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The meaning of dwelling features

Conceptual and methodological issues

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The meaning of dwelling features. Conceptual and methodological issues
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Contents

Preface

Around the turn of the century several researchers at the OTB Research Institute for Housing, Urban and Mobility Studies who were involved in research on housing preferences and housing choice, started to wonder whether it would be interesting to investigate people's motives for their housing preferences: not only find out *what* people want but also look at *why* they want it. This wondering resulted in a paper entitled *Housing and Values*, co-authored by Joris Hoekstra, which I presented at the ENHR conference in Gävle, Sweden in 2000. In this paper the means-end approach, which at that time was only known in marketing and advertising research, was introduced in housing research, and it turned out to be the prelude to several research activities. As a starting point for many of these activities, Peter Boelhouwer and I prepared a research proposal entitled *Housing Experience and Housing Choice Behavior*, which was subsequently subsidized by the Netherlands Organization for Scientific Research (NWO). This proposal aimed at the close cooperation of two researchers, who were to elaborate the research proposal further. They would then carry out the research plan and would realize two doctoral dissertations. Since I co-developed the proposal I was supposed to be one of these researchers. The NWO project envisaged two main phases in the research: the first phase consisted of the development of the conceptual and methodological framework, while the second phase emphasized more the justification of the framework. Because it took a while to find a co-researcher for the project, I set out on my own to develop the conceptual and methodological framework and performed several pilot studies which were to give some insight into the feasibility of the framework. When Janine Meesters started as the co-researcher on the project in the fall of 2004, she hooked up with the ongoing research. After having worked together for a while the outlines of the two dissertations became clearer: my study would focus on conceptual and methodological issues, while the dissertation of Janine, which in this book is called the companion study, would become a survey study of the meaning of activities in the dwelling and residential environment in which the framework would be fully applied. Since I did not want the results of my research to be hidden away in my computer for years I followed an established pattern for each of the chapters in this book. A draft version of each chapter was originally written as a conference paper for either an ENHR or an IAPS conference. Subsequently, each paper was revised, submitted, and, except Chapter 6, has eventually been published in an international scientific journal. Now that the book is finished I consider the research presented in it more as the rounding off of my dissertation project rather than as the end of the research project. Since part of the data still has to be analyzed, I intend to publish several follow-up articles in the near future.

Soon after I started the research on the dissertation project Peter Boelhouwer became my promotor. I want to thank him for his thoughtful advise during the whole project, and for the freedom he gave me in elaborating many facets

of the project. I also want to express my gratitude to Joris Hoekstra for taking up the challenge to write the *Housing and Values* paper with me and to subsequently revise the paper for publication in the *Journal of Housing and the Built Environment*. It goes without saying that this paper would become Chapter 2 in my dissertation. From the beginning the collaboration with Janine Meesters has been exemplary. Thank you for the many discussions we had, which often sharpened my own ideas, and for being such a pleasant and cheerful colleague. I also want to thank the theme group Housing Preferences of OTB for giving me the opportunity to discuss all the facets of my research project and for being a critical but constructive forum over the years.

Last but not least I want to express my gratitude and love to the home front. Beth, Rosa and Danny have given me their warm support by just letting me go my own way. They only started asking questions about when my dissertation would be finished when the end of it was already in sight.

1 Introduction

This study is about the meaning of dwelling features. It relates the research areas of housing preferences and the meaning of a dwelling with each other and with aspects of means-end theory as applied in marketing research, and it results in a conceptual and methodological framework for studying the meaning of dwelling features.

Housing preference and the meaning of a dwelling are two important research areas in both housing research and environment-behavior studies. Housing preference has been studied from different theoretical perspectives (Mulder, 1996) and with a variety of methodological approaches (Timmermans *et al.*, 1994). The relationships between housing preference and both macro-level factors, for example housing market and economic situation, and micro-level factors, such as age, income and household composition, have been studied extensively (Clark and Dieleman, 1996). However, relatively little attention has been paid to cognitive micro-level factors such as goals, functions and values, which tell us something about the meaning housing preferences have for people. With the exception of a few studies (De Jong and Fawcett, 1981; Lindberg *et al.*, 1987) the most researched cognitive factor is 'reasons for moving', which provides only one aspect of people's motives. This means that little is known about the relations between cognitive factors such as values, goals and functions on the one hand and housing preference on the other.

There is also a vast amount of research on the meaning of a dwelling, stemming from a great variety of research traditions, such as psychology, sociology, geography, phenomenology and environment-behavior studies (Després, 1991; Moore, 2000; Mallet, 2004; Blunt and Dowling, 2006). Meaning is viewed as a central topic in environment-behavior studies because meaning links the built environment and people. In people's relationships to dwellings, meaning provides much of the rationale for the ways in which these dwellings are shaped and used (Rapoport, 1988). Although they seem to play a major role in these relationships, in the research on the meaning of a dwelling the features of dwellings in general, and physical features in particular, play only a minor role (Rapoport, 1995; Moore, 2000). This means that there is also very little known about the relationships between the features of dwellings and the meaning these features have for the occupants.

The goal of this study is to develop a conceptual and methodological framework for studying the meaning of preferences for features of a dwelling. These features are viewed as functional for achieving the goals and values that people pursue. The meaning of the dwelling features lies in these functional relationships. The model presented in this study therefore relates preferences for the features of a dwelling to the meaning they have for people. These relationships are called meaning structures. The study also investigates several aspects of the conceptual framework empirically. Several of the chapters presented in this study have already been published as articles in scientific jour-

nals, while Chapter 6 has been submitted for publication. This introductory Chapter presents an overview of the study, and it sketches the relationships between the different chapters.

1.1 Housing preference

The subjects of housing choice and housing preference have been, and still are, attracting the interest of researchers from many different disciplines. Both research topics have been studied from different theoretical perspectives (Mulder, 1996; Clark and Dieleman, 1996; Boumeester, 2004). Economists have primarily focused on house prices and on the way housing costs determine the choice between renting and owning. Sociologists and geographers on the other hand have mainly concerned themselves with studying the housing choices made by individual households and with studying the housing distribution across the population. Their focus is on the socio-economic and demographic variables which are combined in the career-lifecycle of households. Studies about housing and tenure choice, in which career-lifecycle variables are incorporated, can be divided into two categories. First, there is a vast amount of cross-sectional studies which are essentially static in nature. An alternate and dynamic approach is called life course analysis. It incorporates the lifecycle idea and studies several processes (family composition, housing, jobs) simultaneously. Its focus is on events in each of the processes studied that trigger changes in one or all of the other processes. Besides, even when taking the same perspective, different researchers focus on divergent aspects of housing choice and housing preferences. Some researchers specialize in the preferences for houses, whereby houses are typically seen as bundles of attributes. Others look at the process of housing choice. Still others focus on the outcomes of the housing choice process.

Although the concepts of preference and choice are widely used in housing studies these terms do not always seem to be clearly distinguished from each other. In contrast with this practice preference, intention and choice are conceptually distinguished in this study (Ajzen and Fishbein, 1980; Ajzen, 1988). Preference refers to the relative attractiveness of an object, while intention refers to the relative strength of behavioral tendencies, and choice is concerned with actual behavior. Preference may guide intention and choice as it is an expression of evaluation about an object. The evaluation involved in preference is, however, assumed to take place whether one actually has a choice to make or not. Thus one has affective feelings about, for instance, landscapes one passes through and dwellings one sees, even though there is no choice to be made about them. Preference, intention and choice all involve expressions of evaluation. The most important difference between preference on the one hand and intention and choice on the other is that preference is

a relatively unconstrained expression of evaluation. In the case of a dwelling, for instance, intention and choice include factors such as the current market situation and the individual's financial possibilities as well as their preferences. By focussing on preference, one gets a clearer picture of the quality profile that people expect from their dwelling.

There is also a great variety in methodological approaches to the measurement of housing preference (Timmermans, *et al.*, 1994). Two important distinctions in this context are between:

1. Compositional and conjoint approaches to measuring housing preference
2. Stated and revealed preference

In compositional approaches housing preferences are measured by determining separately for each housing attribute how people evaluate this attribute, and sometimes by also measuring the relative importance of each attribute. Subsequently, these separate evaluations of each housing attribute are combined, according to some rule, into an overall evaluation of a dwelling. Jansen (2008) has recently presented a good example of this approach in a study in which she applied multi-attribute utility theory to preferences for housing features. Conjoint preferences, on the other hand, are based on the measurement of people's evaluations of housing profiles. Each profile consists of a bundle of housing attributes, for which the overall preference is measured in one go. Subsequently, a preference function may be estimated, by means of regression analysis or logistic regression analysis, which results in separate evaluations of each housing attribute that is part of the original profile. The measurement of housing preferences in this study fits within the compositional approach.

Revealed preferences are based on actual housing choices; people's housing preferences are inferred from their housing choices after they have actually been made. This means that the evaluations involved in choice are considered to be the same as the evaluations that are involved in preference. In contrast, stated preferences are expressions of evaluation when a choice still has to be made or does not have to be made at all. In this study the main concern is with stated preferences.

Stated housing preferences have been studied extensively; indeed, the literature on this subject is vast (Mulder, 1996). In explaining this type of housing preferences researchers have shown the influence of macro-level factors (housing market, housing system, economic situation) and of micro-level factors such as age, household composition, income and current housing situation (Clark and Dieleman, 1996). Despite the vast amount of research on housing preferences there seems to have been relatively little attention for underlying motivational micro-level factors such as goals, functions and values. Exceptions in this context are the studies by De Jong and Fawcett (1981) and by Lindberg *et al.* (1987).

De Jong and Fawcett's (1981) study on the motivations for migration reviews the basic literature and models of migration, both at the macro and the micro level. The purpose of their review is to identify motives for migration which can be used in a value-expectancy model of migration decision-making. In such a micro-level model the strength of a tendency to act in a certain way depends on the expectancy that the act will be followed by a given goal and the value of that goal to the individual. With respect to migration the model calls for a specification of the personally valued goals that might be met by moving and an assessment of the perceived linkage, in terms of expectancy, between migration behavior and the attainment of goals in alternative locations. In this approach migration is viewed as instrumental behavior. The basic components of the value-expectancy model are thus goals (values, objectives) and expectancies (subjective probabilities).

Although the formulation of the value-expectancy model seems relatively straightforward, its operationalization raises a number of problems. One of the most important of these problems is the specification of the relevant values or goals. De Jong and Fawcett tackle this problem by reviewing the relevant literature, which results in a very long list of potential values and goals. This list was subsequently reduced to seven conceptual categories that seem to represent psychologically meaningful clusters: wealth, status, comfort, stimulation, autonomy, affiliation and morality. They also present a set of potential indicators for each of the seven categories.

The value-expectancy model requires that for each value indicator a measure of importance and a corresponding expectancy are obtained. In the context of migration this expectancy refers to the belief or subjective probability that a certain migration behavior will lead to the valued outcome. By measuring, for each migration option, the importance and the expectancy of each value indicator a total score for each option can be computed, which in the value-expectancy model is specified as the sum of the importance-expectancy products. Although De Jong and Fawcett lay the basis for an empirical analysis of the value-expectancy model applied to migration, their exposition remains mainly theoretical. The importance of their study, though, is that they consider migration as instrumental behavior for achieving certain goals and values.

Lindberg *et al.* (1987) study the subjective beliefs and values that underlie people's evaluations of housing attributes. A basic assumption in their research is that the varying importance ascribed to different life values by an individual is reflected in his or her evaluations of circumstances which one believes facilitate or hinder the achievement of these values. That is, the more important a value is, the more the factors facilitating the achievement of that value are positively evaluated and the more the hindering factors are negatively evaluated. Their research supports the assumption that people have beliefs about how important values can be achieved, and that these beliefs

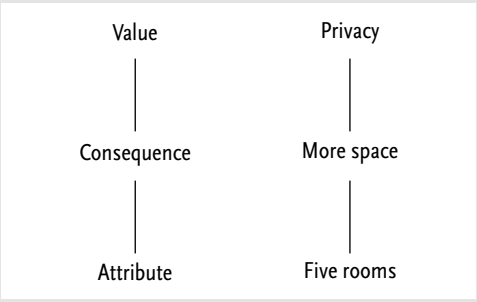
influence their evaluation of different means for value fulfillment.

It also showed that the respondents' evaluations of a large number of everyday activities could be reasonably well predicted from their beliefs about causal links between the performance of these activities and the achievement of different values. One implication for their conceptual model is the assumption that people believe everyday activities to be the primary means of achieving life values. Another is that the attractiveness of various housing attributes derives from their perceived ability to facilitate these activities. Thus, the relationships between housing attributes and values are considered to be mainly indirect with everyday activities as the intervening factors.

In addition to these relationships, they also assume some indirect relationships between housing attributes and everyday activities. Two additional sets of intervening factors are specified in their model: personal resources (creative, independent) and non-personal resources (money, family, friends). The relationships between each housing attribute and the everyday activities, along with the relationships between the everyday activities and the values, as well as all the other relationships in their model, are expressed in terms of value-expectancy models. These models seem to work well for people's evaluations of individual housing attributes, and strongly suggest the usefulness of housing attribute-related evaluations.

