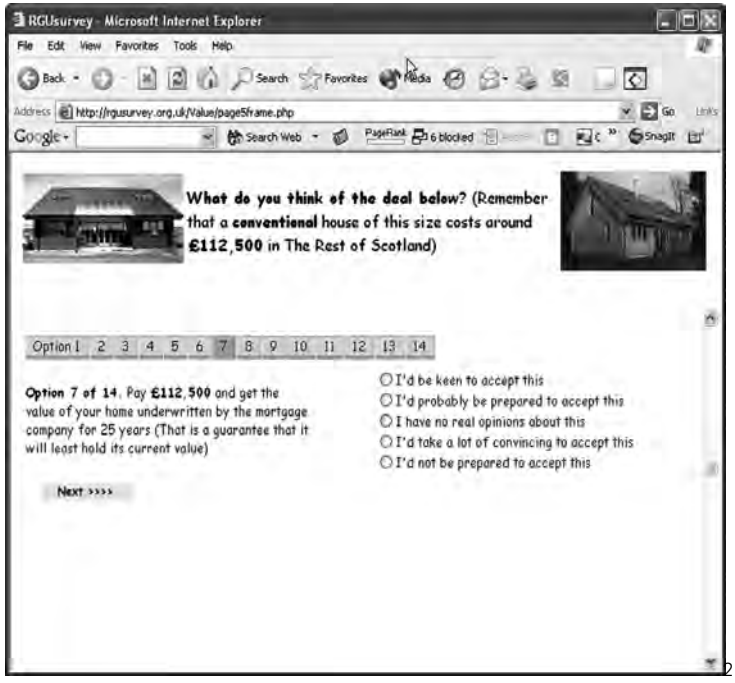



**Figure 2**
An example question, showing that the respondent is about half way through the survey.

The input data used to determine individual hypothetical house **price**s for respondents was drawn from a variety of sources documenting UK **regional** house **price**s.

The study was **pilot**ed during January 2002 at http://rgusurvey.org.uk/Value and aside from the actual results of the **pilot**, a series of comments were either recorded on the form or sent by email by respondents. These comments formed part of the feedback taken into consideration in the refinement of the study. Nineteen respondents completed the **pilot survey**, which is sufficient to test its efficacy and facilitate the refinement process, but insufficient to be able to draw any statistically valid inferences.

A number of changes to the **survey** instrument were made as a result of the preliminary **pilot**. Many people commented that they found it hard to know how far through the **survey** they were, and (more importantly) how far it was until the end. In a traditional **survey**, it is easy to assess how far though the paperwork you are, so the researchers attempted to replicate this by means of a coloured bar, with all the question numbers along the top and the question in hand highlighted (see figure 2). The main change to the **survey** as a result of the **pilot** was the introduction of the **iterative** process whereby

'offer prices' for the different financial deals were altered as a result of the choices made by the previous respondent. The study was then re-piloted in this amended form.

Website managers of various sites dedicated to house sales were contacted and asked to put a link to the survey website. Although, it is hard to assess response rate from such a sampling strategy the intention at this stage was not to validate a survey instrument, but to test a methodological innovation in an applied context.

## Designing the Iterative Study

Two different approaches to the allocation of prices to the different options were considered. Firstly, the prices displayed for the various options can be calculated by an algorithm which makes them a fixed percentage of the particular house values calculated for the region and house size of each respondent. That is, an option may be, for example, a constant 95% of the cost of new houses in whatever area the respondent is interested in. Theoretical financial packages to be offered by mortgagors can be altered in the same way. If an option is unattractive at a certain price, that price will remain the same, subject to regional differences, to all respondents. There are a number of problems with this approach:

1. It may be that this option is only unattractive because of the somewhat arbitrary figure allocated it by the researchers. These figures are intended to relate in some way to real prices and values, but are open to question.
2. There is no real way of knowing, to any great degree of sensitivity, how attractive or unattractive an option is.
3. The researchers are open to the criticism of encouraging people to favour particular options by 'rigging' the figures. That is, can very positive things about energy saving designs be reported only because the researchers decided to make them very inexpensive?

The second approach, and the one adopted for the first part of the study, used algorithms whereby when each respondent submits data, that data will amend the input parameters for the next respondent. For example, if someone responds to an option *'I'd not be prepared to accept this',* the input data for the next respondent can be changed to make the capital cost 94.5% of the average cost, as opposed to 95%. If an option is unattractive it will be made more attractive to the next respondent, and vice versa. If this option is still unattractive to the next respondent, the figure becomes 94% for the third respondent, and so on. As each respondent has replied to a slightly different question as a result of this method, the data gathered is harder to analyse statistically. The approach taken was therefore to apply this algorithm only to the first group of respondents. Once sufficient responses were received to produce a robust, 'optimised' set of input data, the price multipliers were then fixed for subsequent respondents. Due to practical resource considerations the iterative part of the study was limited to around the first seventy

respondents. There is evidence that, though the approach was successful in leading towards a 'level playing field' for the different options, a larger sample would be beneficial in achieving 'consensual' optimum prices.

It should be noted that, in this approach, the price and cost data do not represent the actual cost of constructing the building and providing a particular 'deal'. They do however represent very real values that people state they would be willing to pay for certain options. The use of this iterative survey instrument to generate a series of values at which each of a series of different financial 'deals' was seen as equally attractive by prospective house purchasers, has perhaps been the most innovative methodological feature of the study.

Where respondents rejected certain options, at the end of the survey an explanation was sought and people were asked to specify entry level costs at which they might be persuaded to accept particular packages.

Following the iterative stage of the study, to facilitate statistical analysis of the data, the price variable for each of the options was fixed at the level arrived at in the first stage. The final sample size included 202 respondents and some interesting results were arrived at concerning the relative attractiveness of various different financial options in the purchase of unconventional, environmentally improved housing. These results are reported elsewhere (e.g. EDGE, CRAIG, 2002). Here discussion is restricted to the methodological innovations.

## Results of the Case Study Pilot

Figures 3, 4 and 5 show the changes in the price of the different options during the course of the iterative part of the study, showing the way in which subsequent respondents drove the price multipliers for each option up or down according to how attractive they felt it to be. It was expected that a convex or concave flattening curve would be observed, as price multipliers for individual options approached their optima. Clearly responses would not be expected to be entirely consensual and the individual values would be expected to exhibit variation around the mean. Broadly speaking this pattern was observed, with most options showing a fairly consistent rise or fall, many of the curves beginning to flatten out towards the end of the study. This method of arriving at 'consensual' values is methodologically innovative and appears to have considerable potential. More work is needed however to determine how many respondents are needed to achieve a reasonably steady state in the end prices.

The method appears to somewhat less successful however when dealing with very popular or very unpopular options and the results are perhaps a commentary on the limitations of using hypothetical price data. For two of the fourteen options the graph shows no sign of flattening out even once the price has reached 70% of the price of a conventional house. For one option in particular this would seem to conflict with any sort of economic rationale. Respondents are being ostensibly

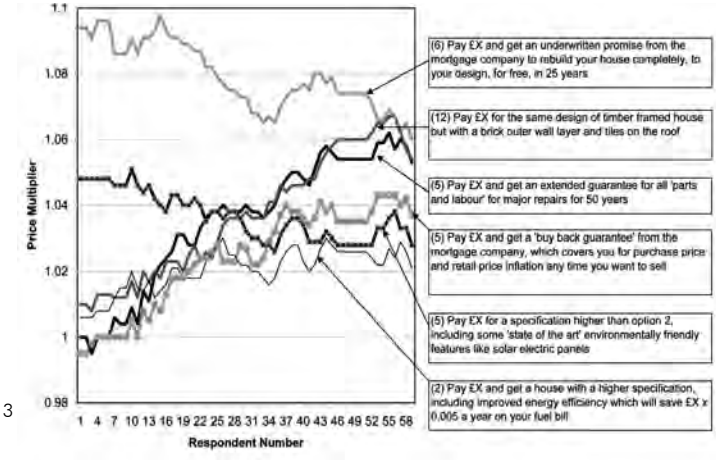
offered a house on average 15% smaller, with the option of enlarging it, at a saving of 30% of total capital **value**. Except in areas where capital **value**s are lower than building costs, which is rare, this would not seem a sensible decision. What appears to be happening here is that respondents are reacting with an automatic negativity to options which do not appeal, rather than making a considered economic assessment. That said, a justified criticism in terms of this particular option would be that people were asked earlier in the **survey** what size of house they were in the **market** for (in terms of number of rooms), so in many ways it is unsurprising that they were not willing to opt for 'one less room'.

It is possible that this feature, though an apparent flaw in the method, could be used positively to gauge how realistic questions on which judgements of **value** are sought are. If most people reject an option however low it is **price**d, or accept it at an overly high **price**, might this be evidence of the inappropriateness of attaching **financial value** judgements to these factors? Conversely, if a flattening curve is observed for a particular option, can this be said to be evidence of its **price** sensitivity and hence the appropriateness of using a **financial** measure?

In all but 3 of the 14 cases the mean for the second half of the sample is closer to the median **value** of 3 than the mean for the first half. This confirms a tendency in this case to gravitate towards a consensual optimal **price** and the general validity of the method of acquiring validated starting point **value**s.

## Conclusions

Methodologically, the research has taken on-line **survey** techniques way beyond the more normal transposition of paper-based techniques into a computing **environment**. The research has demonstrated the efficacy of approaches in

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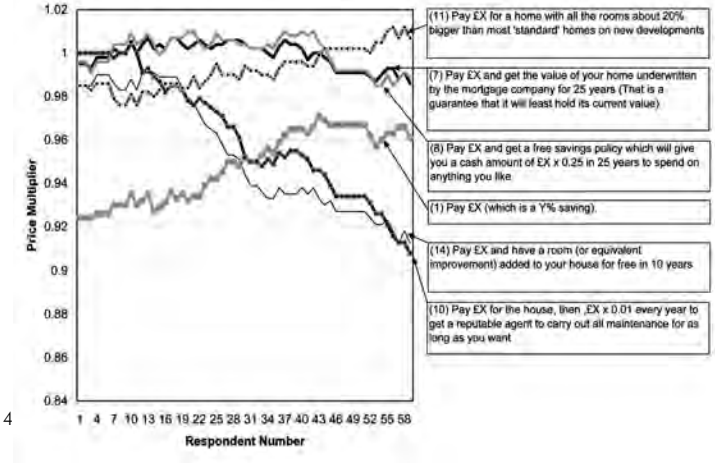


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**Figure 3**
Incremental price change for options in the pilot survey. (left)

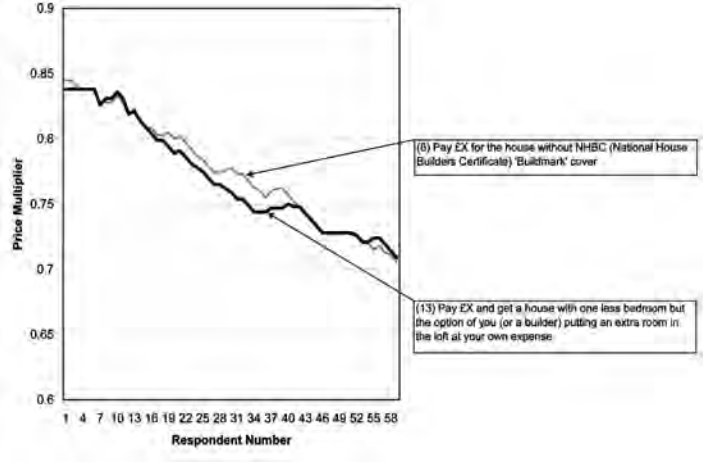
**Figure 4**
Incremental price change for options in the pilot survey. (left)

**Figure 5**
Incremental price change for options in the pilot survey. (right)

which respondents become active participants in changing the **survey** instrument in an **iterative** way. It has also demonstrated the ability to **customise** the **survey** instrument to the particular local circumstances of individual respondents.

This approach is methodologically innovative especially insofar as it suggests a new way of overcoming a problem well known within the field of **environment**al economics - namely that of 'starting point bias'. The technique in **Environment**al Economics which most closely resembles the one carried out here is a variation of Contingent Valuation know as 'Closed Ended Iterative Bidding' (FRICK, et.al., 2003:101-107), where respondents are asked whether or not they would be willing to pay a specified amount for the good being **value**d. If they answer 'yes', then the amount is raised until the maximum bid is reached, whereas if they answer 'no', then the reverse occurs until a 'willingness to pay' (WTP) is expressed (FRICK, et.al., 2003:101-107). This technique is known to be particularly sensitive to starting point bias, so the ability **iterative**ly to arrive at validated starting point **value**s as demonstrated in this study might be useful to **environment**al economists in carrying out Contingent Valuation studies, particularly if the technique can discriminate between those options where people can easily assign monetary **value**s, and those which are being accepted or rejected for non-**financial** reasons.

Although it has been argued here that one of the reasons for doing this as a two-stage process is because it is hard to analyse the first phase statistically, there may well be statistical or econometric techniques that could be refined to deal with this issue. While the utility of establishing validated **price** multipliers in this case is clear, if the automation in the system could be taken one step further, so that the **price** multipliers are automatically recalculated every 50 (for example) respondents, this would make for a more robust data set, which would more readily lend itself to statistical **analysis**. Moreover, the self-correcting mechanism that this technique would have may well greatly enhance the ecological validity of techniques like this.

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## Notes:

[1] Our initial motivation for carrying out a survey on the internet in an earlier project came about because of the high costs of printing colour images on a paper survey - the various other advantages and disadvantages became apparent later.

[2] REIPS (2001) cites a study by REIPS and BACHTIGER (1999) which showed that 80% of all psychological studies are conducted with students as participants, while only 3% of the general population are students.

# 19 MEASURING CHANGE IN HOUSING CONDITIONS OVER TIME

*Maggie DAVIDSON*

## Abstract

*This paper focuses on the problems in measuring change in housing conditions over time experienced by the **English House Condition Survey (EHCS)**. This is a large scale national survey of households and dwellings which started in 1967. The survey is used by national government to plan, monitor and develop strategies to improve housing conditions.*

*One might think that asking surveyors to assess the condition of houses was remarkably straightforward and certainly less problematic than trying to devise reliable measures of respondents' views of their landlord etc.. However, this is not the case because assessments of dwelling condition involve subjective judgements by surveyors. This means that over the years, we have had to devote considerable resources to ensure that any changes in condition that we report are real rather than caused by other factors. The key factors that we have encountered that can cause spurious changes fall under 4 generic headings:*

- *Surveyor variability*
- *Surveyor drift in standards*
- *Sampling methods and survey allocations*
- *New building, demolition and changes in ownership*

*It is important to acknowledge that these are real problems which can be minimised to some extent by measures like improving **surveyor training**, changes to methodology and tightening up allocation procedures. However, they cannot be eradicated altogether and the paper describes some of the alternative approaches to analysis and modelling that we have developed which explicitly recognise these issues. Although specific to dwelling condition, many of the generic problems and solutions described in this paper are common to other areas of housing research that aim to measure changes in behaviour, satisfaction or attitudes over time. Most studies looking at change over time have to contend with issues of reliability, variability, drift in standards or expectations and **sample attrition**.*

**Keywords:** *Longitudinal Analysis, Surveyor Variability, Drift in Standards, Surveyor Allocations, Sample Attrition*

## 1. Background - The English House Condition Survey

The first English House Condition Survey (EHCS) was carried out in 1967. It was repeated in 1971 and every 5 years after that until 2001. From 2002 onwards it has been carried out every year. The scope of the survey and the technical methods employed have changed radically over the years. The 2001 survey involved over 25,000 households and dwellings and consisted of 4 main component surveys:

1. Physical inspection of the dwelling by a trained surveyor.
2. Interview with the household.
3. Assessment of market value by a trained valuer based on dwelling details and photographs.
4. Interview with the landlord where homes are privately rented.

These are used to form a complete picture of the sampled dwelling and its occupants. The sample design always included a **longitudinal** component whereby a proportion of the dwellings visited in one survey were re-visited in the next (ODPM, 2003.a:118).

From 2002 onwards, the survey has been carried out on an annual basis involving about 8,000 dwellings per year. The same four component surveys are used and the survey will have a longitudinal component built in from 2005 onwards.

The survey is organised by the Office of the Deputy Prime Minister. The Building Research Establishment (BRE) act as the development partner on technical issues relating to the analysis, modelling and surveyor training. The fieldwork and data collection for the continuous survey are organised by the Office of National Statistics with Miller Mitchell Burley Lane providing the surveyors and regional managers. Fieldwork management and data collection for the 1996 and 2001 surveys was carried out by MORI. The National Centre for Social Research (NCSR) has also advised on sampling strategy and surveyor variability. Results from the survey are used in a variety of ways:

- To monitor changes in condition of the stock and, in particular, the impact of government policies that aim to improve conditions.
- To allocate government money for both social and private housing.
- To assess the impact of changes in policies by modelling 'what if..' scenarios
- To carry out sensitivity testing to develop initiatives and policies e.g. Decent Homes.

It is therefore vital that the survey can produce reliable and valid estimates of dwelling condition at particular points in time and assess whether observed changes are real.