The studies by De Jong and Fawcett and by Lindberg *et al.* are exceptions, though, and there is still relatively little known about the influence of micro-level motivational factors such as values and goals on housing preference. Rokeach (1973) and Bettman (1979) have shown that goals and values play an important role in the behavior and preferences of people. People's preferences for certain objects are not neutral. People prefer certain objects because they believe these objects contribute to the achievement of their goals and values. In Chapters 2 and 3 of this study a first step is taken towards relating values and goals to housing preferences with a different approach. For this purpose a theoretical perspective called means-end theory, in which micro-level motivational factors such as goals and values are related to preferences, is used. Means-end theory (Gutman, 1982; Reynolds and Olson, 2001) explains the relationships between goods and consumers. A good is defined by a collection of attributes, which yield consequences when the good is used. The importance of the consequences depends on their ability to satisfy the values that motivate an individual. A means-end chain then, is a sequence of attributes, consequences, and values that provides a link between a good and a consumer. Because values determine the relative importance of the consequences and therefore the importance of the attributes, means-end chains can contribute to understanding consumer's preferences. A means-end chain, then, is a model that provides a way of relating the preference for a good to its contribution to the realization of values. These notions are, in this study, applied to preferences for housing attributes. An example of a means-end chain relat-

Figure 1.1 Example of means-end chain



ed to housing is presented in Figure 1.1: five rooms (attribute) – more space (consequence) – privacy (value).

Although means-end theory also focuses on values and attributes, it differs in several important respects from the approach taken by Lindberg *et al.* (*cf.* Lindberg *et al.*, 1989). Means-end theory explains the relationships between goods and consumers. A good is defined by a collection of attributes. These attributes yield consequences when the good is used. The importance of consequences is based on their ability to satisfy the personally-motivating values and goals of people. Thus, in means-end theory the relationships between the attributes and the values are also indirect, but the intervening category, called consequences, is much broader than in the conceptual model of Lindberg *et al.* It may encompass everyday activities but also consequences that are more functional or psychosocial in nature. Also, the means-end approach is much more direct in the sense that the meaning a good has for an individual is investigated from the point of view of the individual and the good. Which attributes, consequences and values turn out to be relevant is determined in the first place by the individual and not by the researcher.

Chapter 2 is a straightforward application of the classical means-end model and its measurement approach to housing and housing attributes. Since the means-end model stems from marketing and consumer research and had until then only be applied to consumer goods, the main purpose of the investigation reported in this chapter is to assess the feasibility of the means-end approach to the field of housing preference.

In Chapter 3 the standard means-end model is further elaborated which results in an extended means-end model. This model is subsequently applied to tenure preference using a different measurement approach than the one used in Chapter 2. The main goal of this chapter is to assess whether goals and values contribute to the explanation of tenure preference while controlling for well-known socio-demographic factors such as income and household composition. Since tenure preference is an extensively investigated housing feature much is known about its relevant socio-demographic variables, which makes it an interesting feature for assessing the influence of values and goals.

1.2 The meaning of a dwelling

The meaning of dwellings has been studied from many different perspectives, such as psychology, sociology, geography, phenomenology and environment-behavior studies (Després, 1991; Moore, 2000; Mallet, 2004; Blunt and Dowling,

2006). Most of this research into the meaning of a dwelling has taken a holistic view of a dwelling (Rapoport, 1995, Moore, 2000). However, the approach in this study deviates from this practice and focuses on features, separate settings, of dwellings.

There are several reasons for studying meaning from the perspective of dwelling features. First, there is the heterogeneity of the category of dwelling. There are many different types of dwellings that differ mainly in their features. Single family dwellings differ not only in many features from apartments but also among themselves, for instance some have a garden and others do not. Secondly, people perceive dwellings not only holistically but also in terms of their features, clearly demonstrated in research into the reasons for moving, where many people include dwelling features as a reason (Rossi, 1955). Thirdly, the holistic view of a dwelling and the feature view of it are just two different ways of considering the same object. Finally, a dwelling affords many potential uses and people are looking for multi-functional dwellings that can have many different meanings, which are, in the first place, afforded through the features of dwellings.

A dwelling is defined as a sub-system of settings, embedded in the larger system of settings called the environment, in which certain systems of activities take place. It forms the chief anchor in the environment for many individuals (Rapoport, 1990, 1995) and provides such primary functions as concealment and shelter. Defining a dwelling as a sub-system of the environment makes it possible to understand specific functions, such as a place of retreat, in the context of the other sub-systems in the environment. Only a subset of all human activities takes place in a dwelling. This subset of activities may be different for different individuals and the subsystem of settings that makes up the dwelling may also vary. An a priori assumption about what a dwelling is, therefore, cannot be made, although social, cultural and legal rules and traditions will generally limit the variations within a housing system.

In the literature on the meaning of dwellings the topic of investigation is often referred to as ‘home’ or ‘the meaning of home’. The term home will, however, be avoided as much as possible in this book since it is extremely vague and ambiguous, and unclear and inconsistently used (Rapoport, 1995). Instead, the term meaning of the dwelling is used. Although the term home seems to have originated to draw attention to the relations of people to certain settings, and to distinguish it from the physical aspects of these settings for which the term house was reserved, in the use of the term home in research exactly the opposite seems to be the case (Rapoport, 1995). First is the fact that the term home is often used as a synonym for house or dwelling. Second, the term home often refers both to an object or physical thing in the environment as well as people’s reactions to it, their links and relationships with it. Third, there is a frequent and prevalent circularity in the use of the terms home and meaning of home, with home being defined as ‘the

meaning of home'. Fourth, the term home often neglects the physical aspects, which seem to be an important component in people-environment relations. Fifth, the term home is also sometimes used for the process of homemaking (Blunt and Dowling, 2006). And sixth, the term home not only refers to house or dwelling, but also to hometown, home state, and homeland. Since these different connotations are sometimes used simultaneously, as for instance in the expression 'I want to go home' by a person currently being in a foreign country, it makes a clear cut analytical use of the term home almost impossible.

The relationship between the individual and the environment has been conceptualized most fundamentally in the theory of affordances, which emphasizes the reciprocity of the individual and the environment (Gibson, 1986). An individual's operating environment consists of objects, the things toward which the individual is oriented, which form the focal points around which the individual's activities become organized. An object is anything that can be referred to or designated; objects may be material or immaterial, real or imaginary, in the outer world or inside the body, have the character of an enduring substance or be a passing event. From the perspective of a human being the environment may be classified in at least five categories: other human beings, other animals, physical objects, social objects, and abstract objects. If the individual notes or is aware of any one of these things, it is an object for that individual. Objects constitute the world or operating environment of the human being. Taken together, they constitute the individual's world of existence, that is, the things the individual deals with in life activity.

Objects have value for human beings in terms of the possibilities they offer for actions and intentions; that is, an object may have certain features in relation to a goal of the individual. The concept of affordances (Gibson, 1986) most basically highlights this congruence between structural features of the environment and the intentions and goals of individuals. Affordances are relations between features of objects and abilities of human beings (Chemero, 2003); they are attributable to the intrinsic features that objects possess by virtue of their make-up, and are specified in relation to a particular individual. In this sense environmental features are experienced as having a functional meaning for the individual.

The relationships between goods and consumers, as presented in means-end theory, as well as the ideas about individual-environment relations put forward in the theory of affordances are closely related to Rapoport's conceptualization of the meaning of the built environment (Rapoport, 1988, 1990, 2005). According to Rapoport, meaning is one of the central mechanisms in linking environments and people by providing much of the rationale for the ways in which environments are shaped and used. He also argues that the common distinction between function and meaning is misguided, because function has mainly been identified with manifest aspects of the environment, while more latent aspects may also help us understand built

form, which implies that meaning is not only part of function, but is often the most important function of the built environment. Rapoport distinguishes three levels of meaning in the built environment. 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 and instrumental meanings, for example accessibility, seating arrangements, movement, etc. which are also called manifest functions. According to Rapoport, everyday meanings have mostly been neglected in research on the meaning of dwellings, although they are essential for understanding the built environment. People's activities and built environments are primarily linked by lower-level meanings, although middle-level meanings also tend to be important. This distinction in the level of meanings clearly shows Rapoport's concern with the purposes of the built environment and his emphasis on the active role of users.

Both Rapoport and Gibson consider meaning in a functional sense in which every object has a meaning that distinguishes it from other objects. This meaning constitutes the nature of the object for the individual for whom the object exists. One confronts an object, sees it, refers to it, talks about it, or reacts to it in terms of the meaning it has for one. No objects exist for a person except in terms of the meaning it has for the person. Meaning is not something that is inherent in an object; it is not an intrinsic part or attribute of the object. The meaning of an object exists in a relation between the object and the individual for whom it is an object; its meaning exists in how the individual designates the object, and in this sense an object may have different meaning for different human beings.

The ideas about the meaning of the built environment put forward by Gibson and Rapoport imply a generalization of the conceptualization of the relationships between the preferences for housing attributes and the goals and values that are presented in Chapters 2 and 3 of this study. This generalization is elaborated for dwelling features in Chapter 5. The goal of that chapter is to present a conceptual framework for studying the meaning of dwellings, and to describe both measurement and analysis aspects of this framework. The focus remains on preferences for features of a dwelling and the central idea remains that people's preferences for dwelling features are not neutral. People prefer certain features because they believe these features contribute to the achievement of their goals and values. So, based on the notion of affordances, the relationship between dwellers and dwelling features is the central topic of study.

This framework is subsequently tested in Chapter 6 with regard to intended tenure preference. The main goal of that chapter is to assess whether meaning, as conceptualized in Chapter 5, contributes to the explanation of tenure preference while controlling for the well-known socio-demographic factors. Since this chapter may be considered as 'Chapter 3 revisited', the anal-

yses performed here will also put us in a position to evaluate the surmise in Chapter 3 that the measurement of values and goals, as used in that chapter, may have been too general for a well-balanced evaluation of their role in the explanation of tenure preference.

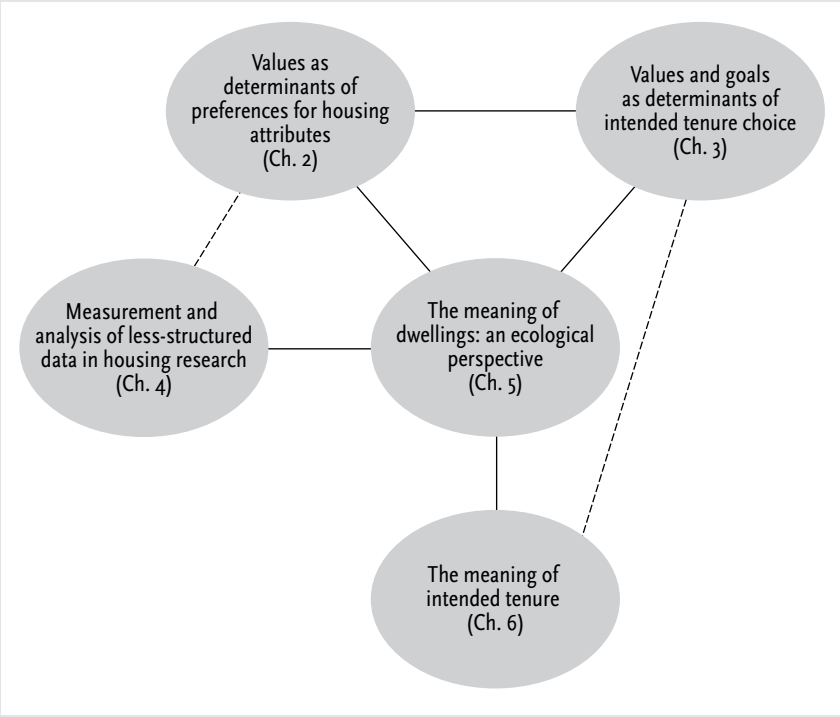
1.3 Research methodology

The data that are presented in this study come from both questionnaires and from less-structured interviews. Data from questionnaires are often labeled quantitative, while less-structured data are called qualitative. Moreover, the way less-structured data are analyzed in this study may be characterized as the analysis of qualitative data by means of quantitative methods. I have been questioned about this on several occasions, for instance at international research conferences where I have presented my research, where I have been asked whether it is possible to analyze qualitative data in a quantitative way and even if it is acceptable. Apparently, in housing research many researchers still draw a sharp dividing line between qualitative and quantitative research (for instance Kemeny, 1992; Winstanley *et al.*, 2002; Johansson, 2007). I have never understood this point of view and have always considered the difference between qualitative and quantitative as one of degree and not as one of kind.

The main reason for not understanding the sharp distinction between qualitative and quantitative research is the observation that categorization is among the most fundamental of cognitive processes without which the mental life, and maybe all life, of human beings would be chaotic (Malt, 1995). Categorization is the division of the environment, or aspects 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, and a category consists of the entities that are considered as equivalent with respect to a particular characteristic or configuration of characteristics. Categories are generally denoted by names, and our use of language is based on categorization. Both qualitative and quantitative data can only be analyzed when these types of data have been categorized. For quantitative data this categorization often takes place before the collection of the data, while the categorization of qualitative data is often performed after the collection of the data. Given the fact that both types of data have to be categorized the analysis can proceed along similar lines (*cf.* Miles and Huberman, 1994), and if this is not the case the differences are attributable to other aspects of the data than their being qualitative or quantitative.

Since I use both so-called qualitative and quantitative data in this study, which are analyzed in similar ways, I have elaborated my ideas about the qualitative-quantitative distinction in Chapter 4, which is a more methodologically-oriented chapter.

Figure 1.2 The plan of the book



1.4 Plan of the book

The goal of this study is to develop a conceptual and methodological framework for studying the meaning of preferences for features of a dwelling. These features are viewed as functional for achieving the goals and values that people pursue. The meaning of the dwelling features lies in these functional relationships. The framework presented in this study therefore relates preferences for the features of a dwelling to the meaning they have for people.

The relationships between the different chapters in this book are represented in Figure 1.2.

The goal of the study makes Chapter 5, in which the conceptual and methodological framework is outlined, the central part of this study. Chapters 2 and 3 contain certain aspects of the framework and have been instrumental in developing it. In Chapter 2 the conceptual and methodological feasibility of the means-end approach to the field of housing preference is investigated. And in Chapter 3, which still leans heavily on the means-end model, tenure preference is considered and an assessment is made of whether goals and values contribute to its explanation while controlling for well-known sociodemographic factors such as income and household composition. Chapter 5 presents the conceptual and methodological framework for studying the meaning of dwelling features. In this conceptual framework the field of housing preference is related to the study of the meaning of dwellings. Its concep-

tual pillars are means-end theory, Rapoport's conceptualization of the meaning of the built environment, and the theory of affordances.

The methodological part of the framework concerns not only measurement aspects but also facets of data analysis. Since so-called qualitative data are analyzed in similar ways as so-called quantitative data, which has been questioned on several occasions, I have elaborated my ideas about the qualitative-quantitative distinction in Chapter 4. Finally, in Chapter 6 we assess whether meanings as conceptualized in the framework developed in Chapter 5 contribute to the explanation of tenure preference while controlling for well-known socio-demographic factors.

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2 Values as determinants of preferences for housing attributes

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Abstract
Preferences for housing attributes have been studied from different theoretical perspectives and with a great variety of methodological approaches. In explaining housing preferences the influence of both macro-level and micro-level factors has been shown extensively. Relatively little attention has been given, though, to motivational micro-level factors such as goals and values. In this article micro-level motivational factors are studied as determinants of stated preferences for housing attributes. The relationships between such motivational factors as values and goals on the one hand and preferences for housing attributes on the other are considered from the perspective of means-end theory. A semi-structured interviewing technique called laddering is used for the measurement of means-end chains. Some of the results of a pilot project in which means-end theory was applied to preferences for housing attributes will be discussed in the sequel.

Key words: housing attributes, housing preferences, laddering, means-end chains, means-end theory, values

2.1 Introduction

The issues of housing choice and housing preferences have been and still are attracting the interest of researchers from many different disciplines. Both research topics have been studied from different theoretical perspectives (Mulder, 1996). Besides, even when taking the same perspective, different researchers focus on divergent aspects of housing choice and housing preferences. Some researchers specialize in the preferences for houses, whereby houses are typically seen as bundles of attributes. Others look at the process of housing choice. Still others focus on the outcomes of the housing choice process. There is also a great variety in methodological approaches to the measurement of housing preferences (Timmermans, Molin and Van Noortwijk, 1994). An important distinction in this context is made between stated and revealed preferences. Revealed preferences are based on actual housing choices. In contrast, stated preferences are based on intended choices or hypothetical choices. In this article the main concern is with stated preferences.

Stated housing preferences have been studied extensively; indeed, the lit-

erature on this subject is vast (Mulder, 1996). In explaining this type of housing preferences researchers have shown the influence of macro-level factors (housing market, housing system, economic situation) and of microlevel factors such as age, household composition, income and current housing situation (Clark and Dieleman, 1996). Despite the vast amount of research on housing preferences there seems to have been relatively little attention for underlying motivational micro-level factors such as goals, attitudes and values. With the exception of a few studies (De Jong and Fawcett, 1981; Lindberg *et al*., 1987) the most looked-at motivational factor at the micro level is 'reasons for moving'. This means that little is known about the influence of micro-level motivational factors such as values and goals on housing preferences.

In this article a first step is taken towards relating values and goals to housing preferences. For this purpose the article describes a theoretical perspective called means-end theory, in which micro-level motivational factors such as goals and values are related to preferences, and a measurement approach named laddering. These notions are then applied to preferences for housing attributes. To illustrate the means-end perspective, some results of a pilot project in which it has been applied are presented.

Section 2 discusses two other theoretical perspectives that relate motivational factors to migration and housing preferences as well as several approaches to measuring stated housing preferences. Means-end chain theory is introduced in Section 3, and the value concept is discussed in Section 4. The measurement and analysis of means-end chains is described in Section 5, which also contains some results of the pilot project. The article ends with a discussion of the methodological problems encountered in applying meansend chain theory to housing preferences and an overview of the follow-up research needed to substantiate our results.

2.2 Housing preferences and values: Theory and measurement

Objectives and values play an important part in the behaviour of people in general (Rokeach, 1973) and in their choice behaviour in particular (Bettman, 1979). The choice process is considered to be a dynamic process in which people identify a problem to be solved. They determine their objectives on the basis of their values, search for or design suitable solutions, evaluate these solutions and finally make a choice (Simon *et al*., 1987). People try to realize certain objectives and values in solving their problems. Choice behaviour is therefore value-oriented and goal-directed behaviour. This is also the case for the choice of a house. In this context it has to be mentioned that goal-directed behaviour is not necessarily rational behaviour in the classical micro-economic sense of utility maximization (Simon, 1955). Rational behaviour implies

an optimal choice; goal-directed behaviour results in a functional choice. Such a choice may be optimal, but it is not necessarily so, and frequently it will not be optimal (Beach, 1990).

The concept of value plays a central part in the approach that is presented in this article. In a few other studies values are considered to be important for understanding migration and housing preferences. The aspects of these studies that are relevant for the purpose of this article are summarized next.

2.2.1 Motivations for migration

De Jong and Fawcett's (1981) study on the motivations for migration reviews the basic literature and models of migration, both at the macro and the micro level. The purpose of their review is to identify motives for migration which can be used in a value-expectancy model of migration decision-making. In such a micro-level model the strength of a tendency to act in a certain way depends on the expectancy that the act will be followed by a given goal and the value of that goal to the individual. With respect to migration the model calls for a specification of the personally valued goals that might be met by moving and an assessment of the perceived linkage, in terms of expectancy, between migration behaviour and the attainment of goals in alternative locations. Note that this is a cognitive model in which migration is viewed as instrumental behaviour. The basic components of the value-expectancy model are thus goals (values, objectives) and expectancies (subjective probabilities).

Although the formulation of the value-expectancy model seems relatively straightforward, its operationalization raises a number of problems. One of the most important of these problems is the specification of the relevant values or goals. De Jong and Fawcett tackle this problem by reviewing the relevant literature, which results in a very long list of potential values and goals. This list was subsequently reduced to seven conceptual categories that seem to represent psychologically meaningful clusters: wealth, status, comfort, stimulation, autonomy, affiliation and morality. They also present a set of potential indicators for each of the seven categories.

The value-expectancy model requires that for each value indicator a measure of importance and a corresponding expectancy are obtained. In the context of migration this expectancy refers to the belief or subjective probability that a certain migration behaviour will lead to the valued outcome. By measuring for each migration option the importance and the expectancy of each value indicator a total score for each option can be computed, which in the value-expectancy model is specified as the sum of the importanceexpectancy products. Although De Jong and Fawcett lay the basis for an empirical analysis of the value-expectancy model applied to migration, their exposition remains mainly theoretical. The importance of their study, though, is that they consider migration as instrumental behaviour for achieving certain goals and values.

2.2.2 Beliefs and values underlying evaluations of housing atrributes

Lindberg *et al*. (1987) study the subjective beliefs and values that underlie people's evaluations of housing attributes. A basic assumption in their research is that the varying importance ascribed to different life values by an individual is reflected in his or her evaluations of circumstances which one believes facilitate or hinder the achievement of these values. That is, the more important a value is, the more positively evaluated are factors facilitating the achievement of that value and the more negatively evaluated are hindering factors. Their research supports the assumption that people have beliefs about how important values can be achieved, and that these beliefs influence their evaluation of different means for value fulfillment.

It also showed that the respondents' evaluations of a large number of everyday activities could be reasonably well predicted from their beliefs about causal links between the performance of these activities and the achievement of different values. One implication for their conceptual model is the assumption that people believe everyday activities to be the primary means to achieve life values. Another is that the attractiveness of various housing attributes derives from their perceived ability to facilitate these activities. Thus, the relationships between housing attributes and values are considered to be mainly indirect with everyday activities as the intervening factors.

In addition to these relationships, they also assume some indirect relationships between housing attributes and everyday activities. Two additional sets of intervening factors are specified in their model: personal resources (creative, independent) and non-personal resources (money, family, friends). The relationships between each housing attribute and the everyday activities, along with the relationships between the everyday activities and the values, as well as all the other relationships in their model, are expressed in terms of value-expectancy models. These models were operationalized by means of a questionnaire answered by a heterogeneous sample of Swedish adults. Some of the results of their analyses will be discussed in the sequel.

2.2.3 Measuring stated housing preferences

For the measurement of stated housing preferences three approaches seem to be especially popular: the compositional approach, conjoint preference models and decision plan nets. They are described concisely in this subsection and contrasted with the measurement approach called laddering which is used in the pilot project described in this paper.

In the compositional approach housing preferences are measured by letting people select the preferred level of each of a number of housing attributes and by having them indicate the relative importance of each attribute. Using

some algebraic rule, often the linear additive rule, this information is combined to arrive at an overall preference measure.

Conjoint preference models are based on the measurement of people's evaluations of housing profiles. Each profile consists of a combination of a limited number of housing attribute levels. Individuals are requested to express their overall preference for each profile by ranking or rating the profiles. Subsequently a preference function may be estimated using, for example, regression analysis.

The aim of decision plan nets is to disentangle people's intended housing choice behaviour. People are requested to identify the housing attributes that influence their housing preference. Then, for each of these attributes, they have to determine at which level of the attribute an alternative would no longer be acceptable (rejection-inducing attribute). The respondent may also indicate that he/she would still consider the alternative if it were to meet one's criteria on all the other relevant attributes (relative preference attribute). Finally, a person can indicate that not meeting his/her criterion on the attribute can be compensated by better scores on one or more other attributes (trade-off attribute). The resulting decision plan net can assist in the decision-making process since it identifies constraints, trade-off dimensions, etc. The interested reader who wants to learn more about the approaches sketched above is referred to Timmermans *et al.* (1994).

In the measurement approach used in this article, which is described more extensively in Section 5.1 and 5.2, people are requested to identify which housing attributes are important for them. For each of these attributes they also have to indicate the level of the attribute they prefer. Subsequently, a semi-structured interview is administered to determine the underlying reasons of the preference for a certain attribute level. These interviews may yield insights into the cognitions that are used to process housing attributes from a motivational perspective. Thus, the measurement approach used here not only measures which housing attributes people find important and which attribute levels they prefer, but it also determines why they find these attribute levels important. The latter aspect is completely lacking in the compositional approach, conjoint preference models and decision plan nets.

2.3 Means-end theory

Although the approach presented in this article also focuses on values and attributes, it differs in several important respects from the approach taken by Lindberg *et al.* Means-end theory explains the relationships between goods and consumers. A good is defined by a collection of attributes. These attributes yield consequences when the good is used. The importance of consequences is based on their ability to satisfy personally motivating values and

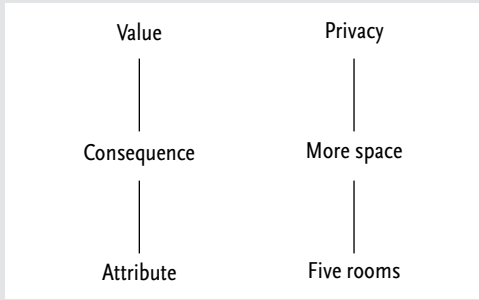
goals of people. Thus, in means-end theory the relationships between the attributes and the values are also indirect, but the intervening category called consequences is much broader than in the conceptual model of Lindberg *et al*. It may encompass everyday activities but also consequences that are more functional or psychosocial in nature. Also, the means-end approach is much more bottom-up in the sense that the meaning a good has for an individual is investigated from the point of view of the individual. Which attributes, consequences and values turn out to be relevant is determined in the First place by the respondents and not by the researcher.

A means-end chain is a model that provides a way for relating the choice of a good to its contribution to the realization of objectives and values. Means in this context are goods which people consume and activities that they carry out. Ends are positively evaluated (end)situations such as freedom, privacy and friendship. The most important linkages between values and objectives on the one hand and behaviour and preferences on the other form the elements of the means-end chain model. The original means-end chain model is based on four assumptions (Gutman, 1982).

The first assumption states that objectives and values influence choice processes. Secondly, it is assumed that people can keep track of the enormous diversity of goods by grouping them in sets or classes so as to reduce the complexities of choice. This means that consumers can not only classify goods in productfields (housing, cars, holidays, for example), but are also capable of creating functional classifications. An example of such a functional class is 'preserving my image', that might contain the objects 'detached house', 'Jaguar' and 'luxury cruise'. Third, it is assumed that the behaviour of consumers has consequences, although these consequences do not have to be the same for everybody. Finally, there is the assumption that consumers learn to associate particular consequences with particular behaviours.