The physical survey consists of an inspection of the dwelling by a trained surveyor taking, on average, about an hour. From 2001 onwards around 200 different surveyors were used per year; in previous surveys it was around 100 or fewer. Inside the dwelling, the surveyor inspects a sample of rooms recording the type

of work needed to floors, ceilings, internal walls and internal doors . In the kitchen and bathroom, the surveyor records the amenities present and any repair works needed. The type of heating and presence of loft and wall insulation are also recorded. Whilst inside the home, he/she also records any assessments of fitness[1] that relate to the inside of the home. For each of the key elements of the exterior of the dwelling (or block if it is a flat) the surveyor records the material used, its approximate age and the proportions requiring different types of repair work. The surveyor makes a final assessment of all other items of unfitness and assesses specified characteristics and problems in the neighbourhood. For flats he/she also assesses the condition of any common areas (shared landings, staircases and entrances).

Before taking part in the survey, all surveyors are required to attend an intensive 6-day training course comprising lectures, practice surveys of real buildings, desk exercises and feedback and discussion sessions. Those who have taken part in previous surveys are required to attend a 2-day 'refresher' training course each year. The aims are to ensure that surveyors understand all of the key definitions and concepts used in the survey and to try and instil **common standards** for assessing dwelling condition. The fieldwork, desk exercises and the feedback sessions take up about two thirds of the training. These are the key means of trying to achieve common standards so that , when presented with the same roof or window or wall, different surveyors will specify broadly similar repair work. However, it is recognised that 100% consistency is not achievable as professional judgements will differ and are often made on the basis of limited information. The training focuses on the assessment of disrepair, unfitness and key information related to the government's new Decent Homes standard. Surveyors also have a comprehensive written manual that covers all of these aspects, together with detailed guidance on applying the fitness standard and a regional manager to whom they can refer any queries.

This paper focuses on the 3 key condition measures that the survey uses:

- Costs of remedying all disrepair
- Whether the dwelling meets the **Decent Homes** standard
- Whether the dwelling meets the fitness standard

All of these involve a high degree of **subjective judgement** or professional opinion. Interpretation of results therefore requires a clear understanding of the four key issues mentioned earlier so that we can report results with confidence and carry out more sophisticated and useful analyses to inform policy and practice.

## 3. Key problems in measuring real change over time

### 3.1 Surveyor variability

That judgements of professionals vary is of no surprise. Within a group of doctors there will often be a difference of opinion as to the best

treatment and likely prognosis for a particular patient; the same thing happens with a group of surveyors inspecting the same house. What may be surprising is the extent of the variability amongst surveyors and how resistant it is to attempts to impose common standards. Over the years on the EHCS a number of methods have been used to examine variability:

- **Call-back surveys** where a proportion of the dwellings surveyed were re-visited and surveyed by a second surveyor.
- Experiments where up to 20 surveyors carried out a survey of the same dwelling totally independently.
- **Pairing experiments** where surveyors were randomly allocated dwellings within clusters and multi-level modelling using the MLWin package was used to estimate variability.
- Analysis of data collected during the fieldwork exercises during training.
- Analysis of data from **calibration** workbooks. These present surveyors with photographs and descriptions and they record repairs needed as on the EHCS form.

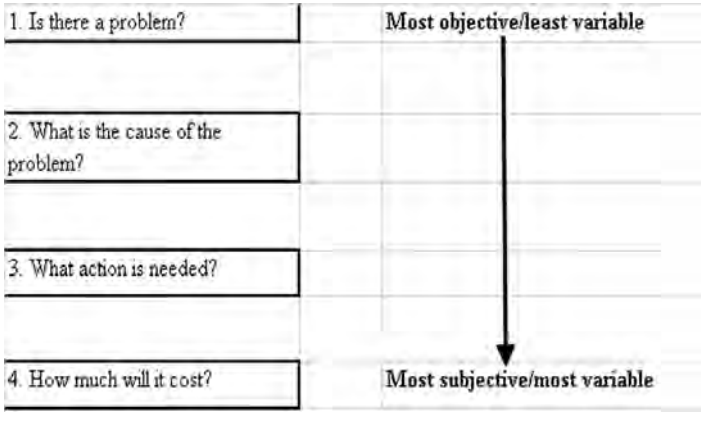


**Figure 1** Hierarchy of judgements about dwelling condition

Very early analysis in the 1980's examined variability from the fieldwork training exercise. This, together with other small scale experiments carried out showed that there are a **hierarchy of judgements** made when surveyors are assessing **disrepair** ranging from the most objective to the most subjective as shown in Figure 1:

The early experiments also showed that apparently large differences between surveyors were the result of subtle differences in strategy towards repairs which would have little impact on costs in the long run. For example three different surveyors looking at the roof shown below in Figure 2 would probably all agree that there is a problem and that some of the slates have slipped. Where they will differ is in their assessment of what to do about the problem. One may say no work is needed now (as it is not leaking) but to replace the whole roof within 5 years; the second may specify some patch repairs required now and for the whole roof to be replaced within 10 years; and the third may say replace the whole thing now. The calculated costs for work required now for the 3 surveyors would vary considerably i.e. from nothing to around £3,000 for an average size house. However, if we were to discount the costs over ten years, the differences would be very much smaller. This led to a change in methodology of asking surveyors to record the 'replacement period' for elements (how long it would be before the element would require complete replacement) and using this in the estimation of

costs of repair.

All of these steps did reduce variability to some extent, but the problem still remains. Estimates of surveyor variability vary because all of the different methods of measuring it have their own strengths and weaknesses and provide different answers. Figure 3 below illustrates the extent of variation in the assessment of calibration workbooks from the 2001 survey.

Improvements in training over the years, particularly the introduction of feedback and discussion, have also reduced surveyor variability but gains are marginal. For example, additional measures to improve the training and survey management process were taken for the 2002 survey. The key aspects of this were:

- Appointing five permanent full-time regional managers who were each in charge of a group of surveyors. Previously we had used about 12 supervisors who been employed on short-term contracts and worked on a part time basis.
- Improving **selection procedures** for surveyors - interview and testing with the regional manager.
- Requiring surveyors to complete exercises and read information prior to attending the main training. This weeded out those who were less committed and totally unsuitable. It also gave the regional managers a good indication of where particular surveyors needed additional help or were interpreting standards much too strictly or too leniently.
- Using desk exercises of real examples in

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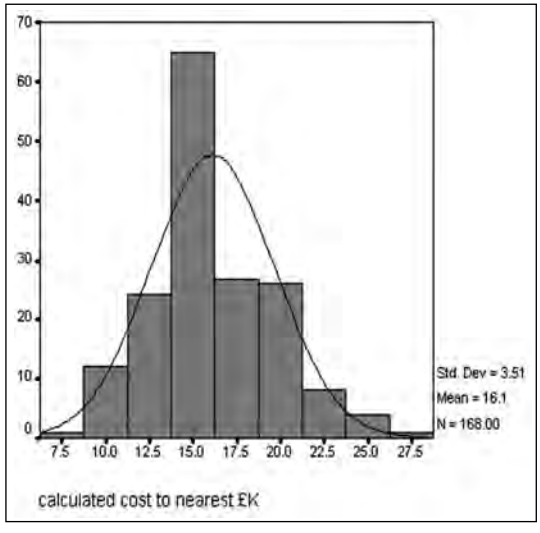


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**Figure 2**
Example of roof with some problems of disrepair

**Figure 3**
Distribution of total repair costs in £K from calibration workbooks in 2001

the main training. This enabled us to encompass a much wider range of situations than were found in the small number of training houses used.

- Regional managers carried out more rigorous checking of completed survey forms and had more time available to coach individual surveyors.

These measures have resulted in some improvements. Table 1 below shows how the standard errors and standard deviations of total costs from the calibration workbooks have reduced between 2001 and 2002. It is also clear that there is less variation in the normalised costs (those that take account of replacement periods) than the nominal costs (all work specified to be done now) which reinforces the utility of this approach to estimating the costs of dealing with disrepair.

It is unlikely that we can do anything further in terms of training and selection of surveyors to significantly reduce surveyor variability. It remains a big problem and means that true longitudinal analysis of data where we track the condition of the same dwelling over time is not possible. If two assessments of the same dwelling are different in 2 years, we do not know whether this is because there has been some real change or simply because we sent two different surveyors.

**Table 1**
Results comparing calibration workbook exercises 2001 and 2002

| | 2001 | | 2002 | |
|---|---|---|---|---|
| | Total costs nominal, £ | Total costs normalised, £ | Total costs nominal, £ | Total costs normalised, £ |
| Mean | 13,449 | 16,138 | 14,165 | 16,419 |
| Valid | 171 | 168 | 188 | 184 |
| Missing | 0 | 3 | 2 | 6 |
| Std. Error of Mean | 322 | 270 | 275 | 221 |
| Median | 12,447 | 15,555 | 13,449 | 16,042 |
| Std. Deviation | 4214 | 3497 | 3767 | 3001 |
| Skewness | 0.7654 | 0.5638 | 0.4552 | 0.5007 |
| Minimum | 6,357 | 8,123 | 6,983 | 9,515 |
| Maximum | 26,500 | 26,501 | 24,953 | 26,256 |

Variability can also manifest itself as a problem with more 'objective' assessments - here the problem is lack of information and assumptions made about missing data rather than differences of professional opinion. The EHCS assessment of thermal comfort, which forms part of the Decent Homes standard, is a good example of this. This assessment uses information on the type of heating, external wall construction, cavity wall insulation and loft insulation. The problem is the quality and reliability of data on insulation. Surveyors cannot always tell whether certain types of insulation are present and the occupant may not know. Dwellings are extremely unlikely to deteriorate on this aspect because people do not normally remove central heating systems or loft insulation without replacing them with an equivalent or improved product. Similarly it is not physically possible to remove cavity wall insulation. However, if we look at the longitudinal sample we see that 15% of those that met this standard in 1996 had failed by 2001. This is clearly implausible but illustrates the dangers in drawing conclusions about change where some of the base data is inherently unreliable.

The only real comparisons possible are therefore cross-sectional i.e. comparing the average condition of a group of dwellings in one year with the same group of dwellings in another year and with the surveyor variability built into the errors around those estimates.

However, this simplistic approach is not enough for a real understanding of the true **dynamics of house condition** which is essential to understand and monitor the impact of different policies or other factors. A key aim of the survey is to monitor and explain the change in the number of Decent Homes. Just because there was a reduction from around 9.4 million homes failing the standard in 1996 to 7 million in 2001 does not mean that 2.4 million were made decent over that period. It means that the net balance has been in favour of improvement. As we cannot use straight longitudinal comparisons we have had to adopt alternative modelled approaches. The paragraphs below describes the methods that we developed to model **improvement** and **deterioration** in the different aspects of the decent homes standard between 1996 and 2001.

The decent homes standard has 4 main components: disrepair, modernisation, unfitness and thermal comfort. We decided to treat each of these separately because the processes of improvement and deterioration are very different for each. The aim was to estimate how much of the apparent improvement and deterioration was real and could be substantiated by other data. In deciding whether apparent improvement was likely to be real, we examined whether there was there any evidence to suggest that relevant remedial work had been or was likely to have been carried out the dwelling Where the household interview survey had revealed relevant work carried out by the household or landlord, or where the occupant had moved into the dwelling within the last 5 years, any improvement was assumed to be real. In all other cases, it was assumed to be the result of variability.

Assessing whether deterioration had occurred was more problematic and was approached from 2 standpoints:

1. Certain items cannot or are extremely unlikely to deteriorate. It has already been noted that deterioration in terms of heating and insulation is extremely unlikely. Similarly it was assumed that items relating to design aspects of the dwelling (e.g. size and layout of kitchen, presence of internal WC, natural lighting to the home) would not deteriorate. If people have a perfectly adequate kitchen, it is most unlikely that they will re-plan it so that it becomes smaller and very badly laid out.

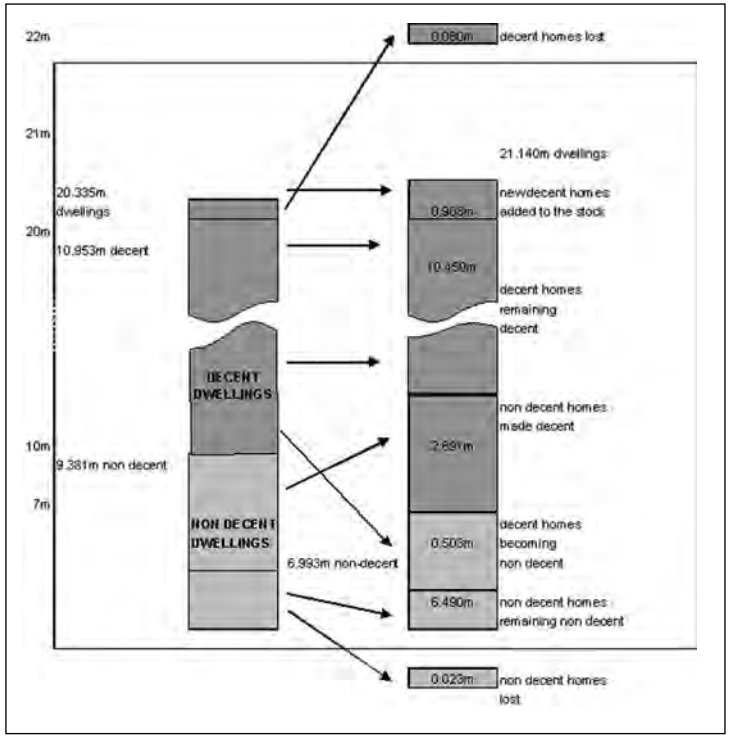
2. For the disrepair component of decent homes, dwellings fail when elements are too old and in substantial disrepair. Apparent deterioration was only counted as real where it was plausible i.e. where one of the following 2 scenarios applied:

- The element was already in substantial disrepair in 1996 but not quite old enough to fail then. If no work had been carried out to that element and it had passed over the age threshold by 2001, then deterioration was seen as genuine.
- The element was beyond its lifetime in 1996 with some disrepair, but not serious enough to be deemed to fail. If no work was carried out to that element, it would deteriorate sufficiently to fail by 2001.

**Figure 4**
Gross flows in and out of Decent homes 1996-2001

The estimates for the individual aspects were then combined, taking account of any overlaps, to produce an overall picture for decent homes. A detailed explanation of the methods used is contained in reference 2.

Figure 4 illustrates our estimates of gross flows in and out of decent homes derived using this method. Although there has been overwhelming improvement, deterioration is a significant factor - over half a million homes that were decent in 1996, had deteriorated so that they failed the standard by 2001. As time progresses and more dwellings improve, deterioration will play a much bigger role in the overall process so this type of analytical approach will become more important.



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## 3.2 Surveyor drift in standards

Surveyors do not only vary amongst themselves in the standards that they apply but these standards may also change for individuals, groups or the profession as a whole over time. This can occur by exposure to new information or research. For example reading an article about the unreliability of certain types of boiler or hearing a colleague talk about the dangers posed by certain types of wiring is likely to alter surveyors' judgements about whether to repair, replace or leave such systems alone in the future. Depending on the source and exposure, such new information may be taken on board by the majority of the profession, particular sub-groups or just one or two individuals. Also our collective standards of what is acceptable change over time: what was a perfectly adequate kitchen in 1963 may now be considered inadequate or even unfit simply because expectations have changed. The criteria used to assess certain aspects are themselves subjective and dependent on cultural values and expectations. There are no objective hard and fast rules to say whether a kitchen is very badly laid out, too small or presents risks to health.

Where we are training surveyors on a regular basis and trying to maintain the same standards we have to ensure that the 'line' on certain issues remains the same. This is particularly difficult because the training houses we visit are rarely the same - we have difficulty in obtaining any suitable training houses where

the owners are content to keep them vacant for a few weeks during the training. Different examples inevitably raise different issues about standards each time.

Our first experience of a drift in standards in EHCS came when we started to examine the change in the costs of disrepair between the 1991 and 1996 surveys. Initial analysis of the data showed a very significant improvement which caused grounds for suspicion for three reasons:

- Average costs had reduced by over 40%. This was orders of magnitude larger than any improvements we had observed over any previous 5 year period.
- There was only a very small reduction in the proportion of faults recorded by surveyors. The implication here is that they were still noting faults but specifying far less repair work to deal with them.
- If dwelling conditions had improved that much, we would expect to have seen massive extra investment in building repairs, new building or demolition. There was no evidence of this from any other surveys or data sources.

Fortunately, we had introduced a video calibration exercise into the surveyor training in the 1986, 1991 and 1996 surveys where surveyors filled out a form whilst looking at videos of the same house. The results from these exercises showed that surveyors in 1996 had specified considerably less work to the same video house than those in 1991 confirming our suspicions that there had been a shift in standards. However, the information was based on an artificial exercise and only used one dwelling so it was not possible to use the results from this to estimate the size of this effect on the survey as a whole.

However, the government were keen for us to estimate how much of this improvement was real and how much was simply the effect of surveyor drift. The method we devised involves 4 key stages (DETR, 1998:110):

1. Create a scale of disrepair based on the primary assessments made by the surveyors.
2. Remove the effects of surveyor variability to establish the apparent change in condition.
3. Estimate how much of the change is real using information from the household interview on work carried out to the dwelling 1991-1996.
4. Combine estimates for all elements to create an overall estimate of proportion of change that is real and that caused by drift.

Using this method, we estimated that costs had reduced by 5% at the very most; very different indeed from the 40% headline figure. We are still unclear as to the precise cause of this large shift and we did not see a similar shift in the next 5 year period 1996-2001. Interestingly, we carried out similar analysis using data from the Scottish House Condition Surveys in 1991 and1996 and found a similar situation had arisen. Because the same thing had happened in both England and Scotland and because the 2 surveys were conducted totally independently using different forms, training and surveyors, it seems likely that there had been a large general shift in the British surveying population as a

whole. However, there are undoubtedly other factors at work arising out of subtle changes in the training and the overall mix and quality of surveyors employed.

The method that we devised to try and estimate how much of the change was real is not without its problems, being developed in a short space of time using whatever data was available. The 2 main shortcomings are that no account was taken of the known under-reporting of work carried out to the home and the fact that the method could not have been used if there had been an apparent deterioration as it was only using an indicator for improvement. Realising this and that surveyor drift was a real rather than simply a theoretical problem, we devised an alternative way to try and measure it using workbooks.

These workbooks consist of descriptions and photographs of a number of faults which surveyors are required to 'score' using the existing EHCS form. The faults encompassed cover a range of elements, severity of faults and building types. All surveyors complete the workbook at the end of the fieldwork for that year. Testing has shown that they produce very similar results to 'real life' surveys of the same dwellings.

### 3.3 Sampling and allocation procedures

The results of EHCS are used to allocate money to different regions within England so the survey must produce reliable estimates of condition at a regional level. In reality the 1991, 1996 and 2001 survey estimates of condition by region were extremely volatile. These were caused by a combination of surveyor variability and allocation procedures. Put simply, the results for some regions were overly influenced by a handful of surveyors who happened to take a particularly strict or lax interpretation of the standard and carried out a significant proportion of surveys in that region.

We have already seen that whatever we do in terms of selection and training have limited impact on variability of assessments of condition. We have therefore tried to tackle this problem as more of a damage limitation exercise by taking the following steps in 2001 and subsequent surveys:

- Using modelled approaches to examine changes in condition by region (ODPM, 2003.b:82).
- Increasing the number of surveyors so each surveyor carries out fewer surveys. In 2002, there were around 200 surveyors carrying out up to 45 surveys each. In 1996, there were half that number, some of whom carried out over 200 surveys each.
- Ensuring that surveyors do not work in one region only. Every surveyor is now required to carry out a specified proportion of his/her total surveys outside their 'home' region. In 1996, surveyors were discouraged from working in other regions to minimise travel expenses.
- Setting strict targets where a single surveyor could do no more than a certain percentage of all the surveys carried out in that region.

In 2001, we managed to employ 200 surveyors, but restrictions on the numbers and

percentage of surveys and requirements for working out of 'home' region were not always met. This was largely because many surveyors were reluctant to work out of region as they felt that the payment system did not adequately reimburse their travelling expenses. However for 2002 onwards, the payment system was changed and this, together with other improvements like creating an appointment system, has resulted in surveyors being much more willing to work out of region and quotas being met. We are hoping that this will be maintained and will result in more stable and plausible pictures of changes in condition in each region over time.

Another thing that has helped the meeting of surveyor quotas in 2002 is the geographical clustering of the sample so that addresses 'out of region' may themselves be closer together. Previously, the sampling frame had been the postcode address file for England so addresses in sparsely populated areas could be very scattered indeed. Geographical clustering has become the norm for many large scale national surveys in England and whilst it has introduced tangible benefits and savings for the fieldwork, this type of **clustering** does have some drawbacks that we are very aware of and will monitor closely. The two key issues are:

- It increases estimates of sampling errors as these should include design effects in their calculation
- Samples can produce biased estimates of characteristics that are themselves spatially clustered.

Although we have what looks like a very large sample (8,000 per year from 2002 onwards) sampling error is still an issue for two main reasons:

1. Generally, the condition of the stock as a whole or groups of dwellings changes slowly over time. Measuring changes over a five year period has proved highly problematic even with a sample size of 16,000 or so for indicators like cost of disrepair and energy ratings where the combined error resulting from sampling error and surveyor variability is larger than the observed changes. It is not possible to produce reliable estimates of change in these annually, especially using a sample of 8,000 dwellings that are geographically clustered.

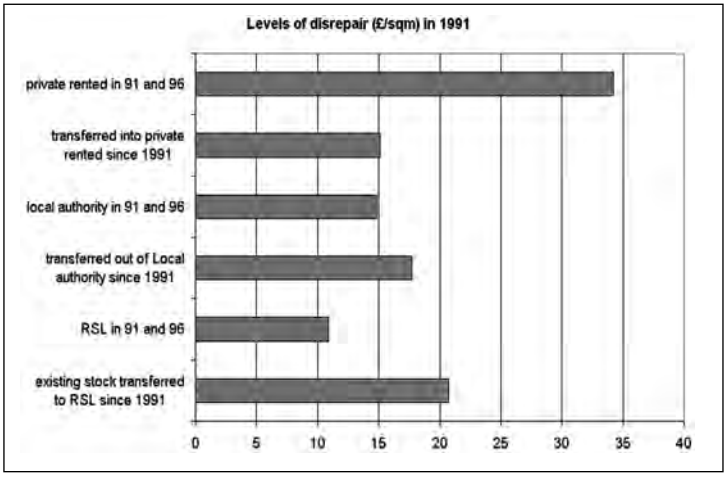
2. As dwelling conditions improve over time we are trying to estimate the size of a rapidly diminishing population of poor condition dwellings. The proportion of dwellings that are unfit has fallen from 7.6% in 1991 to 4.2% in 2001. The proportion of households without central heating or storage heaters has reduced from about 20% in 1986 to 6% in 2001. As these populations reduce in size, our estimates of them will become less and less reliable. As surveyors encounter fewer and fewer instances of disrepair, unfitness or other problems in the course of their work they get less practice in recognising and specifying solutions to these problems which is likely to increase variability and

**Figure 5**
Relative change in extent of disrepair for households in different types of dwellings 1991 and 1996 (right)

**Figure 6**
Average costs of repair in1991 in £ per $m^2$ for groups of dwellings (right)

**Figure 7**
Average costs of repair in1996 in £ per $m^2$ for groups of dwellings (right)

total errors on estimates further. To some extent the new measure of decent homes gets round this problem as in 2001 there were 33% of homes failing, but once we get down to levels of 5-10% we will have the same problems that we have now in attempting to measure change in unfitness.

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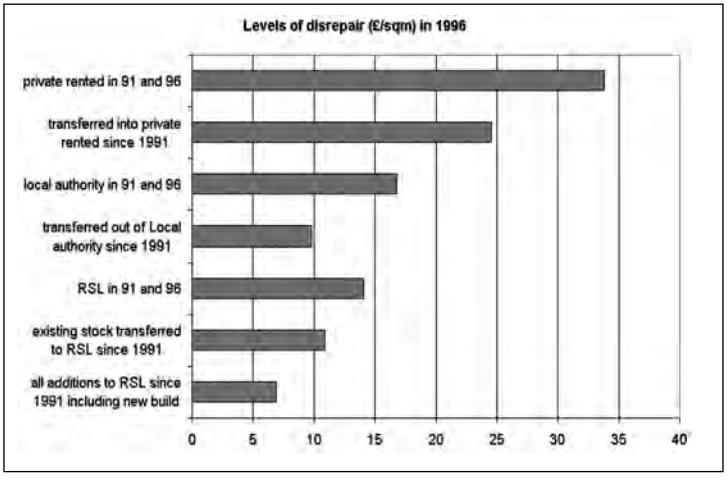


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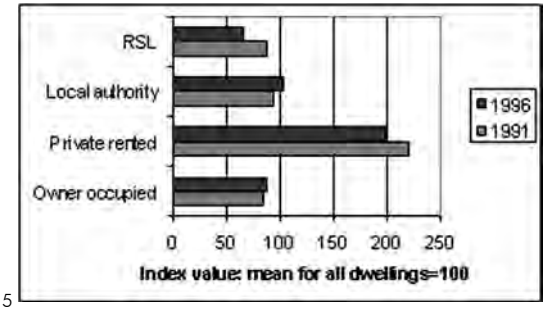
## 2.4 New building, demolition and changes in ownership

These are not problems as such but mean that we need to take care in the analysis and interpretation of results. A good example of this is in examining the changes in disrepair in the stock owned by Registered Social Landlords (RSLs) between 1991 and 1996. Figure 3 below indicates that there was a very large relative improvement for households in this sector between 1991 and 1996:

However, this apparent improvement is connected with changes in the composition of this sector rather than refurbishment and repair of existing dwellings. The RSL stock increased from 624,000 dwellings to 941,000. Over half (52%) of these 'new' RSL dwellings were acquired from Local Authorities through Large Scale Voluntary Transfers (LSVT) and most of the rest (33%) came from new construction.

If we look at the disrepair in the RSL sector in 1996, it is clear that a lot of the apparent improvement since 1991 was actually due to the new build dwellings added 1991-1996 (Figures 6 and 7). Looking at Figure 7 (costs in 1996) it is clear that new build

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dwellings had much lower mean repair costs than those which were in this tenure in both years (£6.90 sqm compared to £14/sqm). Comparing Figures 6 and 7 we can see different patterns emerging for the dwellings that transferred into this sector 1991-1996 and those that remained in the sector over this period. The dwellings transferred into RSL ownership improved significantly from an average cost of £21 per $m^2$ in 1991 to just £11 in 1996. In contrast the dwellings that remained in RSL ownership actually appear to have deteriorated with average costs rising from £11 per $m^2$ in 1991 to £14 per $m^2$ in 1996. The picture is therefore much more complex than one of improvement in this sector. The stock that transferred in has been improved substantially and at the expense of the core stock. The transfers in and new build are responsible for the apparent improvement in condition.

## Conclusions

There are significant problems inherent in measuring change in dwelling conditions over time. Improvements to training, methodology and allocations can help to some extent but they cannot eliminate these problems. The important thing is to recognise that these issues will always be with us rather than hoping or pretending that they do not exist or are not significant. This involves being honest about what can and cannot be inferred from the data and developing analytical and modelling approaches which take these issues into account.

## References:

ODPM 2003 (a), English House Condition Survey 2001, HMSO, London

ODPM 2003 (b), English House Condition Survey 2001 Regional Report, HMSO, London

DETR 1998, English House Condition Survey 1996, HMSO, London

## Further Reading:

www.odpm.gov.uk

## Notes:

[1] This is the current minimum standard for housing in England that determines whether a dwelling is fit for human habitation

# 20 MEASUREMENT AND ANALYSIS OF LESS STRUCTURED DATA IN HOUSING RESEARCH

*Henny COOLEN*

## Abstract

*Two ideal types of data can be distinguished in housing research: structured and less-structured data. Questionnaires and official statistics are examples of structured data, while less-structured data arise for instance from open interviews and documents. Structured data are sometimes labeled quantitative, while less-structured data are called qualitative. In this paper structured and less-structured data are considered from the perspective of measurement and analysis. Structured data arise when the researcher has an a priori category system or measurement scale available for collecting the data. When such an a priori system or scale is not available the data are called less-structured. It will be argued that these less-structured observations can only be used for any further analysis when they contain some minimum level of structure called a category system, which is equivalent to a nominal measurement scale. Once this becomes evident, one realizes that through the necessary process of categorization less-structured data can be analyzed in much the same way as structured data, and that the difference between the two types of data is one of degree and not of kind. In the second part of the paper these ideas are illustrated with examples from my own research on the meaning of preferences for dwelling features in which the concept of a meaning structure plays a central part. Until now these meaning structures have been determined by means of semi-structured interviews which, even with small samples, result in large amounts of less-structured data.*

**Keywords:** *Less-Structured Data, Qualitative Data Analysis, Meaning of a Dwelling, Housing Preference.*

## 1. Introduction

All housing research has dual facets joined in complementary opposition, much like two sides of a coin. These two facets are the ideas that drive the work - conceptual frameworks, theories - and the inquiry procedures, research methods and techniques, with which researchers pursue them. Sometimes these facets are pulled so far apart that they become hopelessly separated. We seem especially prone to discuss methodological matters as though they are independent of the ideas we wish to investigate. The qualitative-quantitative debate is particularly characterized by this shortcoming (WOLCOTT, 1992:6). Once we recognize that ideas and procedures are joined then their complementary features may offer alternative ways to approach the qualitative-quantitative distinction by variously emphasizing one facet or the other. In this paper the emphasis is on two aspects of the inquiry procedures: measurement and analysis.

Two types of data can be distinguished in housing research: structured and less-structured data, which are just two ideal types with many intermediate forms. Questionnaires and official statistics are examples of structured data, while less-structured data arise for instance from open interviews and documents. Both types of observations are sometimes labeled **quantitative** and **qualitative** respectively, and are even contrasted with each other as the consequence of two different ways of doing research (DENZIN, LINCOLN, 2000:3). The terms qualitative and quantitative are avoided as much as possible in this paper because they are confusing and misleading as will become clear. In my view quality and quantity are also two sides of a coin. In research either qualitative or quantitative aspects may be emphasized, but they can never be separated.

A similar argument applies to the analysis of data. Thus, quantitative analysis usually refers to mathematical (statistical) applications based on the assumptions of the probability calculus. On the other hand, qualitative analysis usually refers to non-quantitative approaches, although it often remains unclear what these approaches are. As is shown in this paper it is a mistake to believe that the use of mathematical models and statistical methods is restricted to so-called quantitative data.

In the first part of the paper structured and less-structured data are considered from the perspective of measurement and analysis. Structured data arise when the researcher has an a priori category system or measurement scale available for collecting the data. When such an a priori system or scale is not available the data are called less-structured. It will be argued that these observations can only be used for any further analysis - description, interpretation, explanation, mathematical and statistical analysis - when they contain some minimum level of structure called a category system, which is equivalent to a nominal measurement scale. Once this becomes evident, one realizes that through the necessary process of categorization less-structured data can be analyzed in much the same way as

structured data, and that the difference between the two types of data is one of degree and not of kind.

The second part of the paper illustrates these ideas with examples from my own research on the meaning of preferences for dwelling features in which the concept of a meaning structure plays a central part. Until now these meaning structures have been determined by means of semi-structured interviews which, even with small samples, result in large amounts of less-structured data.

## 2. Categorization and Measurement

### 2.1 Categorization

The world is filled with an incredible number and diversity of objects. If people treated each object as an isolated entity unrelated to any others our mental life would be chaotic. Since no individual can cope with such a diversity, one of the most basic functions of all organisms is the division of the environment into categories by which non-identical entities can be treated as equivalent with respect to a characteristic or a collection of characteristics. The ability to group objects into categories is among the most fundamental of cognitive processes (MALT, 1995:86).

A category is defined as a number of objects that are considered equivalent with respect to a particular characteristic or configuration of characteristics. **Categorization** is the process of developing a category system and carries the further implication that knowledge about the category to which an object belongs tells us something about its properties (ESTES, 1994:4). Categories are generally denoted by names.

A **concept** is a mental representation of a category system serving multiple functions. MEDIN and HEIT (1998:104) distinguish eight functions of concepts: classification, understanding, learning, inference, explanation, conceptual combination, planning, and communication.

We may conceive of category systems as having both a vertical and a horizontal dimension (ROSCH, 1978:30). The vertical dimension concerns the level of inclusiveness of the category - the dimension along which the terms building, dwelling, apartment and penthouse vary. The greater the inclusiveness of a category within a category system, the higher the level of abstraction. The horizontal dimension concerns the segmentation of categories at the same level of inclusiveness - the dimension on which apartment and single-family dwelling vary.

Since all research and observation is idea-driven (HANSON, 1958:7), this implies that not every intersection of the horizontal and vertical dimension of a category system is equally good or useful; rather, the conceptual framework that guides the research determines to a large extent the level of category inclusiveness and its corresponding segmentation that is most meaningful in the context of the inquiry.

## 2.2 Measurement

Measurement is a relative matter. It varies in kind and degree, in type and precision. **Measurement** is defined here as the assignment of numerals to objects or events according to rules (STEVENS, 1946:677). The objects or events might be people, buildings, projects, countries, and so on and the properties that are measured include dwelling type, tendency to move, number of rooms, size of living room. Usually one object has numerous properties. In measuring one property, we leave the other properties, just for the purpose of measuring this one property, out of consideration.

The fact that numerals can be assigned under different rules leads to different kinds of scales and different kinds of measurement. These rules relate in part to concrete empirical relations and operations. Measurement is possible in the first place only because there is a kind of isomorphism between on the one hand the empirical relations among objects and events, and on the other the properties of the numeral system. This isomorphism is only partial, of course, since not all the properties of numbers and not all the properties of objects can be paired off in a systematic correspondence. Some properties of objects can be related to some properties of the numeral series. This is clearly echoed in the definition of a scale as a mapping of an empirical relational system into a numerical relational system (PFANZAGL, 1968:26).