In the original model the term consequences is used where we have also spoken about goals or objectives. The terms consequences, goals and objectives will be used interchangeably in this article. Under the concept of consequence we understand every direct or indirect result of a person's behaviour. Consequences can be desirable or undesirable. Desirable consequences are also known as benefits. The central idea in means-end theory is that consumers choose the actions which produce the desired consequences and which minimize the undesirable consequences. Values provide consequences with a positive or negative valence. Therefore the linkage between values and consequences is of essential importance in the means-end chain model. A certain good must be consumed to realize a desirable consequence. But in order to do that a choice must be made from alternative goods. To be able to make this choice, the consumer must learn which goods possess the attributes that produce the desirable consequences. Thus, the second essential linkage in the model is the one between consequences and the attributes of goods.

Figure 2.1 Original means-end chain model



The original and simplest means-end chain model has three levels: product attributes – consequences – values. A simple example of a means-end chain model related to housing would be: five rooms (attribute) – more space (consequence) – privacy (value) (see Figure 2.1).

Although means-end chains with more than three levels have been described in the literature (Walker *et al.*, 1987), we restrict ourselves to Gutman's original model (1982).

In the context of means-end theory the categorization process is considered to be the manner in which consumers organize their thinking about specific goods. It is assumed that consumers create classes of goods that are instrumental in bringing about certain consequences and that contribute in their turn to the achievement of valued end situations. The categorization process forms the way in which people segment their complex environment into meaningful classes (through the creation of equivalencies between nonidentical stimuli) (Rosch, 1978). Through categorization people divide their environment into smaller units that they can deal with more easily. This categorization process is necessary, because the environment comprises many more objects than people have values. For consumers it is essential to reduce the complexity in the multiplicity of goods that the market offers. In that way they avoid information overload and further processing becomes possible. If the achievement of values is sought, classes of products must be systematically related to higher objectives, because otherwise there can be no question of instrumentality. Although the division into classes is based on the attributes of goods, the choice of the attributes that are important for a consumer is determined by his or her values. Goods are thus divided into various classes on the basis of both the attributes that are emphasized and the attributes that are ignored. The manner in which consumers identify or describe goods therefore fits with their classification of these goods in functional classes. Abstract values that come high in the hierarchy have to be translated through less abstract objectives to consequences and attributes, thus providing the basis for the creation of classes of goods. This categorization process takes place at every level of the means-end chain. Consumers therefore create categories and classifications of goods so that they contribute as much as possible to the realization of desired consequences and the attainment of values.

The conceptual model of means-end theory can be summarized in the following four propositions (Pieters *et al.*, 1991): 1. The subjective knowledge about consumers' goods and services is organized in associative networks; 2. The concepts in these networks that are relevant for consumer decision-making are attributes of products, consequences of product use, and consumers'

values; 3. Attributes, consequences and values are ordered hierarchically; 4. The structure of consumers' knowledge about goods and services influences relevant consumer behaviour. Since the value concept occurs as one of the central concepts in means-end theory, it is discussed more elaborately in the next section.

2.4 Values

Following Schwartz (1994) values are defined as "desirable transsituational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity." Values are thus conceived as objectives which, consciously or unconsciously, function as criteria in all our actions. They have cognitive, affective and behavioural aspects (Rokeach, 1973). In this notion of values as objectives we can recognize the following aspects: (1) values function as interests for individuals or groups; (2) values motivate behaviour and give it direction and intensity; (3) values function as criteria for the evaluation and justification of behaviour; (4) values are acquired through the socialization of dominant group norms and through unique individual experiences (Schwartz, 1994).

In order to be able to live and function in a social environment, individuals and groups transform the needs that are inherent to human existence into specific values. The central role of values in the human cognitive system stems from three types of human needs: from the needs of the individual as a biological system; from the demands set by coordinated social interaction; from the demands which stem from the functioning and survival of groups (Schwartz, 1992). From these fundamental human needs, Schwartz (1992, 1994) derives ten universal, motivational value domains. These domains, with some values belonging to each in brackets, are:

1. Power (social power, wealth);
2. Achievement (successful, ambitious);
3. Hedonism (pleasure, enjoying life);
4. Stimulation (daring, exciting life);
5. Self-direction (independent, curious);
6. Universalism (social justice, unity with nature);
7. Benevolence (helpful, true friendship);
8. Tradition (humble, devout);
9. Conformity (politeness, self-discipline);
10. Security (family security, clean).

Every individual strives for values belonging to each of these domains. According to Rokeach (1973) the values will not be of the same importance for every individual. In other words, individuals organize and structure their val-

ues so that they are in a position to choose from alternative objectives and actions and are able to resolve potential conflicts. Such a configuration of values is called a value system (Rokeach, 1973). Value systems are relatively stable in the sense that over a longer period of time they will on average comprise the same values. Changes in value systems do not occur so much in the values which make them up as in the relative importance ascribed to every value within the system (Rokeach, 1973).

Empirical data analysis (Schwartz, 1992, 1994) by means of smallest space analysis reveals that in terms of both content and structure the ten value domains are universal. The distinction between instrumental values and terminal values introduced by Rokeach (1973) is apparently not reproducible (Schwartz, 1992, 1994; Heath and Fogel, 1978). Although other typologies of value domains have been proposed, for instance by De Jong and Fawcett (1981), we take Schwartz's as the starting point for our analysis, because his typology of value domains seems to be the one with the most empirical support (Schwartz, 1992).

It is generally acknowledged (Rokeach, 1973; Williams, 1979; Schwartz, 1996) that values can influence behaviour in various ways. For example, values contribute to our ability to take a standpoint with respect to political and social questions. They may be used in the assessment of ourselves and others. Furthermore, values play a central part in comparison processes, and they may form criteria for the evaluation of the opinions, attitudes and actions of ourselves and others. In a choice situation, various values will be activated in a person's value system. However, it is unlikely that people will be able to act in agreement with all of the activated values simultaneously. In this context a value system is a learnt and organized entity of principles and rules that helps people in their choice between alternatives, to resolve conflicts and to take decisions. A value system is thus a cognitive system of which only a relevant part becomes activated. People's choice behaviour is determined by a combination of both the values activated by the choice object and the values activated by the choice situation. Both sets of values form (possibly overlapping) subsets of the total value system.

2.5 Measuring and analysing means-end chains: Preferences for housing attributes

In the remainder of this article means-end theory is applied to preferences for housing attributes. The measurement and analysis of the various elements of a means-end chain and the linkages between them takes place in seven phases:

1. elicitation of the attributes;
2. selection of the attributes;
3. elicitation of the attribute levels;

4. performing laddering interviews;
5. determination and coding of means-end chains;
6. aggregation: construction of a hierarchical value map;
7. analysis and interpretation of the hierarchical value map.

These phases are discussed below. The data used to illustrate several aspects of the measurement and analysis process come from a pilot project. The purpose of this pilot was to investigate the feasibility of the meansend approach for research on housing preferences. For the pilot project ten respondents, who were considered knowledgeable with respect to housing, were interviewed. All interviews took place in the home of the respondent.

2.5.1 Elicitation and selection of attributes and attribute levels

The first phase in measuring means-end chains concerns the elicitation of relevant attributes for the laddering interview. Usually the Repertory or Kelly Grid is used for this. In this procedure the respondents are presented with a limited number of triads with constantly differing products/brands from a particular productfield. For every triad they must indicate in what way two of the three named products are similar to each other and consequently differ with the third product. This method is often used when the relevant attributes are unknown. In addition, the method can be readily implemented if one is dealing with a relatively homogeneous productfield and/or if a productfield consists of readily recognizable brands. However, this does not apply to the productfield housing. A house is an extremely heterogeneous product and brands are hardly known. Moreover, much is known about relevant housing attributes. That is why we decided to compile a list with 45 housing attributes ourselves.

The second phase comprises the selection of attributes. The respondents were assigned the task of selecting from the list of 45 attributes those that were most important for them. In addition, they had the possibility to mention attributes they considered important that were not on the list. No limit was set to the number of attributes that could be chosen. If a respondent chose more than eight attributes, he/she was then assigned the task of selecting the eight most important ones. This was done because otherwise the laddering interviews would have taken too much time.

In the third phase, the respondents were asked which level of each of the selected attributes they preferred. If for example the number of rooms was a selected attribute, then the respondent was asked how many rooms he/she would like. The preferred level, which serves as the starting point for a laddering interview, was determined for every mentioned attribute.

2.5.2 Laddering interviews

The key phase in measuring and analysing means-end chains is the fourth. In this phase the actual means-end chains are determined. For this purpose, a semi-structured interviewing technique known as laddering is used. It involves a tailored interviewing format using primarily a series of directed probes, typified by the 'Why is that important to you?' question, with the express goal of determining the links between the essential elements of a means-end chain: attributes – consequences – values. A respondent who states that he/she wants a house with six rooms would then be asked: 'Why do you find it important that the house you want should have six rooms?'. The why question is repeated as a reaction to the answer of the respondent.

The process stops when the respondent can no longer give any more answers to these why questions. Letting the interview begin at the concrete level of the attributes and then continuously asking why allows the underlying consequences and values of a certain choice to be brought into the open. In this way a means-end chain can be determined for each respondent and each attribute level; such a chain is called a ladder. A ladder shows the underlying reasons of the preference for a certain attribute level. This yields insights into the classifications employed at higher levels of abstraction and may reveal how the properties of goods are processed from a motivational perspective.

Since the respondents are asked to be introspective and to talk about their motivations, a non-threatening interview environment must be created. This can be facilitated by pointing out to a respondent during the introduction to the interview that in the context of this type of research there is no such thing as a correct or incorrect answer. It is primarily the respondent's opinion that is important. Thus, the respondent is positioned as an expert and the interviewer fulfils the role of a facilitator, who has to keep the respondent talking. Further, it is of great importance that the interviewer is able to identify the relevant elements of the respondent's answers. This means that the interviewer needs to be fully acquainted with the means-end chain model and the content matter to which the interview refers.

The ten laddering interviews we performed were recorded on tape and subsequently transcribed. The researchers made most of the transcriptions themselves. Whenever someone else made a transcription, one of the researchers checked it thoroughly. During our interviews respondents quite frequently gave so-called forked answers (Grunert and Grunert, 1995). This means that several consequences are linked to only one attribute. According to Grunert and Grunert (1995) this occurs most often with respondents who have thought thoroughly about a certain preference or decision and consequently have an extensive meaning structure in the area concerned. This is almost certainly the case for our knowledgeable respondents. But the high incidence

of 'forked answers' in our pilot project might also be specifically related to the productfield of housing. After all, a house is a good in which the consumer is in general seriously involved, which makes preferences and decisions in this area mostly well thought through. If respondents gave a forked answer, efforts were made to determine a separate ladder for every named consequence.

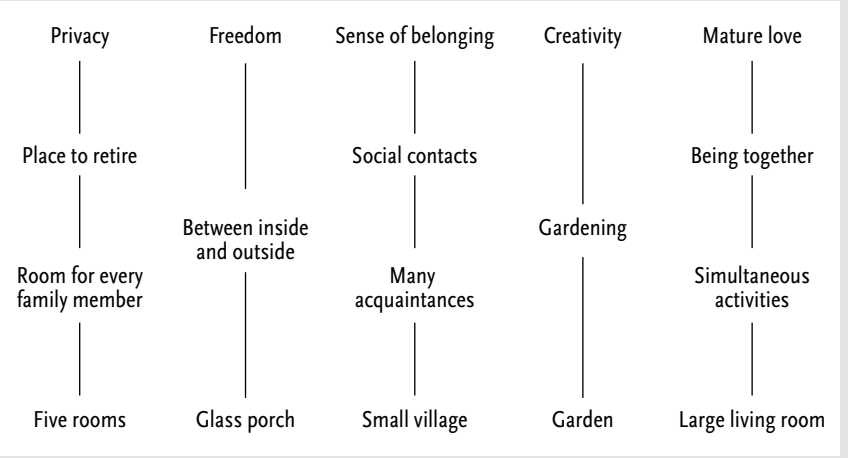
2.5.3 Constructing means-end chains: from interviews to ladders

In the fifth phase, the means-end chains are determined on the basis of the interviews. The raw data generated by the laddering interviews are the (transcribed) verbalizations of the respondents. First, a content analysis was carried out on these free responses. This resulted in a set of ladders for each respondent. Subsequently, the elements of these means-end chains were coded, dividing them according to topic and level in the hierarchy (attribute, consequence, value). In this process, several choices about the interpretation of the various elements of the ladders had to be made. To reach as much intersubjectivity as possible, several researchers were involved in the construction of the ladders from the interviews and the subsequent coding of these ladders. Four researchers constructed and coded the ladders of the first four interviews. After that, the ladders each researcher had constructed and coded were compared with each other in two sessions in which all four researchers participated. Possible differences were discussed until agreement was reached. Further, this consultation process resulted in a coding scheme for the remaining six interviews. For these interviews ladders were first constructed and coded by two researchers separately. Subsequently, the results were compared with each other and differences were resolved. For the coding of the values that appeared in the laddering interviews, the value domains and values of Schwartz (1992, 1994) were used as a frame of reference.

Some examples of ladders that were derived from the interviews are shown in Figure 2.2. In this figure, all the means-end chains start at the level of attributes and end at the level of values. However, this does not necessarily have to be the case (see also Figure 2.3). Sometimes the value level is not reached and the chain stops at the level of consequences. There may be two reasons for this. Firstly, it is possible that the interviewees got stuck at the level of consequences. Secondly, the interviewers may not have pursued the questioning deeply enough, which, considering their unfamiliarity with the laddering method, is not inconceivable.