In particular in dealing with the aspects of objects in housing research we can invoke empirical relations for determining equality, for rank ordering, and for determining when differences and when ratios between the aspects of objects are equal. The type of scale that is achieved when we assign the numerals depends upon the character of the empirical relations. The four basic relations thus give rise to four types of scales: nominal, ordinal, interval, and ratio (STEVENS, 1946:678).

## 2.3 Categorization and measurement

Categorization and measurement are closely related which becomes especially clear when we consider the nominal scale. A **nominal scale** is a set of non-overlapping and exhaustive classes and is as such nothing but a horizontal level of a category system; so categorization is nominal measurement. In its most elementary form a nominal scale consists of two classes, and it measures whether an object belongs to a category or not, for example whether someone intends to move within one year or not. A more comprehensive nominal scale consists of more than two categories, for instance household type is a good example.

How many classes a nominal scale should have is often a matter on which the researcher has to decide, and his decision will be guided by the purpose of the inquiry and the research questions. A nominal scale of dwelling type is a good example to illustrate that a category system is not necessarily a natural given. Essentially, every dwelling is unique since it is uniquely located in three-dimensional space, which results in a category system in which each dwelling has its own class and which has as many classes as there are

dwellings. Such an extensive classification is cumbersome and seldom needed. More often in research nominal scales of dwelling type are used that have less then ten categories.

## 3. Structured and Less-Structured Data

The full range of data-gathering techniques employed in housing research can be divided into three broad categories of activity. These can be identified as observing, with emphasis on sensory data - watching and listening -, asking, in which the researchers role becomes more intrusive than that of a 'mere' observer, and documents, in which the researcher makes use of materials prepared by others (WOLCOTT, 1992:19). Each of these types of data-gathering techniques may give rise to both structured and less-structured data, which, as already stated, are just ideal types with many intermediate forms.

For **structured data** the point where the horizontal and vertical dimension of a category system meet is determined a priori by the researcher, who chooses both the level of inclusiveness of the category system as well as the categories themselves. The resulting category system is generally closed, which means that the categories are both non-overlapping and exhaustive. A good example of structured data are the data that arise from structured questionnaires which contain mainly closed questions. Given the level of inclusiveness one can only move upwards along the vertical axis by aggregating the data into more inclusive categories. The observations can be collected in a data matrix in which the rows represent the units of analysis and the columns the classifications/variables. For the analysis of such a data matrix a tremendous collection of statistical and data analysis techniques is available which can be found in the many available textbooks on these topics.

Since all observations are idea-driven, less-structured data must also be based on some sort of a category system. This category system may be much more open, though, than in the case of structured data. Often a relatively low level of inclusion will be chosen by the researcher and the category system on which the data are based is far from exhaustive and may even contain overlapping categories. Once the data have been collected it is the researcher's task to prepare these **less-structured data** for analysis. This process of categorization, which is often a complex and iterative process, results in the **category systems** that the researcher finds relevant for further analysis. So instead of choosing the inclusion level and the segmentation of the categories a priori, they are in this case constructed before, during and/or after the collection of the data. Since a category system or classification is a nominal scale, this implies that the whole process results in at least **nominal measurement**. The resulting nominal scales may be simple two-category scales of the 'yes/no'-type, but can also contain more than two categories. Given these category systems/nominal scales, the data can now be

displayed in two general formats, matrices and networks (MILES, HUBERMAN, 1994:93). For the analysis of both types of displays essentially the same collection of data analysis techniques can be used as with structured data (see also HANDWERKER, BORGATTI, 1998; RYAN, BERNARD, 2000).

In the remainder of the paper the ideas that have been outlined above are illustrated with examples from my own research on the meaning of preferences for dwelling features in which the concept of a meaning structure plays a central part. Meaning structures are determined by means of semi-structured interviews, which result in large amounts of less-structured data even with small samples.

## 4. The Meaning of Preferences for Features of a Dwelling: Conceptual Framework

In this section the conceptual framework for studying the meaning of preferences for features of dwellings is described. Because of space limitations this description is necessarily concise. Interested readers are referred to COOLEN (2002) for a comprehensive treatment of this conceptual framework.

A residential environment is defined as a system of settings in which systems of activities take place that form a sub-system of the environment. A dwelling is a sub-system of the residential environment that forms the primary anchor in the environment for an individual (RAPOPORT, 1990:12). Only a subset of all human activities takes place in the dwelling. This subset of activities may be different for different individuals and the sub-system of settings that makes up the dwelling may also vary. An a priori assumption about what a dwelling is, therefore, cannot be made. It could include shops, a school, a church, theatres and many other functions.

The emphasis in the conceptual framework is not on the system of settings as a whole but on sub-systems of settings that are called dwelling features. Both physical and non-physical, these features provide the potential functions of a dwelling. In general, people only use a limited number of a dwelling's potential functions.

The conceptual framework assumes that people pursue goals and values and that their actions, ideas and preferences are functional for the achievement of these goals and values. The **meaning of a dwelling** is believed to lie in the functional relationships between the dwelling features on the one hand and the goals and values of people on the other hand. Meaning is thus the mechanism that links people and dwellings and provides much of the rationale for the ways in which dwellings are used. Meaning here is not part of function, but an important function of a dwelling (RAPOPORT, 1988:318). Three levels of meaning have been distinguished (RAPOPORT, 1988:325). High-level meanings are related to cosmologies, world views, philosophical systems, etc.; middle level meanings such as identity, status, wealth, power, etc. which are also called latent functions; lower-level,

everyday meanings, for example privacy, accessibility, seating arrangements, movement, etc. which are also called manifest functions. People's activities and dwellings are primarily linked by lower-level meanings, although middle-level meanings also tend to be important (COOLEN, 2002:13).

The conceptual framework focuses on preferences for dwelling features. Preference is the relative attractiveness of a feature. It is an expression of evaluation that must be distinguished from behavioural intentions and choice (AJZEN, FISHBEIN, 1980:159). Preference, intention and choice all involve expressions of evaluation. Preference may guide intention and choice as it is an expression of evaluation about an object. The most important difference between preference on the one hand and intention and choice on the other is that preference indicates in a rather unconstrained way what affordances people expect from a dwelling. So these preferences form a natural starting point for exploring the meaning of a dwelling.

A both theoretically and methodologically essential assumption underlying the conceptual framework is the idea that people have mental representations about several aspects of the environment. These representations embody an individual's assumptions, beliefs, ideas, affective codes, facts and fallacies about different physical and conceptual aspects of the environment. Mental representations represent important objects and concepts and code the relationships between them, making explicit those objects, features and relations that are the basis for people's thinking and action. Mental representations are conceptualized as associative networks with mental objects serving as nodes and associations serving as paths.

From the perspective of the topic of this paper a mental representation makes explicit the salient dwelling features, affective codes, meanings and relations that are relevant to people's thinking and acting. The structure of the representation corresponds to the preferred dwelling in terms of features and meanings as conceived by the individual. The relationships between a dwelling feature and its meanings are called a meaning structure.

## 5. Research Methodology and Data

### 5.1 Data

The data that are used to illustrate what kind of analyses can be performed on less-structured observations were collected for a project with the aim of comparing the meaning structures of residential environment preferences of urban and suburban apartment dwellers. For this purpose two geographically dispersed locations were selected. The suburban area chosen was a disused airport on the outskirts of The Hague, a large area where construction is still going on. The urban area selected is located in the city of Rotterdam. It was constructed in the middle of the nineties as part of a master plan for the development of former harbour districts.

In January 2003 one thousand and sixty

apartment dwellers, equally divided over both locations, were sent an introductory letter asking them to participate in the research. About one hundred and forty of these responded, and the first thirty respondents in each subgroup were contacted for an interview. In the end, a total of forty-five semi-structured interviews were conducted at the respondents' homes. Several weeks after the interview had taken place the respondents received a structured questionnaire which focused on several aspects of residential environments and which was partially intended to evaluate the validity of the semi-structured interviews.

For the purpose of this paper it is unnecessary to make the distinction between the two sub-populations, so the dataset is treated as one. For illustrative purposes only one residential environment feature - dwelling type - shall be used. This feature was selected as salient by 33 of the 45 respondents, 28 of whom indicated that 'apartment' was their preferred level of the feature dwelling type. The subsequent analyses are performed on the data of these respondents (n=28).

### 5.2 Measurement of Meaning Structures

The measurement procedure for measuring the meaning structures of residential environment features is an adapted version of the procedure for the determination of means-end chains (COOLEN, 2002:8-10). The measurement of the meaning structures of residential environment features takes place in three phases:

1. selection of the salient residential environment features;
2. elicitation of the preferred levels of the salient residential environment features;
3. measurement of the meaning structures.

The first phase comprised the selection of those residential environment features that were salient for the respondent. The respondents were instructed to select an unlimited number of features from two lists, one containing thirteen dwelling features and the other one consisting of fifteen neighborhood features. Each of the lists of selected features was subsequently put in order of importance.

In the second phase the respondents were asked to indicate which level of each of the salient features they prefer. If, for example, dwelling type was mentioned as a salient feature, then the respondent had to indicate the preferred type of dwelling.

The starting point for determining the meaning structure of each salient residential environment feature was the preferred level of that feature. The meaning structures were measured, in the third phase, by a **semi-structured interviewing** technique known as laddering (REYNOLDS, GUTMAN, 1988:12). The interview proceeded according to a tailored format using primarily a series of directed probes of the form 'Why is that important to you?'. The purpose of this interviewing format was to determine the relationships between the preferred level of a salient feature and the meaning or meanings this residential environment feature had for the respondent.

## 5.3 Categorization

The meaning structures were determined on the basis of the interviews. The raw data generated by the laddering interviews, both on paper and tape, were the verbalizations of the respondents. First, a **content analysis** was carried out on these free responses. This resulted in a set of categories for all respondents. Subsequently, the meaning structures of each respondent were coded according to the set of categories. In this process, several choices about the interpretation of the various elements of the meaning structures had to be made. To reach as much intersubjectivity as possible, two researchers were involved in the construction of the categories from the interviews and the subsequent coding of the meaning structures.

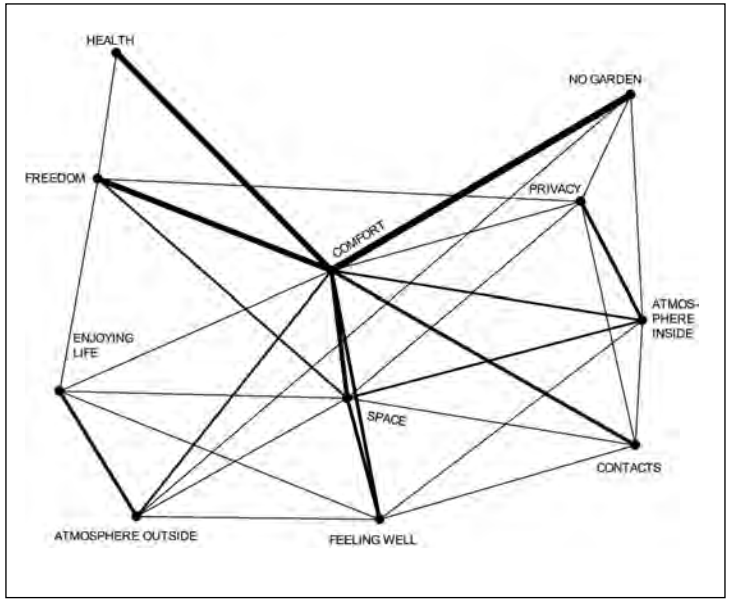



Figure 1
Shared meaning structure of the level apartment of the dwelling feature dwelling type.

The categories and meaning structures each researcher had constructed and coded were compared with each other and possible differences were discussed until agreement was reached.

The categorization process resulted in twelve meaning categories for the level 'apartment' of the dwelling feature 'dwelling type':

- security
- enjoying life
- well-being
- space
- atmosphere outside
- no garden
- comfort
- contact
- health
- freedom
- privacy
- atmosphere inside.

## 5.4 Shared Meaning Structure

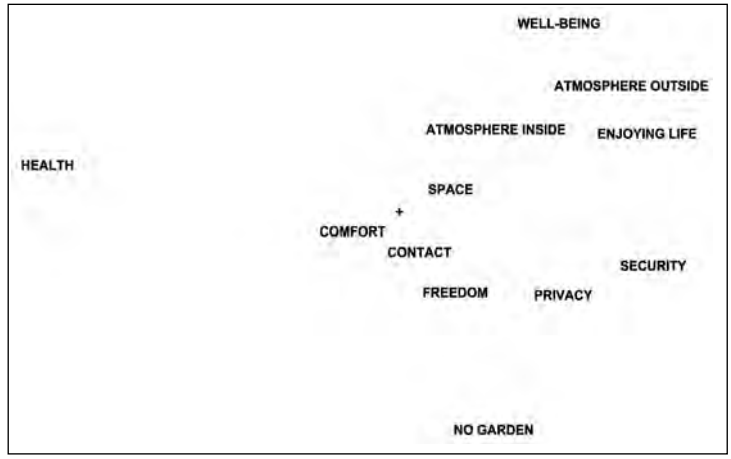
A meaning structure of a dwelling feature is a mental representation of the meaning of this feature as conceived by an individual. As such it may be highly idiosyncratic representing mainly personal meanings. It may also be less idiosyncratic in the sense that it contains meanings that are shared by other people. Because a dwelling is considered to be, at least partly, a cultural artifact (RAPOPORT, 1969:46), one might expect that meaning structures of dwelling features contain both idiosyncratic and shared meanings. If this turns out to be the case empirically, one can construct representations of two types of meaning

structures. One type represents only individual meaning structures, the other shared meaning structures.

From the individual meaning structures of the level 'apartment' of the feature 'dwelling type' a shared meaning structure can be constructed. A shared meaning structure contains the links between a dwelling feature and its meanings, and possibly between separate meanings, that are shared by several people or even a group. A shared meaning structure is constructed by means of a so-called implication matrix. An implication matrix is a square matrix that represents the relationships between the categories from the meaning structures. The rows and the columns of the matrix are formed by the categories, and the cells of the implication matrix show the number of direct links between the categories in the individual meaning structures. The dominant connections can be represented graphically in a tree diagram which is a type of network representation. To construct such a tree diagram REYNOLDS and GUTMAN (1988:20) describe a paper-and-pencil method, which we also applied. Figure 1 depicts the shared meaning structure of the level 'apartment' of the feature 'dwelling type'; the line width of a line between two meaning categories is proportional to the number of times a relationship between these categories was observed.

## 5.5 Construct Validity

A shared meaning structure is a network representation of the dominant structural




properties of the meanings of a dwelling feature for a group. It gives a good idea of the structural relationships between the meanings, but it is difficult to relate to other variables. In order to be able to relate the meanings of a dwelling feature to other variables, one must resort to other representations of the data. Since the observations have been categorized, many different matrix representations of the data are possible (MILES, HUBERMAN, 1994:240).

One way of representing the meanings is by way of an incidence matrix. In an incidence matrix the rows are formed by the respondents and the columns by the categories; cell (i,j) of the matrix contains a 1 if category j occurs in the meaning structure of respondent i, otherwise it has a 0. So an incidence matrix contains the profiles of the respondents, where each profile indicates which categories have been mentioned in the meaning structure. Such a matrix can be analyzed by means of **correspondence analysis** (CA) (GREENACRE,

**Figure 2**
Two-dimensional solution of the correspondence analysis of the meanings of the level apartment of the dwelling feature dwelling type.

1984) which is a multivariate technique for providing a spatial representation of respondent profiles in a reduced Euclidean space.

Figure 2 shows the two-dimensional CA solution of the meanings of the level 'apartment' of feature 'dwelling type'. The singular values of the two dimensions are $\lambda_1$=.62 and $\lambda_2$=.54, and the '+' indicates the origin of the two-dimensional Euclidean space. On the first dimension the main distinction is between 'health' and the other meanings. The second dimension distinguishes meanings such as 'well-being' and 'enjoying life' from meanings such as 'freedom', 'privacy' and 'no garden'.

This CA-solution of the meanings of apartment is subsequently used to form an idea of the **construct validity** of the meanings mentioned in the semi-structured interviews. Construct validity is concerned with the extent to which a particular measure relates to other measures which are consistent with the concepts that are being measured (CARMINES, ZELLER, 1979:23). For this evaluation of the construct validity of the meanings of apartment several measures from the questionnaire are used. In the questionnaire respondents were asked to indicate for several residential environment features, one of which was dwelling type, which aspects they considered important. The questions were closed and the respondents had to choose from a list of aspects presented to them. The relevant aspects of the feature dwelling type were added as supplementary points to the CA-solution of the meanings of dwelling type which is based on the meaning structures that appeared from the semi-structured interviews. Supplementary points do not contribute to the solution, and they form the centroids of the respective respondent points which are not shown in the figure.

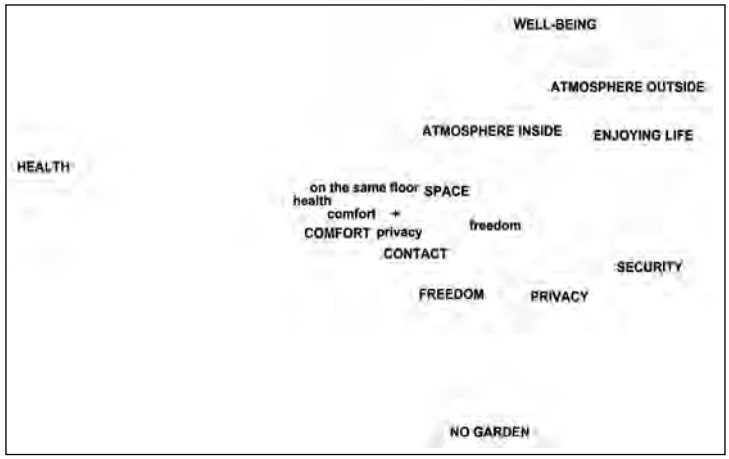



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**Figure 3**
Two-dimensional solution of the correspondence analysis of the meanings of the level apartment of the dwelling feature dwelling type with categories from the questionnaire as supplementary points.

The CA-solution with the supplementary points is depicted in figure 3, in which the categories that contribute to the solution are shown in capital letters and the supplementary points in small letters. What becomes clear from figure 3 is that identical categories from the two different data-collection sources do not coincide, although the 'comfort' categories come close. If respondents had given identical or almost identical answers in the interview and in the questionnaire identical categories should have, almost, coincided. Although this is not the case the categories from the questionnaire are not scattered at random in the CA-solution of the meaning categories, since the supplementary points are in the direction in which one might expect them. 'On the same floor' and 'health' in the direction of HEALTH, and 'privacy' and 'freedom' in the direction of

their respective meaning categories. This seems to suggest that, although there is no complete agreement between the categories of the meaning structures and those of the questionnaire, there is good agreement on the more abstract level of the dimensions of the CA-solution and especially on the level of the first dimension of the solution.

## 5.6 Internal Validity

The CA-solution can also be used to evaluate to a certain extent the **internal validity** of the solution. Internal validity refers to the validity with which statements can be made about relationships between variables (COOK, CAMPBELL, 1979:38), for instance relationships between the research variables and background variables. This is in general a relevant problem, since a solution such as a CA-solution must be meaningful in the inquiry, which means that the solution must discriminate in the sample. This was investigated by relating the CA-solution to the variable 'age'. This is shown in figure 4 in which the categories of the variable age have been added as supplementary points to the CA-solution of the meanings of the level 'apartment' of the feature 'dwelling type'. The variable 'age' originally contained three categories, but the categories '35 - 59 years' and '60 years and older' have been collapsed since they did not discriminate in the solution. The discrimination between the two age-groups is clear. The older respondents attach relatively more meaning to 'comfort' and 'health', while for the younger respondents 'freedom' and 'privacy' have relatively more meaning.

## 5.7 Statistical Conclusion Validity

In figure 4 the two age groups seem to differ in the meanings they attach to an apartment. The difference in scores of the groups is 0.483 on dimension 1 and -0.900 on the second dimension, whereby one has to realize that the CA-solution is normalized and standardized. One may wonder how stable this difference is in a statistical sense. The question of how valid our inferences statistically are is known as the problem of **statistical conclusion validity** (COOK, CAMPBELL, 1979:41).

Traditionally, researchers would obtain through the postulation of a statistical model, such as the normal distribution, the standard errors and confidence intervals for the differences of group means in order to gain insight into the uncertainty of both point estimates. Such an approach would be potentially misleading in the context of this inquiry, since many assumptions of such a model are violated. For instance, the sample is

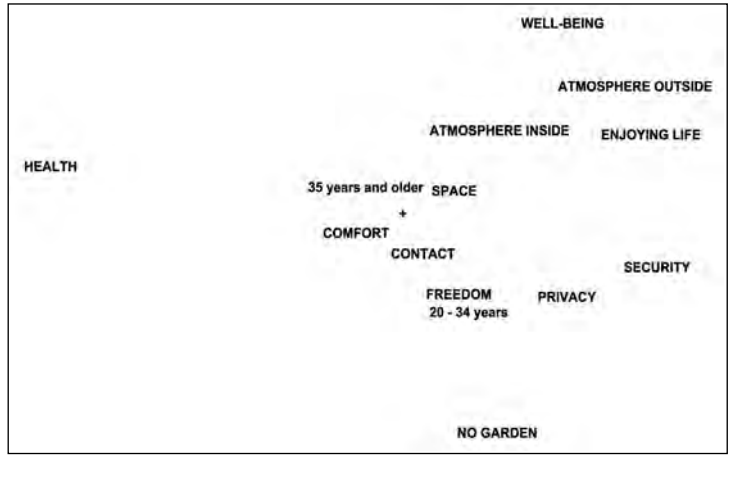


**Figure 4**
Two-dimensional solution of the correspondence analysis of the meanings of the level apartment of the dwelling feature dwelling type with categories from the variable age as supplementary points.

a convenience sample and not a random sample at all. The sample size is small (n=28) and the size of the subgroups is even smaller, $n_1$=5 respectively $n_2$=23, and unequal. In addition, assuming that these data are normally distributed seems far-fetched if not misleading.

Now, with the availability of modern computing power, researchers need no longer rely on the classical methods to estimate the distribution of a statistic. Instead, they can use resampling methods which provide inferential results for either normal or non-normal distributions. Resampling techniques such as the **bootstrap**, which will be used here, provide estimates of the standard error, confidence intervals, and the distribution for any statistic. In the bootstrap *R* new samples, each of the same size as the observed data, are drawn with replacement from the observed data. The relevant statistic is calculated for each new set of data, yielding a bootstrap distribution for that statistic. By resampling observations from the observed data, the process of sampling observations from the population is mimicked. For a more detailed description of bootstrapping the reader is referred to EFRON and TIBSHIRANI (1993).

In order to investigate the stability of the differences of the age-group means on the two dimensions of the CA-solution both differences were bootstrapped by 5000 resamples each. Since our interest is in whether the differences of means are meaningful or not, one-sided p-values were computed to test whether these differences of means differ from 0. The bootstrapped difference of means on the first dimension is 0.486, with a standard error of 0.252, and a small bias of 0.003; and the empirical p-value is p = 0.028. The resampled difference of means on dimension 2 is -0.902, with a standard error of 0.447, and also a small bias of -.002; the empirical p-value here is p = 0.013. So the difference of means on both dimensions of the CA-solution between the age group under 35 and the age-group over 35 seem to be rather stable.

## 6. Conclusion

The paper's main conclusion is that the differences in the measurement and analysis of structured and less-structured data are differences of degree and not of kind. With structured data the category systems that are used for measuring and analyzing the units are developed before the collection of the data, although the categories may be aggregated during the analysis of the data. When the observations are less-structured these category systems are partly constructed also during the data-collection, data-processing and data-analysis phases of the research. Once the categories have been developed essentially the same arsenal of methods and techniques for analyzing data can be used as in the case of structured data.

The view that categorization is an essential prerequisite for any further analysis of less-structured data can also be found by GLASER and STRAUSS (1967:23), MILES and HUBERMAN (1994:56), and by STRAUSS and CORBIN (1998:19). But neither of these authors draws from this the conclusion that it

implies that many of the methods and techniques that are used for analyzing structured data can also be used for analyzing less-structured data, although it must be mentioned that this idea can be found in embryonic form in the book by MILES and HUBERMAN (1994).

The views expressed in this paper on the measurement and analysis of less-structured data also put the qualitative-quantitative distinction into a different perspective. The qualitative-quantitative debate often only takes place in terms of research procedures, especially when defending ones qualitative or quantitative approach from the litany of shortcomings. By omitting the other side of the coin - the ideas that drive the research - one fails to recognize the instrumentality of research methods and techniques, which makes for a kind of mystique of quality and quantity. In my view quality and quantity are two inseparable facets that interplay with each other. In an inquiry the emphasis may be on qualitative or on quantitative aspects, but whatever aspect is emphasized the other aspect is never far away (see also STRAUSS, CORBIN, 1998:27-34).

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# 21 MODELING RESIDENTIAL QUALITY USING SUBJECTIVE AND OBJECTIVE MEASURES

*Robert W. MARANS*

## Abstract

*This chapter posits that models of residential quality showing hypothesized relationships between the objective reality in residential environments and subjective responses to those environments can be empirically tested through quality of life studies that focus on place. It begins with the premise that quality is a subjective phenomenon and that the residential environment can be defined at different scales. Following a review of the literature on quality of life and subjective-objective measures, it reviews residential and other models used in quality of life studies and person-environment research. Next, a QOL study in the metropolitan Detroit area is described including its purposes and its methodologies. Finally, the chapter outlines the benefits of such research for policy makers and designers and concludes with a call for parallel quality of life studies in other world cities.*

**Keywords:** *Quality Of Life, Objective Indicators, Survey Research, Residential Quality.*

## Introduction

During the past quarter century, a number of scholars operating at the interface of the social sciences and the environmental design professions have argued that quality of any entity has both a subjective dimension as well as an objective reality. Central to this assertion is the meaning of quality of the environment where the environment may be defined as having built, natural, and sociocultural, dimensions. The residential environment or places where we reside, consists of all three dimensions and as past research as demonstrated, is an important component of our overall quality of life or well-being. The residential environment and residential quality are also central to the work of architects, planners, and environmental design researchers worldwide who want to contribute to societal well-being.

I support the contention that a better understanding of the meaning of residential quality requires systematic study of the interrelationships between objective measures of environmental phenomena and people's responses to them. Furthermore, I suggest that such study can occur within the context of quality of life research. In this paper, I first review quality of life research that acknowledges linkages between objective and subjective measures. I then discuss the Detroit Area Study (DAS 2001), a major program of research aimed at measuring quality of place or community life, one aspect of quality of life. Finally, I conclude with a discussion of the rationale for launching parallel studies in other world cities.

## Meaning and Measurement of Quality of Life

In the introduction to their comprehensive book on well being, KAHNEMAN, DEIMER, SCHWARZ, 1999: x) present an overview of the literature which addresses global evaluations of life (quality of life). They indicate that the quality of life experience is embedded in the cultural and social context of both the subject and the evaluator. They also suggest that objective characteristics of a society like poverty, crime rates, and pollution contribute predominantly to people's judgments of their lives. A precedent for these assertions is the work of CAMPBELL, CONVERSE and RODGERS (1976) whose conception of the quality of life experience (or what they referred to as individual well being) was operationalized in a seminal study that measured people's perceptions, evaluations, and satisfactions. Using questionnaires administered to a sample of over 2000 U.S. residents, the researchers focused on the holistic experience of life rather than on actual conditions of life. In doing so, Campbell and his colleagues addressed the concept of satisfaction rather than happiness, considered in earlier studies of well being (BRADBURN, CAPLOWITZ, 1965; BRADBURN, 1969). Satisfaction was viewed as more definable to researchers, and implied a judgmental or cognitive experience whereas happiness

reflected a relatively short-term mood of elation or gaiety. Satisfaction was also considered a more plausible and realistic objective for policy makers than that of creating happiness (gaiety), and the researchers were interested in generating data that could potentially influence public policy. Finally, the researchers felt that "satisfaction" was more appropriate to the goals of their study than "happiness". Their intent was to measure and compare people's assessments of several domains of their lives as well as "life as a whole," and determine the degree to which each domain explained the quality of life experience. Domains considered were health, marriage, housing, family, friendships, financial situation, leisure, and community or place of residence.

In addition to the satisfaction measures, Campbell and his colleagues believed that context and evaluator or person characteristics were important to understanding quality of life. Context was considered to be the actual conditions of life or what they referred to as objective attributes. Nonetheless, their efforts to measure these attributes as part of their empirical work were modest.

With respect to domain satisfactions, the researchers suggested that domain satisfactions were a reflection of people's assessments and perceptions of domain attributes which in turn, were influenced by the objective attributes (characteristics) themselves. For example, job satisfaction was seen as a function of a person's assessment of the many attributes of the job such as degree of autonomy, relationships with co-workers, wages and so on. Furthermore,

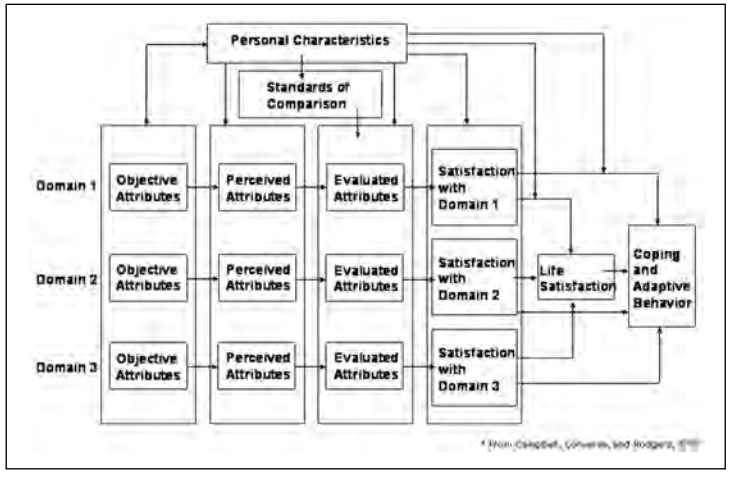



**Figure 1**
Model showing relationship between domain satisfactions and life satisfaction.

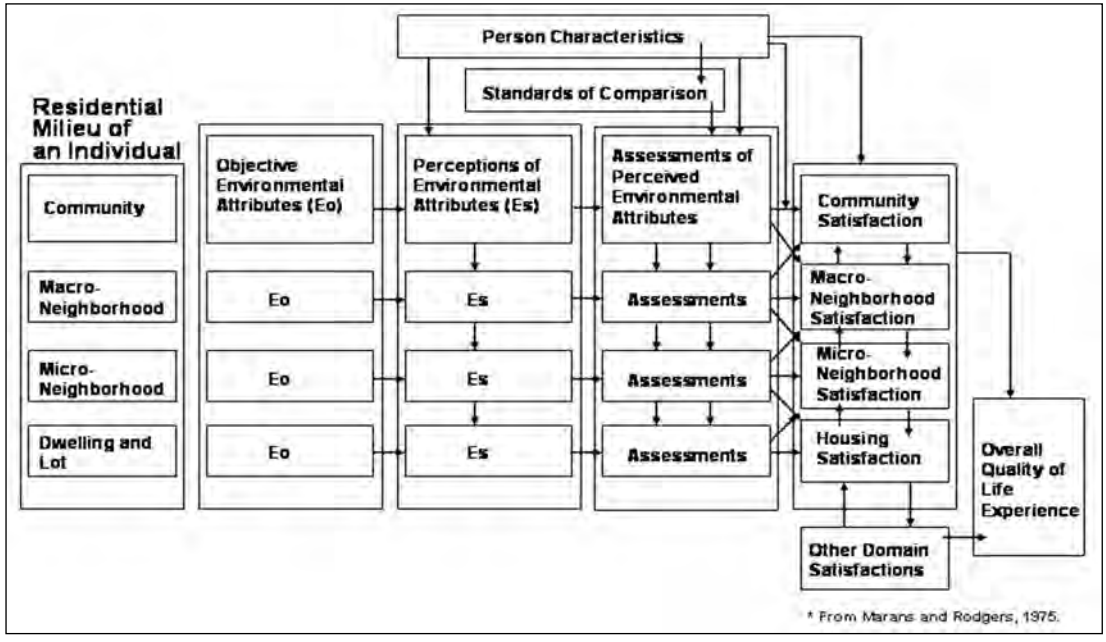
assessment of wages was considered a function of the person's actual salary. Similarly, perceptions of crowding in a dwelling were expected to be associated with an objective measure such as people per room or another measure of housing density. Their conceptualization is shown in Figure 1 and is the similar to the views of Kahneman et al. on the role of the objective world in understanding subjective well being.

However, other researchers contend that at least with respect to measurements of subjective well being, the association with an individual's objective conditions of life has often been weak in empirical studies (SCHWARZ, STRACK, 1999). Although linkages between objective attributes of selected domains and domain satisfaction have been examined in past research (see WARR, 1987; 1999 for a review of such research dealing with work), studies exploring objective-subjective relationships in other domains such as housing

**Figure 2**
Model showing relationships between residential domain satisfactions and quality of life.

or community have been limited. Studies focusing on quality of life in cities present an opportunity to explore such relationships. They enable us to better understand the meaning of quality of life in cities and the manner in which it can be measured.