The most remarkable thing about the ladders in Figure 2.2, though, is the fact that the consequences that are mentioned differ tremendously. Some are functional (a room for every family member), while others are more psychosocial (place to retire) in nature. Several consequences are rather concrete (gardening, room for every famliy member) and others more abstract (social con-

Figure 2.2 Examples of means-end chains of housing attributes



Source: OTB pilot project Means-end Chains

tacts). We also note that some of the consequences concern everyday activities (gardening), while many others (between inside and outside, a room for every family member) don't. This result of our study sheds a different light upon the conceptual model presented by Lindberg *et al*. (1987). In their model, they assume that the relationships between housing attributes and values are indirect, with everyday activities as the most important intervening factor. In means-end theory the relationships between housing attributes and values are also considered to be mainly indirect. The intervening category of consequences, though, is much broader than everyday activities. We believe our study has made it very probable that preferences for housing attributes are motivated not only by everyday activities but also by a broader spectrum of consequences that differ tremendously in nature and that comprise the category of everyday activities.

2.5.4 Coding and aggregation: Construction of a hierarchical value map

In the sixth phase, the ladders of the individual respondents are aggregated by means of a so-called implication matrix. An implication matrix is a square matrix that represents the relationships between the elements from the ladders. The rows and the columns of the matrix are formed by the elements from the ladders arranged into attributes, consequences, and values. The cells of the implication matrix show the number of direct and (any possible) indirect links between the elements of the ladders. The dominant connections can be represented graphically in a tree diagram known as a hierarchical value map. To construct such a tree diagram Reynolds and Gutman (1988) describe a paper-and-pencil method, which we also applied.

In the literature, examples of implication matrices and hierarchical value maps are not abundant. One of the few examples we know can be found in Reynolds and Gutman (1988), where means-end theory is applied to the pro-

ductfield wine-coolers. Their analysis resulted in a 23×23 implication matrix and a well-organized hierarchical value map. A preliminary analysis of the results of our ten interviews, however, revealed more then 50 attributes and/or attribute levels and approximately 150 different consequences.

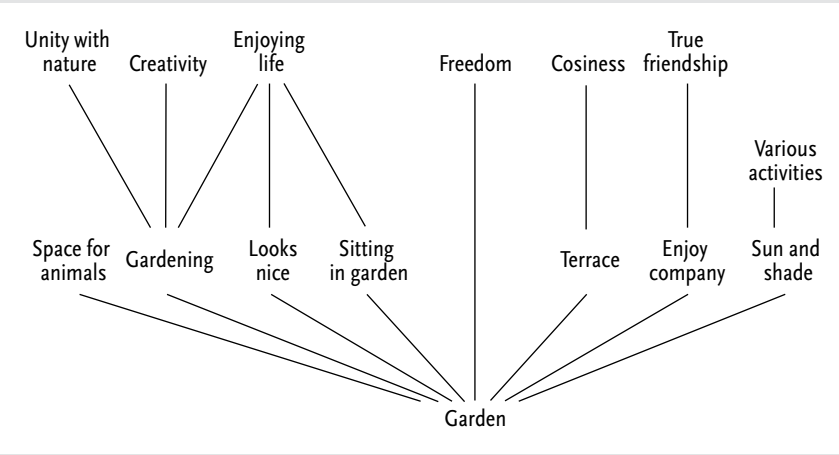
The variation in attributes, consequences and values depends on the level of detail at which the coding process is stopped. If this process ends at a relatively detailed level (as was the case in our pilot project), the loss of information will be limited and the resulting number of categories will be large. As a consequence of this, the implication matrix will be large, the cell frequencies will be relatively low, and the construction of a hierarchical value map by means of a paper-and-pencil method will be complicated, if not impossible. In such a case, it remains doubtful whether computer-aided means could ease the burden, because the resulting tree diagrams are likely to be very complex and thus difficult to interpret.

Of course, it would have been possible to reduce the size of the implication matrix by using broader coding categories. For our pilot project we did not find this an appropriate option. The variation in attributes and consequences was so big that a less detailed coding would have resulted in an in our view unacceptable loss of information and a very general, and therefore possibly less meaningful, hierarchical value map. That is why we chose another solution; we decided to construct implication matrices and tree diagrams for separate attributes (on the condition that the attributes concerned were mentioned several times during the interviews). This implied, however, that some of the data we collected in the laddering interviews (the ladders based on attributes that were only mentioned by one or two respondents) could not be used for this type of analysis.

Figure 2.3 shows the hierarchical value map of the attribute garden, which is based on a 34×34 implication matrix. We chose this attribute because almost all the interviewees (9 of the 10 respondents) mentioned it. The hierarchical value map clearly illustrates the great variation in consequences and values we encountered in our pilot project. The attribute 'garden' is linked with one other attribute (terrace), seven consequences (space for animals, gardening, looks nice, sitting in garden, enjoy company, sun and shade and various activities) and six values (unity with nature, creativity, enjoying life, freedom, cosiness and true friendship). This implies that there are not necessarily one-to-one relations between the different elements of the hierarchical value map. As we see in Figure 2.3, different consequences may contribute to the accomplishment of one and the same value, and one consequence may also contribute to the realization of different values. This is as one might have expected on the basis of Rokeach's (1973) ideas about values and value systems which have been summarized in Section 4.

The seventh phase of measuring and analysing means-end chains concerns the analysis and interpretation of the hierarchical value map. In analyz-

Figure 2.3 Hierarchical value map of the attribute 'garden'



Source: OTB pilot project Means-end Chains

ing several of the individual ladders the most remarkable thing that attracted our attention was the tremendous variation in the type of consequences that appeared in the ladders. After aggregating the individual ladders for the attribute garden this phenomenon does not disappear. The consequences that appear in the hierarchical value map in Figure 2.3 concern everyday activities (gardening, sitting in the garden), functional consequences (space for animals, sun and shade), psychosocial consequences (looks nice, enjoy company) and even another attribute (terrace). This seems to support several aspects of means-end theory and our earlier conclusion, based on the analysis of the individual ladders, that factors that intervene in the relationships between housing attributes and values comprise more than only everyday activities.

We also see in Figure 2.3 that the attribute 'garden' is related, mainly indirectly, to a variety of values. These values are indicators of different value domains. In terms of Schwartz's (1992, 1994) conceptualization the attribute 'garden' is related to the value domains Universalism (unity with nature), Self-direction (creativity, freedom), Hedonism (enjoying life, cosiness) and Benevolence (true friendship). From a motivational point of view this means that both inner-directed (hedonism, self-direction) and outer-directed drives (universalism, benevolence) seem to motivate the preference for a garden.

An interesting aspect of Figure 2.3 is the direct relationship between the attribute 'garden' and the value 'freedom'. Apparently the association between having a garden and feeling free is so strong for our respondents that this emerges immediately from the hierarchical value map. This result seems to be in contrast with the findings of Lindberg *et al.* (1987). They did not find a direct relationship between the housing attribute 'outdoor space' and any of the values they specified (one of which was the value 'freedom'). In their study the attribute 'outdoor space' was only directly related to the everyday activities of gardening and family, of which only gardening appears in our hierarchical value map. But the everyday activity of gardening was not related to any of the values they specified.

2.6 Discussion

In this article means-end theory was applied to preferences for housing attributes. This approach to housing preferences was illustrated with data from a pilot project. The main purpose of this pilot project was to assess the feasibility of the means-end approach for research on housing preferences. That is why only ten respondents were interviewed. In a regular research project in which means-end theory is applied, the number of respondents is at most 50 to 60. The reason for this is that the approach is mainly exploratory in nature. The emphasis is on discovering relationships and hypotheses and not on testing them. When the interviews do not produce any new information one stops the interviewing because the exploration process is saturated. Thus, it is not the number of interviews but the nature of the information that is gathered that determines when to stop the interviewing. As a consequence of this, the results of a means-end chain analysis, and thus the empirical results derived from our pilot, are somewhat speculative in nature and should be treated with care since little can be said about their robustness.

Nevertheless we believe that the pilot project has demonstrated the likelihood that preferences for housing attributes are motivated by a broad spectrum of consequences that differ tremendously in nature. This spectrum comprises the category of everyday activities, which Lindberg *et al*. (1987) assumed to be the main intervening factor between values and preferences for housing attributes. It seems, though, that it also comprises other factors such as functional and psychosocial ones. In the remainder of this section the focus will be on the methodological problems encountered during the pilot project and on the follow-up research needed to substantiate our preliminary results.

2.6.1 Methodological problems

Many of the problems we faced during our pilot project were related to the broadness of the productfield of housing. The list of attributes we compiled for the interviews not only consisted of attributes of houses, but also included aspects such as neighbourhood and location. These aspects are definitely related to a house, but they certainly are as complex as the good 'house' and as such merit a means-end analysis in their own right. Also, consumers turned out to be very heterogeneous in their preferences and motivations. More then 50 different attributes or attribute levels were mentioned by no more than ten interviewees (with more respondents the diversity would probably have been even greater). This meant that the construction of a hierarchical value map according to Reynolds and Gutman's (1988) paper-and-pencil method was an impossible task. As an alternative, hierarchical value maps were constructed for only those attributes that were mentioned by a significant number of respondents. Unfortunately, this implied that a part of the data was not used in

this phase of the analysis.

We can therefore conclude that the application of the laddering method to housing is a far from simple matter. The most important reason for this seems to be the heterogeneity and complexity of the good 'housing'. However, if one takes these aspects more into consideration than we did in the pilot, the method might be useful. For instance, it seems possible to apply the method successfully to a particular aspect of housing, such as garden or type of architecture. It could also be applied, for example, to evaluate a restricted number of clearly defined housing types designed for the development of a new construction project.

A specific characteristic of the laddering method as it is usually applied, is that the interviewing begins at the level of the product attributes. The question arises whether it would not be better to start at the level at which respondents conceptualize their preferences. Walker *et al.* (1987) have shown that people differ in this respect. Some respondents express their desire for a larger house, for example, by naming an attribute (six rooms), while others say 'everyone with their own room' or 'more space' (consequences). In the traditional way in which laddering interviews are performed this aspect is left out of consideration: every interview begins at the level of the attributes. As a possible alternative for this, one could begin a laddering interview by asking the respondents what they find important about a particular aspect of housing, or why they want to move. If they name attributes, the traditional way of laddering can be followed. If they on the other hand name consequences, the manner of interviewing ought to be adapted (Pieters *et al.*, 1995). Then the laddering interview should not take place from the bottom up but from the middle out; attempts must be made to determine both values ('why' questions) and product attributes (How do you think you could achieve that?), given the consequences cited.

Another aspect that is closely related to the interviewing format is the fact that the activities of interviewing, transcribing the taped interviews and analysing the protocols are very time-consuming. One way to reduce the amount of time that is spent with these activities is to let the respondent, supported by the interviewer, construct the means-end chains him-/herself during the laddering interview. By doing this the face-to-face aspect of the interview is maintained, which is important since it is not an easy task to construct the ladders, while the time needed for analysing the tapes and protocols can be reduced tremendously.

In Section 4 it was asserted that every behaviour or activity is determined by the cognitive interaction of values which are activated by the object of behaviour and values which are activated by the behavioural situation. In the pilot project we have concentrated on the object of behaviour, namely housing, and excluded the behavioural situation. Nonetheless, it is wellknown (Clark and Dieleman, 1996) that situational factors, both at the macro and the

micro level, have a great impact on housing preferences. Although this aspect is less relevant for exploratory research than it is for a confirmatory analysis, it may have some advantages to bring these situational factors into the analysis, when applying the laddering method in the field of housing. One advantage could be the fact that by doing so the research population becomes more homogeneous. That may lead to less variation in the attributes and consequences, which in turn may possibly result in more compact hierarchical value maps.

2.6.2 Follow-up research

The purpose of the pilot project described in this paper was to assess the feasibility of the means-end approach for research on housing preferences. Although it has become clear that problems arise when the approach and especially the laddering method is applied in an unmodified way, we do believe it is a promising avenue for further research. In the coming years, we intend to analyse the impact of values and objectives on housing preferences in several research projects.

The first project that can be mentioned is a direct follow-up of the pilot project on which this article is based. This project has recently been subsidized by the Netherlands Organization for Scientific Research (NWO) and is entitled 'Housing experience and housing choice behaviour'. For various clearly defined groups of consumers means-end chains will be determined for several aspects of housing by way of a modified version of the laddering interviewing format. For the validation of the laddering interviews, the results of these interviews will be systematically compared with the results of a values questionnaire which will be sent to the interviewees about one week after the laddering interview.

A second direction for research is being established along the lines of the work of Lindberg *et al.* (1987, 1989) and of Ajzen (1988). In this project the decision-making process plays a more central role; not only do housing preferences and values play a part in this process but, as we have seen, so do various situational factors and consumers' perceptions of these factors. The research questions will be partly based on the results of the laddering interviews. The research approach will be more top down, focusing on testing relationships and hypotheses.