Building on the working of Campbell et al., Marans and his colleagues began to explore these issues from a conceptual and empirical perspective (MARANS, RODGERS, 1975; LEE, MARANS, 1980; CONNERLY, MARANS, 1988). It was asserted that quality of a place or geographic setting (city, neighborhood, dwelling) was a subjective phenomenon, and that each person occupying that setting may differ in his/her views about it. Furthermore, those views would reflect their perceptions and assessments of a number of setting attributes that could be influenced by certain characteristics of the occupant, and his or her needs and past experiences. The past experiences represent a set of standards again which present judgements are made. These standards or references include other settings experienced by the occupant, and settings to which the occupant aspires. Finally, it is suggested that the occupant's assessments and perceptions of setting attributes are associated with the attributes themselves. As noted above, the degree to which a person feels crowded at home is expected to be related to the number of people in his household per room (i.e. housing unit density). At the neighborhood level, assessments of air quality and family health

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(e.g. incidence of asthma) are likely to be associated with objective air quality measures for the neighborhood. The model depicting these relationships for different residential domains and how these domains together with other domain satisfactions contribute to quality of life is shown in Figure 2.

An important assumption underlying the model is that the quality of any geographic setting (i.e. city, neighborhood, house, etc.) can not be captured with a single measure. Rather, measures of the multiple attributes of the setting in question are needed. In combination, they reflect the overall quality of the setting. A second important assumption is that quality is a subjective phenomenon reflecting the lives of the setting's occupants. The objective conditions of those occupants themselves do not convey the true quality of the setting. A model showing illustrating these relationships in explaining neighborhood satisfaction is presented in Figure 3.

In the models described above, various domain satisfactions including place satisfaction (city or community, neighborhood, and house) are considered important outcomes worthy of study from both a theoretical and policy perspective. For instance, policy makers are concerned with the well being of constituent satisfaction with conditions that their policies

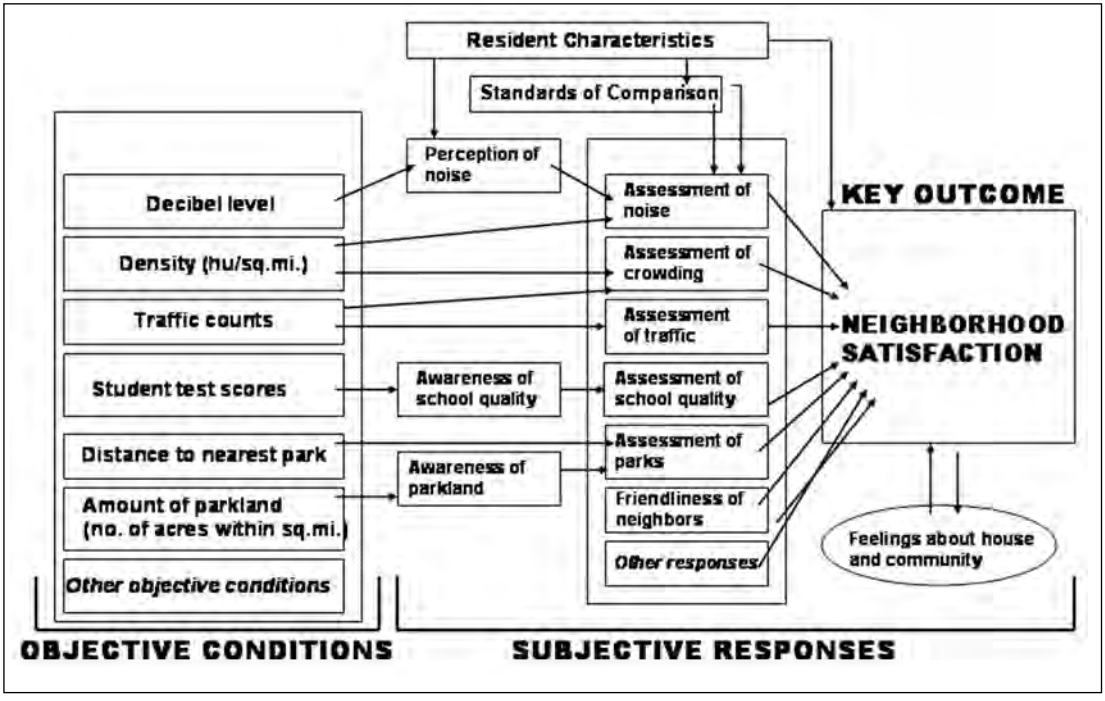


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**Figure 3**
Model showing relationships between objective conditions, subjective responses, and neighborhood satisfaction.

may alter. Often, policy makers want to know the most effective means of enhancing satisfaction. An important part of the research therefore is determining the degree to which various objective conditions are associated with satisfaction. There is general agreement that satisfaction as an indicator of individual well being is an important outcome in quality of life studies. Nonetheless, there are other outcomes of importance to well being that may be examined in quality of life research. For instance, the physical health of individuals and the amount and type of physical activity they engage in are important to their overall quality of life. MARANS and MOHAI (1991) present a conceptual model suggesting how **physical health** may be linked to a number of objective conditions associated with a set of leisure resources including environmental quality attributes.

The model shown in Figure 4 suggests that environmental and urban amenities are related to community quality and individual activities, satisfactions, and physical health.[1] **Environmental amenities** includes both natural recreation resources (NRR) such as lakes, rivers,

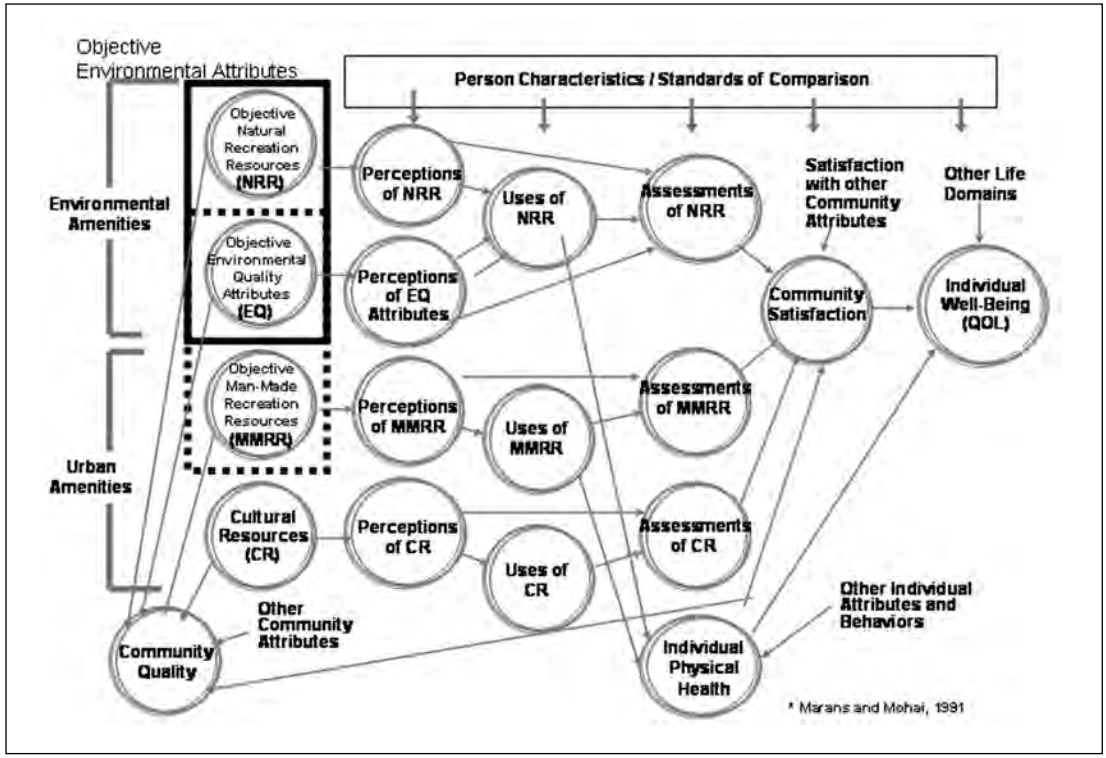


Figure 4
Model linking recreation resources and activities to individual well being, health, and community quality.

wetlands forests and park land and the quality of the ambient environment (EQ) including air and water, noise, and solid and hazardous waste. **Urban amenities** include both man-made recreational resources (MMRR such as swimming pools, bicycle trails, golf courses, etc.) and cultural resources (CR such theaters, libraries, orchestra, sports teams, etc.). The model suggests that perceptions or awareness of these environmental and urban amenities will influence people's evaluation and use of them. The model also suggests that in the case of the man-made recreational resources and natural recreational resources, their use (no non-use) by an individual is associated with individual physical health.

Opportunities exist to explore relationships suggested by the above models in studies aimed a measuring the quality of life. Furthermore, other models can be developed to explore different outcomes associated with quality of life and the quality of place. These opportunities are expanded in studies of metropolitan areas containing different populations living in places that vary in their environmental quality. A 2001 study of the quality of community life in the metro Detroit area presented such an opportunity.

## Detroit Area Study - 2001

Quality of community life was identified as the theme for the 2001 Detroit Area Study (DAS). DAS is an annual household survey conducted in metropolitan Detroit area by the **University of Michigan**[2]. In selecting the quality of community life theme, it was intended to examine a range of issues associated with the lives of people in a particular place. Furthermore, a better understanding of the quality of place and how it impacted on people's lives was an overarching goal of the study. The specific issues were based in part on discussions with governmental, institutional, and non-profit organizations in the region. Issues were to be addressed that met two criteria. First they had to be important and common to the missions of several organizations in the Detroit region. That is, the sets of indicators to be used had to be grounded in the political reality of the region and its parts (MYERS, 1988: 350). Second, the findings from the household survey had the potential of informing policy and planning decisions. The issues selected included people's evaluations of their communities, their neighborhoods, their dwellings, their assessments of government and public services, their travel behavior, use of parks, and involvement in community affairs, their moving intentions and residential preferences, their willingness to pay for improvements ranging from public transit to preserving farmland, their attitudes toward growth and development, and their perceptions of environmental problems.

There were four specific goals articulated for DAS 2001. These were to: 1) produce accurate and credible information on the quality of community life that can inform governmental, corporate, institutional, and community policy makers, 2) measure and document public perceptions about salient

aspects of community life in the region at the beginning of the 21st century and identify the extent to which they have changed since the 1960s, 3) establish a benchmark for assessing changes in the quality of community life and changes in community and environmental conditions throughout the 21st century, and 4) determine how much public perceptions correspond to the community and environmental conditions associated with where people live.

For purposes of this paper, the fourth goal provides the opportunity to examine relationships between objective and subjective measures associated with residential quality.

Sources of Information. A multi-method approach to the research was employed involving the collection of information from questionnaires, the U.S. census, and other secondary of data about the respondents' communities and their physical surroundings. Questionnaires were administered through face to face interviews and by mail.

Face-to-Face Interviews. As part of DAS, trained graduate students and professional interviewers from the University of Michigan conducted face-to-face interviews with adults drawn from a sample of households in three metro Detroit's seven counties. Beginning in mid-April 2001 and ending in mid-August, 315 interviews were conducted. The average length of the interviews was 60 minutes. In addition to asking each respondent a series of questions, interviewers recorded data about the respondent's dwelling and the area around it. As an incentive, metropark passes were mailed along with a cover letter to half of the households that fell in the sample; the remaining half received five dollars. An additional five dollars was given to respondents who completed the interview. The response rate for the face-to-face survey was 59.8 percent.

Mail Questionnaires. In order cover the remaining counties in the metro Detroit area and expand the number of respondents in the initial three counties, a parallel mail questionnaire was sent to a sample of over 9000 adults throughout the region.. In designing the mail questionnaire, roughly half of the questions asked in the face-to-face interview were eliminated in order to ensure a questionnaire that could be completed in approximately 20 minutes. As in the case of the face-to-face survey, metropark passbooks and five dollars were used as incentives. The mail survey yielded 4077 responses representing a 56.4 percent response rate. Data from the face-to-face interviews and the mail questionnaires have been merged and weighted so are to represent the correct population distribution of counties in the region.

Secondary Sources of Information. Several sources were used to measure objective community and environmental conditions associated with the places where the sample of residents lived in the region.

As a first step in gathering objective measures, the addresses of each respondent in

the survey were geocoded. That is, **geographic information systems** (GIS) were used to spatially map the addresses of over 4000 respondents throughout the region.[3] Besides being placed in one of the seven counties, each respondent can also be placed in a particular community (i.e. a city, village, township) within the region They also can be assigned to a school district, or a census unit (block, block group, tract). Accordingly, contextual measures related to communities, neighborhoods, and census units can then be made and matched with the survey respondents and their answers to questions. The creation and merging of separate data files covering survey data, community data, environmental data and census data allow the researchers to explore a numerous relationships suggested by conceptual models similar to those described earlier in this paper.

Among the particular community or MCD measures incorporated in the database are tax rates, employment data and other indicators of growth. Data such as expenditures per student and MEAP scores associated with school districts are also incorporated in the community data file.

The environmental data file includes land use information such as percent in each land use category, degree of mix, percent of open space and natural resources; accessibility measures to parkland, major employment centers, shopping areas, and various density measures. The density measures using census data will cover the number of housing units and the size of the population for blocks, block groups, and tracts.

The census data file uses 2000 U. S. Census statistics to determine racial mix, poverty rates, housing tenure, and median income for each block, block groupings, and tract associated with respondents.

**Analysis, Feedback, and Ongoing Work**. The files containing census data, environmental data, and community data associated with each respondent are being merged with the survey data file (see Figure 5).

Figure 5 suggests numerous possibilities to examine relationships between contextual data and questionnaire responses using bivariate analysis and multivariate analysis. For example, an analysis might examine the impact of density (as reflected by multiple density measures) on people's responses to crowding, their knowing the names of neighbors, and their interactions with them. Another might determine the degree to which objective data covering

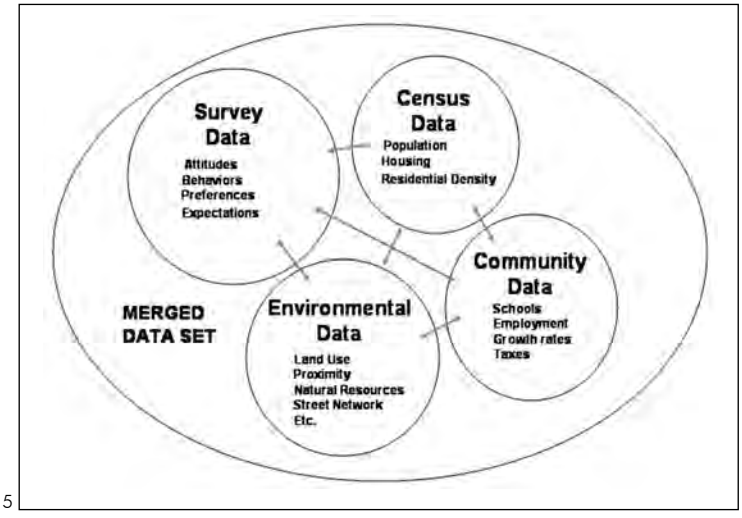


**Figure 5**
Data sets from DAS 2001.

school districts (i.e. student-teacher ratio, test scores, expenditures per student) are associated with people's ratings of their pubic schools. Using multivariate analysis, an examination could be made of the relative importance of several measures covering school districts in predicting rating scores for respondents with varying numbers of school-age children living at home.

There are a number of other questions of both theoretical and policy interest that can be explored using data from the merged files. Several posed by policy makers in the Detroit region and considered by researchers are:

- Where do people live in who feel negatively about their cities, villages and neighborhoods?
- Is public transit use associated with proximity to bus routes and bus stops?
- Do people who live in **mixed-use neighborhoods** use public transit more and walk more than people living in neighborhoods consisting of single family homes?
- Is there a relationship between access **to parks** and the amount of exercise people engage in?
- Is the amount of walking that people do associated with self-reports of health?
- What environmental factors if any contribute to residents feelings about **"sense of community"**?
- Are preferences for open space neighborhoods associated with feelings about natural resource conservation?
- Is the type of street network in a neighborhood associated with amount of automobile use and walking behavior?

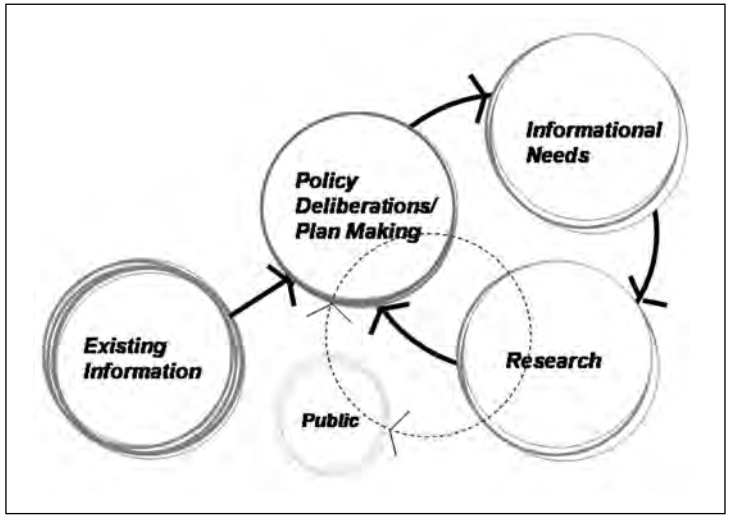


**Figure 6**
Model showing relationship between policy, planning and research.

As suggested by the above questions, there are innumerable opportunities to explore relationships within and between objective and subjective indicators as well as person-environment relations. In part, determination of relationships to be explored can be made by policy makers and environmental designers who pose questions after reviewing the survey findings. In metro Detroit, examining the data has been an interactive process involving the researchers on the one hand and policy makers, planners, and designers on the other. Initially, the percentage distributions of responses for each question in the questionnaire were presented to policymaking bodies. Discussions regarding responses inevitably lead to new questions that can be addressed through further analysis of the data.