In addition to the more fundamental research mentioned above, we also see possibilities for the use of means-end theory in applied research on housing preferences. In segmentation research, more or less homogeneous groups of consumers are sought, which could possibly form target groups for various marketing activities. The consumers, usually with heterogeneous housing preferences, are divided up into a number of subgroups that are as homogeneous as possible with respect to these housing preferences. Mostly this seg-

mentation takes place on the basis of demographic and geographic characteristics, though sometimes also on the basis of lifestyle. Application of means-end theory could facilitate the assessment of the influence of values, consequences and attributes on these segmentations, while the values could also be related to the distinctions consumers make at the levels of consequences and product attributes. A second application can be found in town planning and architectural (re)design of housing construction projects. The linkages between the various levels of a means-end chain connect product attributes with consequences and values that are important for the consumer. By taking into account the product attributes that produce the desired consequences for the consumer, new products can be better specified. As a third possible application area for means-end theory, we would suggest marketing communication. If the essential distinctions consumers make at every level of a means-end chain are known, promotional activities in relation to the value orientations of various groups of consumers can be developed more directly.

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3 Values and goals as determinants of intended tenure choice

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Abstract
Housing choice and tenure choice have been studied from many different theoretical perspectives and with a great variety of methodological approaches. In explaining housing choice, researchers have shown the influence of both macrolevel (housing market, economic situation) and microlevel (age, income) factors. Relatively little attention has been given to motivational microlevel factors such as goals and values. In this article, the focus is on values and goals as determinants of housing choice. The relationships between these motivational factors, other microlevel factors, and housing choice are specified in an extended means-end model which is based on means-end theory. The empirical validity of this extended model has been partly assessed by using it to predict intended tenure choice. In the article, previous research on the motivations for housing choice is discussed and the extended meansend model is described. The empirical results of applying the model to intended tenure choice are presented and discussed, while the assessment of the reliability of the value scales is also described.

Key words: extended means-end model, housing choice, intended tenure choice, means-end theory, regression analysis with optimal scaling, values

3.1 Introduction

Housing choice and especially tenure choice have been and still are attracting the interest of researchers from many different disciplines. Both research topics have as a consequence been studied from different theoretical perspectives (Clark and Dieleman, 1996; Boumeester, 2002). Economists have primarily focused on house prices and on the way housing costs are determining the choice between renting and owning. Sociologists and geographers on the other hand have mainly concerned themselves with studying housing choices made by individual households and with studying the housing distribution across the population. Their focus is on socio-economic and demographic variables which are combined in the career-lifecycle of households.

Studies about housing and tenure choice in which career-lifecycle variables are incorporated can be divided into two categories. First, there is a vast amount of cross-sectional studies which are essentially static in nature. An

alternate and dynamic approach is called life course analysis. It incorporates the lifecycle idea but studies several processes (family composition, housing, jobs) simultaneously. Its focus is on events in each of the processes studied that trigger changes in one or all of the other processes.

There is also a great variety of methodological approaches to the measurement of housing choice (Timmermans *et al*., 1994). An important distinction here is the one between stated and revealed choice. The stated approach to housing choice focuses on intended or hypothetical choices. Stated housing choice has been studied extensively and there is a vast amount of literature on this subject (Mulder, 1996). In explaining this type of housing choice researchers have shown the influence of macrolevel factors (housing market, housing system, economic situation) and of microlevel factors such as age, household composition, income, and current housing situation (Clark and Dieleman, 1996). In the revealed approach the analysis of housing choice is based on the actual housing choices, whereby more or less the same explanatory variables are used as in the stated preferences approach. What both methods have however in common is little or no attention for the influence of microlevel motivational factors on housing choices. To fill up this lacuna, this article gives attention to several motivational microlevel factors such as goals, values, and attitudes in explaining housing choices in general and tenure choices in particular. The contribution elaborates on a recently published article about values as determinants of preferences for housing attributes (Coolen and Hoekstra, 2001). The relationships between such motivational factors as values and goals on the one hand and preferences for housing attributes on the other are considered by these authors from the perspective of means-end theory. They used a semi-structured interviewing technique called laddering for the measurement of means-end chains. Coolen and Hoekstra assess the feasibility of the means-end approach for research on housing research. In this article we use an extended means-end model in which microlevel motivational factors such as values and goals are related to stated housing choice. More precisely we focus on the intended tenure choice. The research on tenure choice is well documented (see for instance Elsinga, 1995; Clark and Dieleman, 1996). It is well known that some strong relations exist between tenure choice and the socio-economic characteristics of households. On the basis of regression analysis with optimal scaling we elucidate the role that values play in the choice between renting and owning, when other important variables like income, age, current tenure and Household composition are held constant.

Before we present the results of this analysis (in Section 3.6), we discuss (in Section 3.2) some previous research that relates motivational factors to migration and housing choice. Means-end theory, on which our model is based, and the value concept are discussed in Section 3.3. The extended means-end model is introduced in Section 3.4. Section 3.5 contains a concise description of the research methodology, both for assessing the reliability of the value scales

and for testing the extended means-end model, and the data that are used for partly testing this model. The results are described in Section 3.6.

3.2 Previous research

The article of Coolen and Hoekstra (2001) gives an overview of some specific studies that relate motivational factors to migration and housing preferences. They argue that objectives and values play an important part in the behavior of people in general (Rokeach, 1973) and in their preferences and choices in particular (Bettman, 1979). Preference refers to the relative attractiveness of an option or an attribute level, while intended or actual choice reflects the relative strength of behavioral tendencies. Preferences and choices are regarded as value-oriented and goal-directed activities. The concept of value plays a central part in the approach to housing choices that is presented in this article. In a few other studies values are considered to be important for understanding migration and housing preferences.

On the basis of an extensive literature review De Jong and Fawcett (1981) distinguish seven conceptual categories that seem to represent psychologically meaningful clusters of values and goals: wealth, status, comfort, stimulation, autonomy, affiliation, and morality. Although De Jong and Fawcett lay the basis for an empirical analysis of the value-expectancy model applied to migration, their exposition remains mainly theoretical. The importance of their study, though, is that they consider migration as instrumental behavior for achieving certain goals and values.

A more empirical study which deals with the subjective beliefs and values that underlie people's evaluations of housing attributes was conducted by Lindberg *et al*. (1987). A basic assumption in their research is that the varying importance ascribed to different life values by an individual is reflected in one's evaluations of any circumstances which he or she believes facilitate or hinder the achievement of these values. That is, the more important a value is, the more positively evaluated are factors facilitating the achievement of that value and the more negatively evaluated are hindering factors. Their research supports the assumption that people have beliefs about how important life values can be achieved, and that these beliefs influence their evaluation of different means for value-fulfillment. It also showed that the respondents' evaluations of a large number of everyday activities could be reasonably well predicted from their beliefs about causal links between the performance of these activities and the achievement of different life values. For their conceptual model this implies that they assume that people believe everyday activities to be the primary means to achieve life values. They also assume that the attractiveness of various housing attributes derives from their perceived ability to facilitate these activities. So the relationships between hous-

ing attributes and values are considered to be mainly indirect with everyday activities as the intervening factors.

In addition to these relationships they also assume some indirect relationships between housing attributes and everyday activities. Two additional sets of intervening factors are specified in their model: personal resources (creativity, independence) and non-personal resources (money, family, friends). The relationships between each housing attribute and the everyday activities as well as the relationships between the everyday activities and the life values, as well as all the other relationships in their model, are expressed in terms of expectancy-value models. These models were operationalized by means of a questionnaire answered by a sample of Swedish adults.

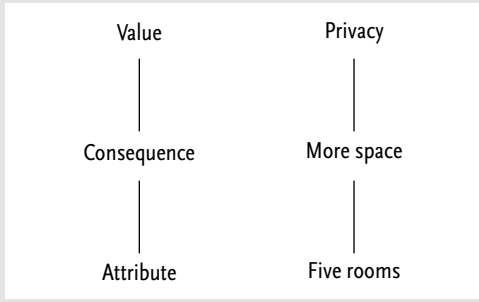
The study of Hoekstra and Coolen differs in at least one important respect from the approach taken by Lindberg *et al*. While the modelling of Lindberg *et al*. is based on the value-expectency model, the approach of Hoekstra and Coolen is based on means-end theory which explains the relationships between goods and consumers. A good is defined by a collection of attributes. These attributes yield consequences when the good is used. Consequences are important based on their ability to satisfy personally motivating values and goals of people. Thus, in means-end theory the relationships between the attributes and the values are also indirect, but the intervening category called consequences is much broader. It may encompass everyday activities but also consequences that are more functional or psychosocial in nature. The study of Hoekstra and Coolen demonstrated the likelihood that preferences for housing attributes are related to a broad spectrum of consequences and to a great variety of values. In the next section a concise exposition of means-end theory is presented.

3.3 Means-end chains and values

3.3.1 Means-end theory

Means-end theory (Gutman, 1982) provides a model for explaining the relationships between goods and consumers. Means in this context are goods which people consume and activities that they carry out. Ends are positively evaluated (end) situations such as freedom, privacy, and friendship. A good is defined by a collection of attributes. These attributes yield consequences when the good is used. Consequences are important based on their ability to satisfy personally motivating values and goals of people. A consequence is every direct or indirect result of a person's behavior. Consequences can be desirable (benefits) or undesirable. The central idea in means-end theory is that consumers choose the actions which produce the desired consequences and which minimize the undesirable consequences. Values provide consequences

Figure 3.1 Means-end chain



with a positive or negative valence. Therefore the linkage between values and consequences is of essential importance in the means-end chain model. A certain good must be consumed to realize a desirable consequence. But in order to do that a choice must be made from alternative goods. To be able to make this choice, the consumer must learn which goods possess the attributes that produce the desirable consequences. The second essential linkage in the model is that between consequences and the attributes of goods. The original and simplest means-end chain model has three levels: product attributes – consequences – values. A simple example of a means-end chain related to housing would be: five rooms (attribute) – more space (consequence) – privacy (value) (see Figure 3.1).

A means-end chain is, thus, a model that relates the choice of a good to its contribution to achieving objectives and values. Means-end chains are measured bottom-up using a semi-structured interviewing technique known as laddering (Reynolds and Gutman, 1988). An application of means-end theory to preferences for housing attributes can be found in Coolen and Hoekstra (2001).

Since the concept of value occurs as one of the central concepts in both means-end theory and in the extended means-end model that is described below, it is discussed more extensively in the next section.

3.3.2 Values

Values are defined as "desirable transsituational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity" (Schwartz, 1994). Values are thus conceived as objectives which, consciously or unconsciously, function as criteria in all our actions. They have cognitive, affective, and behavioral aspects (Rokeach, 1973). In order to be able to live and function in a social environment, individuals and groups transform the needs that are inherent in human existence into specific values. The central role of values in the human cognitive system stems from three types of human needs: from the needs of the individual as a biological system; from the demands set by coordinated social interaction; from the demands which stem from the functioning and survival of groups (Schwartz, 1992). From these fundamental human needs, ten universal, motivational value domains can be derived according to Schwartz (1992, 1994). These domains, with some values belonging to each in parentheses, are: 1. Power (social power, wealth); 2. Achievement (success, ambition); 3. Hedonism (pleasure, enjoying life); 4. Stimulation (daring, exciting life); 5. Self-direction (independence, curiosity); 6. Universalism (social justice, unity with nature); 7. Benevolence (help-

ing, true friendship); 8. Tradition (modesty, devoutness); 9. Conformity (politeness, self-discipline); 10. Security (family security, cleanness). Every individual strives for values belonging to each of these domains. According to Rokeach (1973) the values will not be of the same importance for every individual. In other words, individuals organize and structure their values so that they are in a position to choose from alternative objectives and actions and are able to resolve potential conflicts. Such a configuration of values is called a value system (Rokeach, 1973). Value systems are relatively stable in the sense that over a longer period of time they will on average comprise the same values. Changes in value systems do not occur so much in the values which make them up as in the relative importance ascribed to every value within the system (Rokeach, 1973).

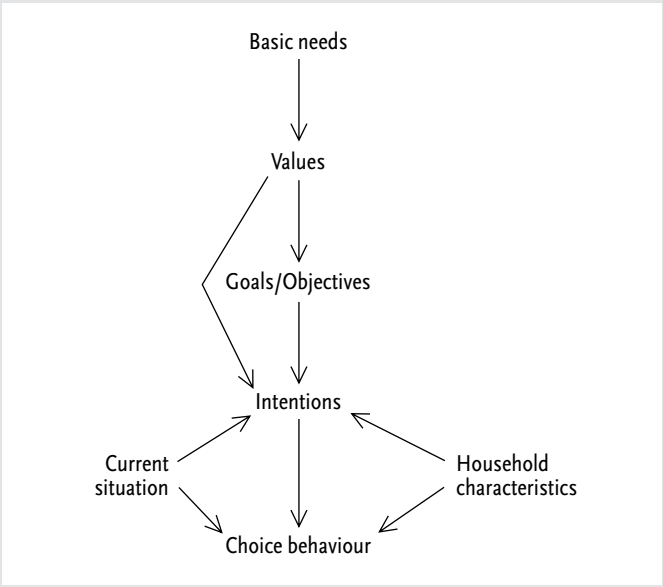
It is generally acknowledged (Rokeach, 1973; Williams, 1979; Schwartz, 1996) that values can influence behavior in various ways. In a choice situation, various values will be activated in a person's value system. However, it is unlikely that people will be able to act in agreement with all of the activated values simultaneously. In this context a value system is a learned and organized entity of principles and rules that helps people in their choice between alternatives, to resolve conflicts, and to make decisions. A value system is thus a cognitive system of which only a relevant part becomes activated. People's choice behavior is determined by a combination of both the values activated by the choice object and values activated by the choice situation. Both sets of values form (possibly overlapping) subsets of the Total value system.

3.4 An extended means-end model

As indicated in the previous section, a means-end chain is determined from the bottom up, and the terminology of the three levels of a means-end chain has been adapted to this. The consumption of goods with certain attributes leads to certain desirable consequences and these benefits contribute to the realization of certain values, providing the rationale for the original selection of the term consequence. To explain consumers' choice behavior, however, one must consider the means-end chain model from the top down. The ultimate aim in life is the values we find important. These values determine to a certain extent which objectives to pursue. Consequently, products with certain attributes have to be consumed in order to realize these objectives. The three levels of a means-end chain then become: values – goals/objectives – product attributes (*cf.* Pieters *et al.*, 1995; Gutman, 1997) (see Figure 3.1).

For the explanation and prediction of choice behavior and behavioral intentions this model seems too simple; it does not take several factors into account which are known to influence these phenomena. Therefore we developed an extended version of the means-end chain model. This model is

Figure 3.2 Extended means-end model



depicted in Figure 3.2 and is described now in more detail. The emphasis in this description is on housing intention, which is considered from the microlevel perspective.

Although values have been defined as transsituational goals, we do not think that they form the most general goals in life. The most general goals are what Maslow (1954) has called basic needs (*cf.* Rokeach, 1973; Schwartz, 1992). Conceptualizing these basic needs as the most general goals in life, values and goals/objectives, as described above, are considered intermediate cognitive categories. According to means-end theory values influence intentions and behavior only indirectly mediated by goals/objectives. Coolen and Hoekstra (2001), however, found direct relationships between values and intentions. These are also incorporated in the extended model.

At the bottom end of the extended means-end model, following Ajzen (1988), the distinction between intentions and choice behavior is made. Intentions refer to the relative strength of behavioral tendencies with respect to the level of an attribute (Ajzen and Fishbein, 1980). Intention should be distinguished from preference, which refers to the relative attractiveness of the level of an attribute (Ajzen and Fishbein, 1980). This distinction is an important one, because intentions are found to be better predictors of behavior than preferences (Ajzen and Fishbein, 1980; Ajzen, 1991).

But choice behavior is not only influenced by intentions. Many studies in housing choice show that (intended) choice behavior is also influenced by other microlevel factors such as household characteristics (Clark and Dieleman, 1996) and the previous housing situation (Deurloo, 1987). So these factors are also incorporated in the extended means-end model.

In the remainder of the paper the focus is on the prediction of intended tenure choice at the microlevel. On the predictors side the emphasis is on values, the current tenure situation, and household characteristics. Because several of our variables are categorical, a regression technique will be used that is suitable for this type of variable. In the next section we give a short description of this technique.

3.5 Research methodology and sample

3.5.1 Sample

For several years now the OTB Research Institute has been conducting a large telephone housing survey for the Netherlands Association of Building Contractors (NVB). The emphasis in this national survey, which is held annually among approximately 2500 respondents with a modal or above modal income, is on preferences and intentions with regard to housing. In the 2000 survey several questions about values were incorporated. The fieldwork is done in two stages. The first stage (approximately 1000 respondents) has been used as a pilot for measuring and validating the value domains. The results of this pilot have been incorporated in the second stage of the 2000 housing survey. For the regression analysis that is reported in Section 3.6 only the respondents who answered that they are planning to move within two years are used (n = 480).

3.5.2 Reliability of value scales

Schwarz (1992) operationalized his ten value domains with a questionnaire consisting of 55 items. Twenty-nine value-items from Schwartz's list were piloted in a study among 1050 Dutch respondents. The items were almost equally spread over the value domains, and were stated as follows: "In life in general, how important do you find power?" Subjects were asked to rate these statements on a five-point Likert scale (with categories: very unimportant, unimportant, not so important, important, very important). With principal components analysis only eight value orientations could be retrieved from the data and not Schwartz's ten domains. Therefore these domains were consequently reinterpreted and renamed. The following eight value domains were distinguished: 1. Basic values, 2. Hedonism, 3. Family values, 4. Structure and order, 5. Power and achievement, 6. Self-esteem, 7. Esteem from others, 8. Self actualization.

Items that did not sufficiently contribute to any of the eight components were consequently discarded and replaced with other items. In addition a number of items were added, to a total of four items per domain. The resulting 32 items (see Table 3.1) were then administered to a sample of 1550 Dutch respondents.

Cronbach's α was used to establish the reliability of the scales. Scales with a low reliability may not measure a construct with enough precision. Although basically arbitrary, commonly the value of 0.70 is used as the lower boundary for sufficient reliability (Drenth and Sijtsma, 1990). Cronbach's α is dependent both on the homogeneity of the items in a scale and on the number of items, i.e., the length of the scale. In the present case the value scales are aggregates

Table 3.1 Reliabilities (Cronbach's alpha) of the value scales

Value scale	Value items	Alpha scale	Alpha lengthened scale
Basic values	freedom, privacy, equality, true friendship	0.44	0.66
Hedonism	pleasure in life, enjoying life, sexuality, spoiling yourself	0.58	0.78
Family values	harmonious family life, safety for family, mature love, good parenthood	0.69	0.85
Structure and order	self-discipline, politeness, clean, order	0.67	0.84
Power and achievement	power, wealth, success, influence	0.65	0.82
Self-esteem	rational, intellectual, reasonable, self-respect	0.42	0.64
Esteem from others	preserving public image, sense of belonging, social recognition, prestige	0.61	0.80
Self-actualization	varied life, creativity, curiosity, choosing own goals	0.49	0.71

of four items each. A low reliability estimate may therefore be the result of a lack of homogeneity in the scale or of the small number of items. With the Spearman-Brown formula (Nunnally, 1967) it can be calculated what the reliability will be if the number of items increases, given the measured homogeneity in the scale. Since the present scales consist of only four items, the reliability is also calculated for a lengthened version of each of the scales with an additional six items, to a total of ten items per scale.

Scale reliabilities are shown in Table 3.1, with reliabilities of five scales ranging between 0.58 and 0.69. For the lengthened (10-item) version of the value scales the reliabilities of six scales attain values above the 0.70 boundary. Only the Basic value scale and the Self-esteem scale have to be rejected as scales, showing too little internal consistency, with corrected reliabilities of 0.66 and 0.64 respectively.

The remaining six value scales are used for the prediction of intended tenure choice. These scales could have been treated as numerical variables. Because only categorical variables can be used in the implementation of regression analysis with optimal scaling, which is discussed in the next section, in SPSS, each value scale has been recoded into four categories (1. unimportant, 2. not so important, 3. important, 4. very important) for the subsequent analysis.

3.5.3 Regression analysis with optimal scaling

One of the most popular techniques for describing the relationship between a response variable and a set of predictor variables is linear regression analysis. The classical regression model has the form:

$$Y = b_1X_1 + b_2X_2 + \ldots + b_mX_m + e$$

All the variables in the model are treated as numerical and the parameters $b_1 \ldots b_m$ are estimated in such a way that the sum of the squared residuals is minimized, or equivalently the squared multiple correlation (R^2) is maximized.

Many of the variables that are used in the subsequent analysis are categori-

cal. For instance, the response variable 'intended tenure choice' has three categories (1. own, 2. rent, 3. no preference) which are coded in such a way that this variable is considered to be a nominal variable.

Linear regression analysis can also be used when one or more of the variables are categorical, as long as the response variable is polytomous (Gifi, 1990). In that case there no longer exists a unique solution for the regression coefficients and for the multiple correlation, because for categorical variables with a nominal or ordinal measurement level there exists no unique coding system (Gifi, 1990).

For the analysis of our categorical data linear regression analysis with optimal scaling (Young *et al*., 1976; Young, 1981; Gifi, 1990) is used. This technique makes nominal and ordinal variables suitable for regression analysis. The general idea behind optimal scaling is to scale the variables in a way that optimizes an objective criterion. A scaling (quantification, transformation) of a variable is a real-valued function defined on its codes. For a scaling we use the notation S_j: X_j => **R**. The type of scaling that is employed will be determined by the measurement level we associate with a variable. For nominal variables the transformation of such a variable is required tomaintain the equivalence structure of the original codes. Let '~' be the relation 'has the same code as', then this restriction can be expressed as:

$$x_{ij} \sim x_{kj} \Rightarrow S_j(x_{ij}) = S_j(x_{kj}).$$

For ordinal variables we require in addition that the transformations be monotonous with the order of the original codes. If '<' denotes the empirical order relation, the additional constraint for ordinal variables becomes:

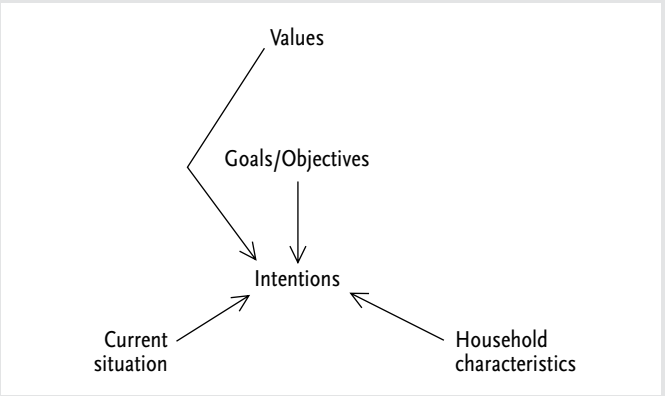
$$x_{ij} < x_{kj} \Rightarrow S_j(x_{ij}) \leq S_j(x_{kj}).$$

For numerical variables the transformations are required to be linear, as is the case in the classical regression model. For a more elaborate treatment of measurement levels and optimal scaling the reader is referred to Young (1981) and Gifi (1990). The regression analysis with optimal scaling model has the following form:

$$S(Y) = b_1S_1(X_1) + b_2S_2(X_2) + \ldots + b_mS_m(X_m) + e$$

The parameters that have to be estimated are now the regression coefficients $b_1 \ldots b_m$ and the transformations (scalings) $S(Y)$, $S_1(X_1) \ldots S_m(X_m)$, while the assumed measurement level of a variable determines the type of transformation that is permitted. The regression coefficients and the transformations are estimated in such a way that the sum of the squared residuals is minimized, or equivalently the multiple correlation is maximized. The estimation

Figure 3.3 Submodel of extended means-end model used in the analysis



of the regression coefficients and the optimal scalings of the variables is performed alternatingly by means of an alternating least squares algorithm (Gifi, 1990).

When presenting the results of the regression analysis with optimal scaling in Section 3.6 in addition to the beta coefficients and their respective F-values also Pratt's measure of relative importance is shown for each predictor variable (Pratt, 1987). In contrast to the regression coefficients it defines the importance of the predictors additively, that is, the importance of a set of predictors is the sum of the individual importances of the predictors. Pratt's measure equals the product of the regression coefficient and the zero-order correlation of a predictor. These products add to the squared multiple correlation, so dividing each importance by R^2 means that they sum to one for the set of predictors. For each predictor the importance measure thus indicates its contribution, expressed as a percentage, to R^2.

3.6 Results for intended tenure choice

The primary reason for starting the investigation into the relationships between intended housing choice and values with tenure is that tenure choice has been one of the central research topics in housing research for a long time (Saunders, 1990), not the least because of the fact that the transition from renting to owning is considered as very important in one's housing career (Kendig, 1990; Clark and Dieleman, 1996). Another reason for beginning with intended tenure choice has a more applied nature and is the fact that recently in the Netherlands several market research organizations have been stressing the importance of value orientations for renting (Glaser *et al*., 1999).