6

The relationships between research, policy, and planning as conceptualized in the Detroit Area Study are shown in Figure 6 and Figure 7.

Figure 6 presents a basic model indicating that policy makers and planners rely on available information in their deliberations and actions. In democratic societies, they also listen to and have input from their constituents (the public). But often, they require new or updated information which in turn can drive a research agenda. The results of the research can then satisfy the informational needs of the policy makers and planners. Those results made available to the public through the media and the internet create a more informed citizenry that in turn elects and communicates with their government officials.

In Figure 7, the model is expanded in two ways. First, the research component is shown in four parts: research design, data collection, data analysis, and findings. The design for the research is often guided by various theoretical perspectives and is constrained by budgetary considerations. As part of the design, determination is made about data needs and the most efficient means of obtaining the data. Next, the data are collected and analyzed and findings are then presented to decision-makers and the public.

Second, the model suggests that relationships between policy and research are interactive and ongoing. Policy-makers and planners during their deliberations typically pose questions, many of which can be addressed through additional analysis of available data. These questions may be sparked by research findings, changing conditions in the environment, or citizen concerns. If the data are not suitable for addressing new informational needs, new research may be initiated. Over time, research findings for policy and plan making purposes may also become obsolete as environmental conditions and people's responses to them change. New research can then be initiated that measures the environment and people's responses offering policy-makers a new set of findings and an indication of the magnitude of change in conditions and responses that has taken place.

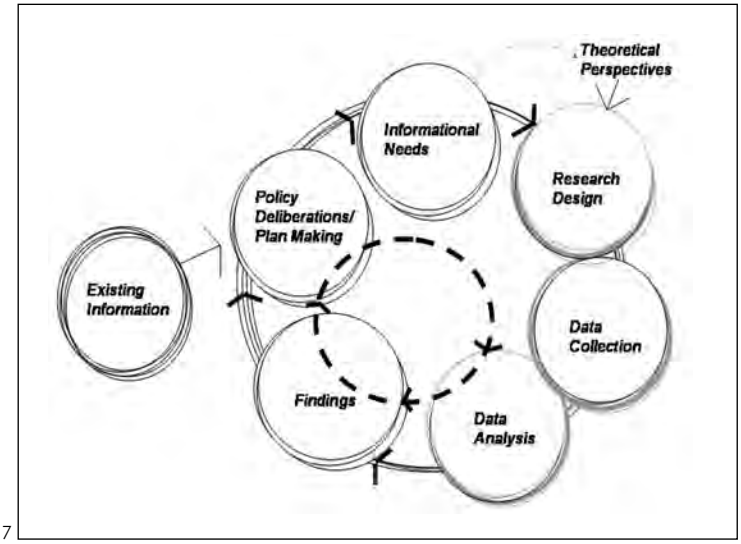


**Figure 7**
Detailed model showing relationship between policy, planning and research.

The model in part has guided DAS 2001 activities. That is, the feedback of initial findings to policy makers and planners has sparked further inquiries of the data. At the same time, comparisons of the 2001 findings with findings from early quality of life studies in the Detroit region are sensitizing both groups to the

potential value of launching another wave of data collection dealing with quality of community life in the next 4-5 years.

Other DAS 2001 activities currently being pursued include exploring relationships between subjective measures drawn from the household survey and the objective measures that incorporated in the data set. In addition, plans are being formulated for replicating the research in 2006.

## Benefits for Policy Makers, Environmental Designers, and Researchers

The above discussion suggests the potential benefits to policy makers in the Detroit region. First and foremost, study findings are informing them in a systematic way about how citizens view various aspects of community life ranging from housing satisfaction to attitudes toward urban growth and development. Second, the findings enable them to "test the waters" about possible actions they might take. For example, a proposed tax levy on metro area residents to support an improved and expanded public transit system was tested by asking people about their willingness to increase their tax bill for this purpose. Although there was some support for this possible action, survey findings suggest that citizens would vote against the proposal. The findings also indicated where geographically there was strong support and where it was weak and who were the major supporters and who were the major opponents.

Another potential benefit of the research for policy makers is in gauging the acceptance of new forms of housing resulting from new policy initiatives. In the area of land use planning, changes in zoning and design standards aimed at encouraging the building of new urbanism communities could be tested with the research. Such policy changes might involve relaxing allowable densities to permitting a greater mixing of land uses. The DAS gave policy makers, housing planners and residential builders an indication of how receptive people would be to high density, mixed use housing. Questions about neighborhood preferences and the trade-offs people are willing to make when choosing a place to live can provide useful insights about what features of the residential environment are important.

Finally, the research can be helpful in assessing the impacts of past actions taken by policy makers. If for example zoning changes were made that permitted small grocery stores to be located close to housing and such neighborhoods were created, would people use their automobiles less and walk more? The research conducted prior to and after the creation of the new neighborhood could answer these questions.

Quality of life research focusing on place could be beneficial to architects and urban designers.

Data generated by surveys and findings from person-environment explorations can guide environmental designers in establishing design guidelines for housing, neighborhoods and other types of places (i.e. shopping areas,

transit terminals, parks and recreation facilities, etc) and in understanding the behavioral consequences of alternative designs. The degree to which these benefits occur depends on the depth of questioning about a particular topic in the survey and the level of detail in the corresponding environmental data that are collected.

The research on quality of life focusing on place can greatly advance our understanding of person-environment relations and how those relationships may vary depending on the cultural and historical background of the place where the study is undertaken. That is, there are theoretical advances to be made from cross-cultural research that uses comparable theoretical models, research designs, and methodologies.

## Conclusions

The program to study the quality of place or community life in the Detroit region (DAS 2001) was designed to combine policy and environmental design interests with scientific and theoretical concerns. From a policy perspective, the program was intended to provide public and private sector planners and other decision-makers at the regional and county levels with information about the quality of life as experienced by area residents. At the same time, information about the contributions of place and in particular the residential environment, to the quality of life experience was a central goal in the study. The residential environment includes the particular communities and neighborhoods where people live, the amenities and environmental conditions associated with those places and the individual housing units. The quality of those communities and neighborhoods and their attributes, together with the quality of the ambient environment largely reflect actions taken by public and private decision makers including planners and environmental designers. As past research has demonstrated, these domains are important to the well being of individuals and families. As urban areas continue to grow throughout the world, it is likely that the quality of cities and their suburbs and the quality of their residential environment will become even more important in defining quality of life.

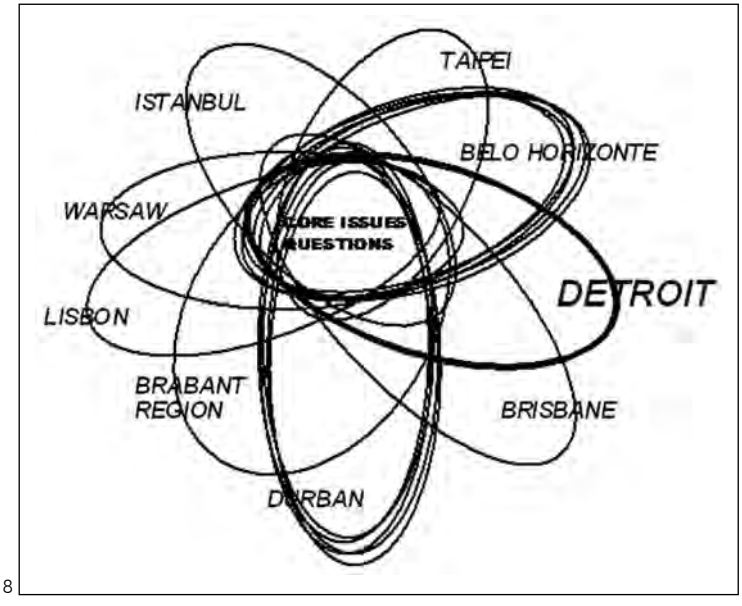


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**Figure 8**
Conceptual overlap and unique issues among partner cities and regions (existing and potential)

We are at the beginning of a new millennium, where the majority of the world's population now resides in urban areas. Under the circumstances, now is an opportune time to document quality of life in world cities by measuring the environment objectively and as it is experienced by residents. Indeed, research paralleling the study in the Detroit region is currently underway or is being considered in other cities and regions including sourtheast Queensland in Australia, Belo Horizonte Brazil, Istanbul, Lisbon in Portugal, and the Brabant region in the Netherlands. While many of the issues and questions addressed in these places are identical to those examined of the Detroit region, issues and questions reflecting local concerns are also being explored. Figure 8 should provide the conceptual links between the Detroit study and those of other places. The diagram shows that there are opportunities for both comparative analyses across cultures and places and for satisfying the informational needs of local decision-makers.

There is also growing interest in many parts of the world in **sustainability indicators** that reflect conditions in the city, that can be used to monitor change, and that are accessible to all segments of society. These indicators can inform public and private actions, and be used to assess the city's progress in moving toward its overall goal of enhancing the quality of life of its residents. It is important to recognize that, besides reflecting conditions in cities, the indicators need to address changing behaviors such as travel and energy use, and the perceptions of residents. Without these indicators, we delude ourselves in believing that we understand the meaning of the changes that are taking place in our cities.

In conclusion, an exciting initiative is underway that brings together researchers from one of the great universities in the world and public and private decision-makers in a large metropolitan area. They are working together toward the common goal of enhancing the quality of community life in that region. Other cities are invited to launch similar efforts so that experiences and knowledge about environmental quality and its antecedent objective and subjective indicators can e shared.

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## Notes:

[1] For a complete description of the model, see MARANS and MOHAI, 1991: 358-360.

[2] The Detroit Area Study was started at the University of Michigan in 1951 with the idea of satisfying the three goals. These addressed the training of graduate students in social science research techniques, the provision of a facility for faculty to conduct basic research, and making available social science data of value to the Detroit region. For a discussion of the Detroit Area Study and its history, see MARANS and COUPER, 2000 and COUPER, CLEMENNS, and POWERS, 2002.

[3] A number of the respondents who returned questionnaires had their mail sent to a post office box and therefore, determining their residential address was not possible. Similarly, some respondents indicated they had moved elsewhere in the region or out of the metropolitan area without giving a precise address. Consequently, 95 percent of the respondents who were interviewed or sent mail questionnaires were geocoded.

# 22 USEFUL CONCEPTS OR ETERNAL TRUTHS? REFLECTIONS ON CASE STUDY GENERALISATION

*Örjan SVANE*

## Abstract

*For the author of this paper, researching the Environmental Management of the built environment has meant doing a series of case studies - exploring the good practice of twelve Swedish housing companies, evaluating the environmental management process of a large brownfield development, or assessing the merits and shortcomings of a new methodology for environmental management in small neighbourhoods. Direct, empirically based results from these case studies tell something only about that case - the environmental management of this city authority, that housing company. Furthermore, the focus on ongoing activities means that results typically have a short life span - the god practice of a given company changes as the environmental officer is replaced, or re-organisation moves the management's focus to other issues. The case study seems to severely restrict generalisation, in scope as well as in time. Thus, if the norm for valid research results is "universal and eternal", this kind of results is far from the norm. The author argues, however, that there are ways of generalising also from case studies. With an ongoing project as example, he discusses two possibilities for the researcher to generalise beyond the case: Generalisation to concepts and to research strategy. Furthermore, the process of generalisation taking place within the mind of the report reader is discussed in terms of naturalistic generalisation. In the paper, there are also some reflections on generalisation as related to the philosophy of science and to methods of collecting and analysing qualitative data, respectively. The author's final comment is that the concept of generality is not the obvious norm for good case study research. Instead he proposes the application of the concept of "tripartite truth".*

***Keywords:*** *Case Study, Generalisation, Theory of Science, Environmental Management.*

## Evaluating The Environmental Management of a Brownfield Development

The construction of **Hammarby Sjöstad** is a brownfield development of an old harbour and industrial area in the southern part of Stockholm. In the next ten years, a new city for 30 000 people will be built, adjacent to the city core. The development is guided by well-defined environmental objectives, drafted by the City (STOCKHOLM CITY, n.d.; STOCKHOLM CITY, 1997). The basic idea is "twice as good" as other contemporary housing.

The City's politicians decided on the objectives. Its administrations and companies, the municipal and private developers, the contractors and consultants are jointly responsible for realising the objectives. Together, they form the group of actors or stakeholders of the development of Hammarby Sjöstad. In their **environmental management** process, they utilise drawings and written documents, contracts and other tools, also used in ordinary planning, design and construction.

Master plans are drawn up, building permits given and contracts signed, just like in any other large-scale construction project. The stakeholders compete, negotiate and co-operate in the usual manner. However, since the environmental objectives are tough, new methods, tools and solutions are needed in the development process. Mutual learning concerning the environmental issues is one such tool, the search for new technical solutions another. Organisation and division of responsibilities are also affected. For the project, the City established a Project Team, which is an addition to the normal set of stakeholders.

In co-operation with my colleague, architect and associate professor Rolf Johansson, I evaluate the process, seeing the Project Team as main actor (JOHANSSON, SVANE, 2002; JOHANSSON, SVANE, 2004). We are looking for chances taken as well as chances lost, for example analysing some predictable, always upcoming environmental management situations such as the signing of a standard contract. We also explore unexpected or unique, "carpe diem" situations, for example how the project team utilised the discovery of mould in some completed buildings to put pressure on all contractors. However, we do not evaluate the outcome of the process in terms of environmental impacts; that is undertaken by the project team itself.

## Uncontrollable Generalisation Taking Place in The Reader's Mind

An obvious way of presenting our findings is in the form of a chronological narrative, telling the story of the process of environmental management and construction from 1998 through 2002. This way of reporting results contains little of generalisation - explicitly presented results say nothing about anything outside the process that we evaluate. Furthermore, to the extent that the narrative is about an ongoing process, things might change, perhaps making our result statements

short-lived or untrue. In other words, the narrative is limited in scope as well as in time. Therefore, it seems relevant to ask what happens in the minds of our readers as they study our text:

> "...the meaning of a text is enlarged by the reader's capabilities and desires. Faced with a text, the reader can transform the words into a message that deciphers for him or her a question historically unrelated to the text itself or its author. This transmigration of meaning can enlarge or impoverish the text itself; invariably it imbues the text with the circumstances of the reader. Through ignorance, through faith, through intelligence, through trickery and cunning, through illumination, the reader rewrites the text with the same words of the original but under another heading, re-creating it, as it were, in the very act of bringing it into being." (MANGUEL, 1997:211).

Depending on who the reader is, different kinds of generalisation might take place in her or his mind. If inexperienced, she or he might unreflectedly assume that our example is the typical, the good practice or the norm, and read us thus. Another reader might have experience from other processes of municipal environmental management. Based on this experience, she or he will more or less systematically compare the examples and accept our narrative as one case in her or his collection of related cases. This way of more systematic generalisation - often called **naturalistic** - is routinely used among architects, whose main professional activity is the design of unique buildings based on the experience of other, similar projects (MYERS, 2000; STAKE, 1995). It has also been argued for in educational research (STAKE, TRUMBULL, n.d.).

As Manguel argued in the quotation above, the researcher has little or no influence over naturalistic generalisation. It can be assumed that it is less systematic and more varying from person to person than generalisations explicitly introduced by the researcher. Furthermore, this kind of generalisation is the rule rather than the exception, no matter how results are presented in the research report; as readers we unconsciously reflect upon, relate to or generalise from what we read. On the one hand, our reflections relate backwards in time, to our former experience, our pre-comprehension; on the other they are guided by the purpose or intention with our reading. Thus, even if it is outside the influence of the researcher, this kind of generalisation might contribute to the reader's long-lasting, generally useful knowledge.

Intentional naturalistic generalisation is accepted in research traditions such as history, architecture and anthropology. The case study as research strategy has been discussed by among others Yin and Stake (YIN, 1994; STAKE, 1995). Swedish architectural researcher Johansson has contributed to analysing its use for example in architectural research and also characterised it in relation to other social science research strategies such as the experiment or the statistical survey (JOHANSSON, 2002).

Naturalistic generalisation as described

here reminds us that research is in part an act of communication that also includes the report readers. In a positivistic research tradition, reporting might be seen as relatively unproblematic, the reader so to say being absent. Results and conclusions are derived from the data collected, good research is a proper representation of the object or phenomenon studied, and results take the form of information (BOYD, 1984). One might argue that figures from a statistical survey "speak for themselves"; but even there, the researcher can arrange the presentation in texts, tables and diagrams in many different ways that might communicate more or less directly with the reader. Even though this is a "weak" interpretation of the concept of naturalistic generalisation, it could be worth considering when reporting research projects.

On the other hand, in a hermeneutic research tradition, interpretation is seen as something always present, indeed as a prerequisite for any understanding of a text (PALMER, 1972). Thus, interpretation of the data of the research project is not finished when the report is written but takes place every time the text is read, and might also be further developed in discussions between readers. If it is worth "visualizing" the reader when compiling the information from a statistical survey, it seems crucial to consider how readers will interpret my text if I work in a social science, in a qualitative research tradition or in the humanities.

From the above I conclude that the reporting of research results should benefit from considering naturalistic generalisation, but that extent and depth depend on what research tradition that the researcher is working in.

## Generalising to Concepts or Theory

In order to characterise main properties of the Hammarby Sjöstad environmental management process or its parts, we utilise a set of concepts. Most of them take the form of pairs of opposites, for example *formal-informal, certain-uncertain* or *competition-co-operation*. Some of them come from literature on project management or business economy, others were suggested by our empirical material (SAHLIN-ANDERSSON, 1989; VEDUNG, 1997). Together, they form a conceptual system. This system could be used to analyse and describe also other processes of environmental management, for example that of Viiki outside Helsinki, or that of the refurbishment of a 1960s suburb of Norrköping, Sweden, Ringdansen. From this follows, that the set of concepts should be more lasting than the concrete description of the ongoing, ever developing environmental management process. Thus, by generalising to a set of concepts we produce more long-lasting and more generally applicable results.

The conceptual system is a kind of theory (FRANKFORT-NACHMIAS, NACHMIAS, 1993). Considering its provisional character, it is so far in our case a draft theory. Its concepts are clearly related to one another, making it a system or a framework. On the other hand it is

not as rigid as a taxonomy, since the concepts are not mutually exclusive. It is meant for characterisation rather than classification as the following example indicates: The animal you observe is classified according to a taxonomy as being either this or that kind of swan, never both. On the other hand, an event in the environmental management process has properties along the sliding scale of the category *competition-co-operation*, and its belonging to that category does not prevent it form having *formal-informal* category properties.

Our method for generating the conceptual system was influenced by **Grounded Theory**, a methodology first proposed by Glaser and Strauss in 1967. Historically, grounded theory has three main sources of inspiration (ALVESSON, SKÖLDBERG, 1994:65): American pragmatism, where truth became a matter of utility; German neokantianism, which stressed ideographic research on the particular rather than nomothetic on mass data; and finally German historicism, stressing the qualitative in favour of the quantitative.

Grounded Theory focuses on generating theories rather than on verifying them. Thus, as methodology it is based on inductive reasoning, starting with empirical findings and from there generalising to theory. Verification of the theory is secured through a strict procedure of development, the coding of data into categories and then assigning properties to these. In analysis, the researcher should have an unbiased, unprejudiced perspective. In my understanding, the reason for this is that theory, at least to some extent, "is there to be discovered". This is closely related to a positivistic view, in which there are natural regularities and laws of nature, existing independent of man, to be discovered by man. This view could be compared to the hermeneutic one that unbiased interpretation is an incongruity, that facts are always laden with theory (ÖDMAN, 1994:18). Here, modern theory of science is on the whole in agreement with hermeneutics (ALVESSON, SKÖLDBERG, 1994:71). In our project, we are influenced by the hermeneutic tradition in not relying on induction only for theory generation and generalisation to theory.

As already mentioned, we deviated from a strict application of Grounded Theory methodology. For reasons given above, we did not want to start interviewing or collecting documents with "tabula rasa" minds. Instead, from literature on management and political science, we identified a set of related concepts to guide collection and analysis of data. However, when confronted with empirical findings, concepts changed. A few of them were found to be less relevant and are no longer used. On the other hand, some of the concepts of the system were derived from analysis of the material, the Grounded Theory way. They were, however, afterwards found to be part of already existing theories. This applies for example to the concept of *situations of opportunity*, which was found to be closely related to the concept of formative moments as used in political science.

From the above follows, that to us the concepts of the conceptual system were tools

for analysing data to the same extent as they were generated through analysis. To the unidirectional procedure of induction we added another one, going in the opposite way, that of deduction. Our theory was generated from and verified against empirical findings through the repeated interplay between induction and deduction. This approach is closely related to that of **abduction**, as first introduced by American pragmatist Peirce, and later discussed by N. R. Hanson, Eco and others (HANSON, 1958; ALVESSON, SKÖLDBERG, 1994:44). There is also a parallel to the hermeneutic circle of interpretation, comprising the interplay between pre-comprehension and understanding, and between totality and components.

As part of the generalisation to concepts in the project, we also discussed the circumstances under which the conceptual system could be used. This we found important since the application of the conceptual system does not seem to follow the dichotomy "possible-impossible", but rather a sliding scale, where some of the concepts might have a wider scope or a longer life span than others.

In philosophy of science, this has been illustrated with the aid of the concepts of domain and field of application, respectively (TUOLMIN, 1953). The former is the wider concept, indicating the type of cases in which the theory is applicable: In our context the domain would be "Environmental management in large-scale building projects". The field of application is identified trough testing the theory against different cases to see where it is valid. Using the examples from our project mentioned above, one could ask: Could the theory be applied to Viiki, to Ringdansen? In our project, this has not been done on solid empirical material from different cases, but through general knowledge of for example the aforementioned cases. We concluded, that our conceptual system not necessarily should be considered as an indivisible whole but rather as a toolbox; where some concepts have a wider application than others, and applicability varies from case to case.

Furthermore, even though they well characterise the main aspects of an environmental management process without gaps or overlaps, our chosen concepts are not the only possibility. Another researcher might come up with a different set that characterizes the process just as well as ours. If, in natural science, concepts like length or mass seem self-evident - the only possibilities - this is not the case for our project.

Finally, the concepts in themselves are not true or false. It is the statements made by using them that are. This, of course applies likewise to natural science concepts (variables). However, all could be said to be more or less useful in relation to the purpose of the research project, or to practice. This relates back to the discussion on applicability above: For this kind of theory one does not in the first hand ask if it is true or false, but rather "when is it valid, where can it be applied?".

The line of reasoning introduced above could be taken one step further, following the work of Swedish social scientists Alvesson and Sköldberg. They propose a **"tripartite" concept of scientific truth**, one that includes the three

aspects Correspondence, Meaning and Use (ALVESSON, SKÖLDBERG, 1999:35). The first aspect of truth, also called the *representative* one, occurs when a statement corresponds to reality. The second, the *significative*, is the hermeneutic aspect, truth as a deeper meaning than the one immediately evident. The third or *applicative* aspect is related to pragmatism, where utility or use is a main criterion. According to Alvesson and Sköldberg, most theories will combine elements of all three aspects. This they illustrate through a triangle with each side corresponding to one aspect. Within its sides different theories can be positioned to illustrate to what extent their concept of truth is dominated by this aspect or that.

Applying the tripartite concept of truth to our project, I conclude: The basic narrative about the process of environmental management in Hammarby Sjöstad should in the first hand be *representative* - correspond to what really happened. The conceptual system, the theory, should help us identify and to others describe the key elements of the process in such a way as to facilitate similar management processes in the future; and this would contribute to the *applicability* of our results. In the next section some further results from our project are discussed. These should help creating a more profound meaning, or in other words *significance*.

Finally, this discussion on truth is also directly related to the theme of generalisation: In our project we generalise from representativity towards applicability and to some extent also, as discussed in the next section, towards significance.

## Generalisation to a Research Strategy

The evaluation of the Hammarby Sjöstad environmental management process follows a research strategy that we in part outlined before the project was started, but to a large extent developed during data collection. It too, involves a set of main concepts, here used as key elements of a strategic research tool. Within the full process of environmental management we identify parallel sub-processes of decision-making and learning. During shorter moments of the whole process, the possibilities for realising the environmental objectives are lager than the average. Therefore, we identify, analyse and describe a number of ***situations of opportunity*** within the process. We also discuss what *field of options* that is available to the Project Team within each such situation, and to what extent that field was utilised. To identify the field of options, we must study the situation's history - the events leading up to its key moment - as well as the factual outcome. Important evaluation questions are related to this study: Did its stakeholders identify it as a situation of opportunity? Did they try to map the field of options?

One such situation that we identified and analysed is the process of developing and implementing a "detail plan", which in Sweden is a powerful formal tool of environmental management. Its key moment is its being passed by the City Planning Board, but it has a prehistory from comprehensive plans and negotiations with developers and other stakeholders. In the case studied, however, the

field of options of at least the first detail plan was restricted by decisions taken before the environmental objectives were passed as well as by the inertia of routines in the city planning office.

The situations' concept suggested itself from empirical findings, but we could afterwards find it in literature from business economy and political science, for example as windows of opportunity, policy windows or formative moments (KINGDON, 1995; ROTHSTEIN, 1996). Analysing the *field of options* through the prehistory and outcome of the *situation of opportunity* is, to me, closely related to hermeneutics as already mentioned above: The act of interpretation has one direction towards the past, one towards the future, both indispensable for understanding (SARTRE, 1983; ÖDMAN, 1994:46).

The concept of **situation of opportunity** as discussed here, is not only a tool in the research strategy but also part of the conceptual system. In relation to the concepts discussed before, for example *competitive-co-operative* or *formal-informal*, it is on a higher, more abstract level: Properties of the situation are analysed with the aid of these lower-order concepts. Thus, the conceptual system has become hierarchical, but without being transformed into taxonomy. Furthermore, through the abduction process - the interplay between the empirical findings and the developing theory - we created results that go beyond translations of the words used by the Project Team and the other stakeholders. This, Alvesson and Sköldberg see as one of the inherent weaknesses of Grounded Theory, arguing that the researcher should make an "epistemological break with the actors' level." (ALVESSON, SKÖLDBERG, 1994:93).

The research strategy that we developed is applicable also to other processes of environmental management. Therefore, it is necessary to define under what conditions the strategy should be applicable. Just as with the results in the form of a conceptual system, we do not see this definition as a dichotomy "applicable-not applicable". Instead, we see it as a sliding scale, parts of the methodology having a wider scope or being longer lasting than others.

Note finally, that we developed a *research* strategy. Generalisation from a case study to a methodology to be used by practitioners is equally possible. For example, a thesis project at KTH, Stockholm utilises this kind of generalisation to produce a strategy for environmental management in small neighbourhoods (NILSSON, 2003).

## From Generalisation to Tripartite Truth

With one example as a starting point, I outlined two possibilities for generalising in case study research, and also discussed how our readers might generalise even when we as researchers do not. However, the theme of case study generalisation is by no means exhausted. For example, the paper has its starting point in a single person's research practice, mine. Confronting the concept of generalisation with theories of science - on research methodology in general and case studies in particular - is

notoriously difficult. Therefore, it is also by needs personal, in this paper taking the form of reflections. This applies equally well to the above as to my final comments.

In dictionaries, generalisation might be given definitions such as: "The action or process of generalizing, i.e. of forming, and expressing in words, general notions or propositions obtained form the observation and comparison of individual facts or appearances; also an instance of this." (OXFORD DICTIONARY, 1989). Thus, as we have seen, induction is prominent. To me, the concept of generalisation has its abode in empiricism and positivism, stemming from the scientific study of natural phenomena. It is also related to "the idealized scientific method" sometimes found in textbooks on scientific method (WIKIPEDIA, 2004.a). The theories and natural laws thus generated are meant to predict and to explain. Often, in that scientific context, generalisation has normative traits: "The most powerful statements in science are those with the widest applicability" (WIKIPEDIA, 2004.b). How does this apply to social science, to qualitative research, to case studies?

In this paper, the normative interpretation of generalisation was understood from the onset: It starts with the question how to give results from my case studies a wider scope and make them more long-lasting. From this starting point, two ways of generalisation were identified and discussed - to theory in the form of a conceptual system, and to research strategy, which was not considered a theory. Furthermore, I argued that naturalistic generalisation is a process that always occurs in the reader's interpretation of a research report, and that it should be considered by the researcher when preparing the report.

For the researcher, generalisation is a process that calls for a method, a systematic approach. It is also an inevitable result of our acquiring knowledge, interpreting our experiences on the basis of pre-comprehension. Here, I argued for a process of analysis related to the hermeneutic circle and to abduction. In other words: I propose that the researcher should utilize the interplay between emergent theory and gradually penetrated empirical material.

From the researcher's perspective, and based on the discussion above, I furthermore conclude: Generalisation is not the obvious norm for good theories in case studies, perhaps not in other forms of qualitative research either. Instead, I propose the application of the concept of ***tripartite truth***, as discussed above. In a case study, the researcher then should strive for producing basic results, the narrative, in good correspondence with the case - addressing the *representative* aspect. Furthermore, she or he should consider the relation between basic empirical findings and theory in terms of interpretation and the creation of meaning; in the research process, and in relation to the presumptive reader when reporting. This is the *significance* aspect. Thirdly, the utility of results should be considered as the *applicative* aspect. Finally, the balance between the three are unique for each case - no generalisation here!

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# International Conference
# "Methodologies in Housing Research"
## Stockholm, Sweden 22-24 September 2003

Arranged by the Royal Institute of Technology (KTH) in cooperation with the International Association of People-Environment Studies (IAPS) and the European Network for Housing Research (ENHR). The conference will address methodological issues in housing research. The content will primarily be discussions of papers in workshops organised by different themes, with a discussant assigned for each paper.

**Venue:** The Royal Institute of Technology (KTH), Lecture Hall D3, Lindstedtsvägen 5 (just off Drottning Kristinas väg 4; near subway station Tekniska Högskolan, 3 stops from the Central station), see map on the website.

## Bus tour to Stockholm housing areas
### Sunday 21 September

14-18h Guided tour to classical modernist housing areas, stage 1 & 2 of the ecocity of 7000 apartment development Hammarby Sjöstad, other recent residential developments and the urban ecovillage of Understenshöjden. Fee including refresh ments: SEK 150 (USD 18, Euros 15), to be paid at the start of the tour. Start at 14 at the L building, Drottning Kristinas väg 30. Guide: Prof *Dick Urban Vestbro*.

## Conference programme
### Monday 22 September

8.30 Conference registration outside Lecture Hall D3, Lindstedtsvägen 5, KTH campus.
9.30 Opening of conference. Welcome address by Prof Dick Urban Vestbro
9.45 Keynote speech. *Overview of current housing research and its methods*[1] Prof. **Roderick Lawrence**, Centre for Human Ecology and Environmental Sciences, Geneva.
10.45 Parallel workshops
12.30 Lunch
14.00 Parallel workshops
15.30 Coffee break
16.00 Keynote speech. *Case Study Methods*[2], Assoc. Prof. **Rolf Johansson**, Div. Urban Studies, KTH.
19.00 Dinner and free evening

[1] The speech presents a review of housing research in the 1990s, with a particular focus on the methods used rather than the results of these contributions. It notes that each discipline and profession has adopted sets of methods without paying sufficient attention to the development of co-ordinated research projects involving several disciplinary contributions. In order to ensure that cultural, social, economic, political and individual human factors are considered simultaneously at the geographical scale of the housing unit, the residential building and its site and conditions in the local neighbourhood there is an urgent need for the application of interdisciplinary and transdisciplinary approaches.

[2] The purpose of this paper is to capture the essence of case study methodology: firstly, by tracing its history; secondly, by making explicit its most characteristic features; and finally, through a discussion of its application in housing research.

*View of Danviksklippan, a classical modernist housing area from the 1950s taken from the ecocity of Hammarby Sjöstad being developed in the period 1998-2011 (photo: Dorota Wlodarczyk).*

## Tuesday 23 September

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|---|---|
| 9.00 | Keynote speech. *"Modeling Residential Quality Using Subjective and Objective Measures"*[3], Prof. **Robert Marans**, Institute for Social Research and Taubman College of Architecture and Urban Planning, University of Michigan. |
| 10.00 | Coffee break |
| 10.30 | Parallel workshops |
| 12.30 | Lunch |
| 14.00 | Parallel workshops |
| 15.30 | Coffee break |
| 16.00 | Parallel workshops |
| 19.00 | Dinner at the City Hall of Stockholm |

## Wednesday 24 September

| | |
|---|---|
| 9.00 | Keynote speech. *Participatory Planning as a Research Method,*[4] Assoc. Prof. **Liisa Horelli**, Centre for Urban and Regional Studies, Helsinki University of Technology |
| 10.00 | Coffee break |
| 10.30 | Parallel workshops |
| 12.00 | Lunch |
| 13.30 | Parallel workshops |
| 15.00 | Coffee break |
| 15.30 | Summaries and impressions from workshops, Prof *Roderick Lawrence* and Prof *Robert Marans*. Evaluation of conference. Information about Book of Proceedings. |
| 17.00 | End of conference |

[3] The paper discusses housing research within the context of quality of life studies involving subjective and objective measures. Conceptual models focusing on the residential environment along with empirical data covering quality of life research in the Detroit region are presented.

[4] The methodologies of participatory planning are dealt with in the context of creating and evaluating human-friendly environments. This requires an action research approach in which explanatory and normative concepts are carefully applied while being enhanced by appropriate enabling methods together with the participants. Examples of collaboratory research with laypeople and experts, young and old, will be provided.

METHODOLOGIES in housing research

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