In Section 3.4 the extended top-down version of the means-end model has been described. The analyses presented here focus on a submodel that is shown in Figure 3.3. Important from the point of view of means-end theory is the fact that only the direct relationships between intended tenure choice and the other factors are assessed. As described in the previous subsection the housing survey contained a set of value items to determine the value scales. The survey also contained some general questions about goals one might pursue with the house one was looking for that were used for the operationalization of the goals/objectives. In each of these questions one value item from each value scale was selected. Respondents were asked to indicate on a five-point scale (very little, little, neutral, much, very much) to what extent their

Table 3.2 Variables, relative frequencies and measurement levels

Variable	Relative frequency (%)	Measurement level
Intended tenure choice		Nominal
1. Own	66	
2. Rent	16	
3. No preference	18	
Current tenure		Numerical
1. Own	67	
2. Rent	33	
Age		Ordinal
1. < 30	11	
2. 30-40	17	
3. 40-50	18	
4. 50-65	33	
5. > 65	21	
Income (in Dutch guilders per month)		Ordinal
1. < 4,700	34	
2. 4,700-5,500	20	
3. 5,500-6,600	20	
4. > 6,600	26	
Household composition		Nominal
1. One person, or other	13	
2. Two partners	49	
3. Two partners, child(ren) < 18	27	
4. Two partners, child(ren) ≥ 18	11	
Hedonism		Ordinal
1. Unimportant	21	
2. Not so important	23	
3. Important	24	
4. Very important	32	
Family values		Ordinal
1. Unimportant	7	
2. Not so important	18	
3. Important	36	
4. Very important	39	
Order and structure		Ordinal
1. Unimportant	11	
2. Not so important	18	
3. Important	44	
4. Very important	27	
Power and achievement		Ordinal
1. Unimportant	11	
2. Not so important	27	
3. Important	38	
4. Very important	24	
Esteem from others		Ordinal
1. Unimportant	17	
2. Not so important	27	
3. Important	28	
4. Very important	28	
Self-actualization		Ordinal
1. Unimportant	10	
2. Not so important	26	
3. Important	28	
4. Very important	36	
Pleasure		Ordinal
1,2. Very little	3	
2. Little	3	
3. Average	15	
4. Much	64	
5. Very much	18	
Harmonious family life		Ordinal
1. Very little	8	
2. Little	6	
3. Average	20	
4. Much	49	
5. Very much	17	
Clean		Ordinal
1. Very little	16	
2. Little	12	
3. Average	29	
4. Much	36	
5. Very much	7	
Wealth		Ordinal
1. Very little	29	
2. Little	28	
3. Average	29	
4,5. Much, very much	14	
Respect from others		Ordinal
1. Very little	27	
2. Little	26	
3. Average	34	
4,5. Much, very much	13	
Personal development		Ordinal
1. Very little	26	
2. Little	20	
3. Average	30	
4,5. Much, very much	24	

Table 3.3 Results of regression analysis with optimal scaling for intended tenure choice

Predictor variables	Beta	F-value	Importance
Age	0.40	79.73	0.43
Current tenure	0.33	48.35	0.32
Income	-0.15	10.30	0.10
Household composition	-0.12	7.09	0.06
Power and achievement	-0.09	4.11	0.03
Family values	0.10	5.06	0.02
Wealth	-0.09	4.00	0.02
Harmonious family life	0.12	7.99	0.02

$R^2 = 0.43$, adjusted $R^2 = 0.42$, $F = 28.97$, $p < 0.001$, n=480

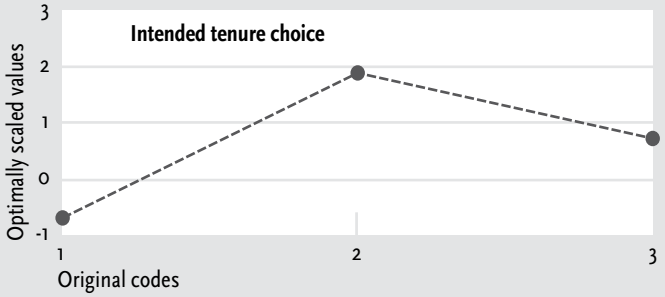
new house had to contribute to the achievement of each of these goals.

The variables and their categories, the frequency distribution of each variable, the original codings of the categories, and the measurement level that we assumed for each variable are shown in Table 3.2. The response variable 'intended tenure choice' has three categories, which are originally coded in such a way (1. own, 2. rent, 3. no preference) that it is treated as a nominal variable. The current situation is indicated by the current tenure position. Since it does not really matter what measurement level one assumes for dichotomous data, the measurement level for this variable has been specified as numerical. As household characteristics we selected the variables income, age (of the oldest person of a household), and household composition. Income and age are assumed to be ordinal variables, while household composition will be treated as nominal. As we described in the previous section the value orientation variables each have four categories; they are assumed to have an ordinal measurement level. The variables that represent the goals/objectives each have five categories. In some instances one of the extreme categories (very little or very much) contained so few observations that we decided to collapse this category with the next less extreme category (little or much). These variables are assumed to be ordinal.

The response variable 'intended tenure choice' was initially regressed on the complete set of eighteen predictors. The results of this regression with optimal scaling showed several variables which had a statistically not-significant F-value at the 5% level ($F \leq 3.84$). Given the fact that the regression model contained variables that were statistically not-significant, it was decided to perform backward elimination by hand eliminating one of the not-significant variables at the time. This resulted in a model with only statistically significant predictors. Subsequently forward selection was performed on the deleted variables. The final result for intended tenure choice is a model with eight predictors, among which are two value orientations and two goals/objectives related to these domains.

The main results for this model are shown in Table 3.3. When interpreting these results one has to keep in mind that the regression equation has two sets of parameters: the regression coefficients and the scalings of the variables. This implies that one cannot interpret the regression solutions by only looking at the coefficients; one also has to take the scalings simultaneously

Figure 3.4 Optimal transformation of response variable



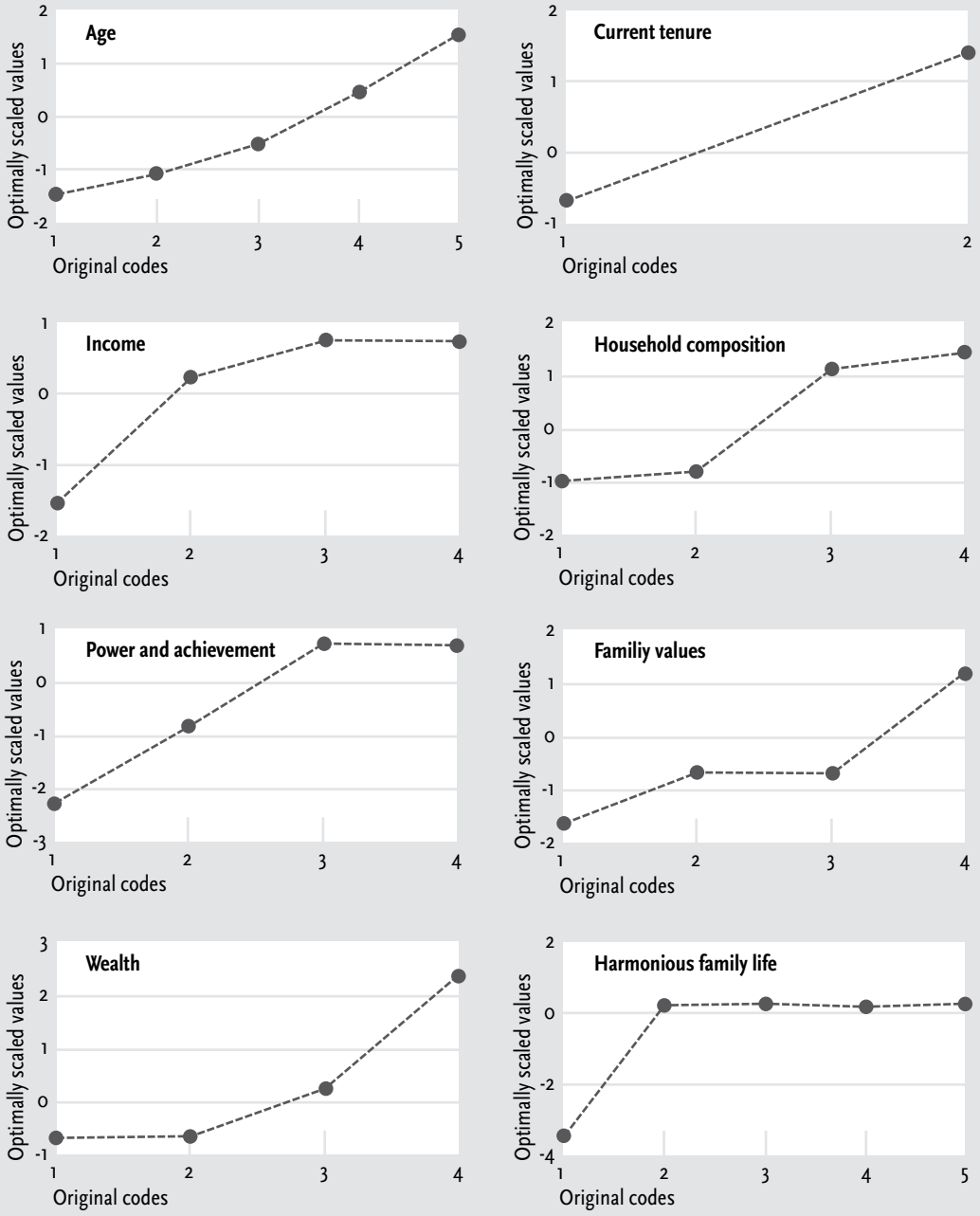
into account. These are given in Figures 3.4 and 3.5. In Figure 3.4 we see, for instance, that the shape of the transformation of the response variable is curvilinear. The third category 'no preference' turns out to be a middle category in between 'own' and 'rent', as it was meant to be! The final regression equation is now discussed in more detail.

The eight predictor variables explain 43% of the variance in intended tenure choice. The importance measures show that 91% of this explained variance is accounted for by the household characteristics. The value orientations family values and power and achievement contribute 5% to the explained variance and the associated objectives wealth and a harmonious family life contribute the remaining 4%. Table 3.3 also shows that the predictors age and current tenure contribute three-fourths of the explained variance of intended tenure choice, while income contributes 10% and household composition 6%. Examining Table 3.3 and Figures 3.4 and 3.5 simultaneously the regression with optimal scaling tells us that current owner-occupiers tend to have the intention to own, whereas current renters tend to have the intention to rent, and the planners who express no preference tend to be current renters. The negative regression coefficient for income suggests that the higher income categories go together with an intention for owning and a lower income tends to an intention for renting. The relationship between intended tenure choice and age is positive and monotone. This means that with increasing age of the oldest person of the planner's household, the respondent tends more towards renting. This is especially true when the oldest person is over 65 years of age. As far as household composition is concerned, planners from households with two partners and children, irrespective of their age, intend to own, while planners from other types of households intend to rent. For the value orientations we see the following picture. The more important that planners consider power and achievement to be, the more they tend towards owning. For the family values it is just the other way around. The more one finds family values important, the more one intends to rent. The goals wealth and a harmonious family life have been taken from the value domains power and achievement, respectively family values. In the regression equation they behave in the same way as their associated value domains.

3.7 Discussion

In this article an extended means-end model has been presented in which motivational factors such as goals and values, together with such microlevel

Figure 3.5 Optimal transformation of predictor variables



factors as age, income, and household situation, are related to housing choice and to intended housing choice. This extended means-end model could be operationalized only partially due to the limitations of the available data. Nevertheless several results of our analyses are interesting. The results of analyzing the values show in general favorable features for the values scales. The reliability estimates are relatively low, but this is not surprising since these

scales consist of only four items. Using the Spearman Brown formula, reliability measures were estimated for a lengthened version of the current scales to ten items per scale. These results were acceptable for six scales. This result shows that at least ten items per scale should be used in order to capture these concepts with enough precision. It is interesting to note that in both the exploratory analysis in the pilot and in the more confirmatory analysis on the basis of this pilot the ten value domains of Schwartz (1992, 1994) could not be reproduced. His claim that the ten value domains are universal, based on extensive cross-cultural exploratory analyses using a technique called smallest space analysis, has been undermined by the results presented in this article.

It is not very surprising that in the prediction of intended tenure choice the variables age, current tenure, income, and household composition account for 91% of the explained variance. Their influence is well documented in the literature on housing choice (Deurloo, 1987; Clark and Dieleman, 1996). In a cross-sectional study these variables may be seen as the representation of the influence of the different processes that are studied simultaneously in life course analysis. The relatively small importance of income in this study may be, at least partially, explained by the fact that the sampled population consisted of respondents with an above-modal income.

Although the value orientations and the goals contribute only 9% to the explained variance of intended tenure choice, one must realize that this contribution comes on top of that of the well-known microlevel variables. Besides, with respect to content the results for the value orientations and goals are internally consistent. The values that are associated with the goals wealth and harmonious family life are part of the power and achievement scale, respectively the family values scale. In housing research one often distinguishes between a house as a capital good and the housing service as a consumer good. It is interesting to see that the significant value orientations and goals in the regression equation seem to capture both aspects of housing. The value domain power and achievement and the associated goal wealth are related to buying and seem to capture the investment aspect of housing. The consumption aspect seems to be more prominent in the value orientation family values and the associated goal harmonious family life.

Reflecting a little more about the relatively small contribution of the value domains and goals to the explained variance of intended tenure choice, one may wonder whether the questions in the survey about values and goals were not too general and abstract. Coolen and Hoekstra (2001) found that the answers of respondents who were asked why a certain level of a particular housing attribute was important to them differed tremendously in nature. Some answers were functional (a room for every family member), others more psychosocial (a place to retire). Several consequences were rather concrete (gardening) and others more abstract (social contacts). It will be interesting to see whether their follow-up research will provide clues that can be used as

input for the type of modeling and survey analysis performed in this article.

The emphasis in the study presented here has been on explaining housing choice, in particular intended tenure choice, from a scientific perspective. From a more applied point of view it may also be interesting to use the results of the analyses in this article to find out more about the relationships between values and goals on the one hand and housing choice on the other. For instance, it would be interesting for marketing purposes to create subpopulations on the basis of a number of lifecycle variables. Subsequently one might determine dominant value patterns for each of the subpopulations and relate these patterns to housing choice. If certain more or less stable relationships are found between the value patterns of subpopulations and housing choice this may open new opportunities for the marketing of, for instance, new housing projects.

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4 Measurement and analysis of less structured data in housing research

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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 labelled 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

4.1 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 and 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 lessstructured 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.

4.2 Categorization and measurement

Categorization

The world is filled with an incredible number and diversity of objects. If peo-

ple 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 singlefamily 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.

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).

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.

4.3 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 identi-

fied 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 datagathering 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, lessstructured 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 twocategory 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 and 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 and Borgatti, 1998; Ryan and 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-struc-

tured interviews, which result in large amounts of less-structured data even with small samples.

4.4 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 subsystems 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 and 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.

4.5 Research methodology and data

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).

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:

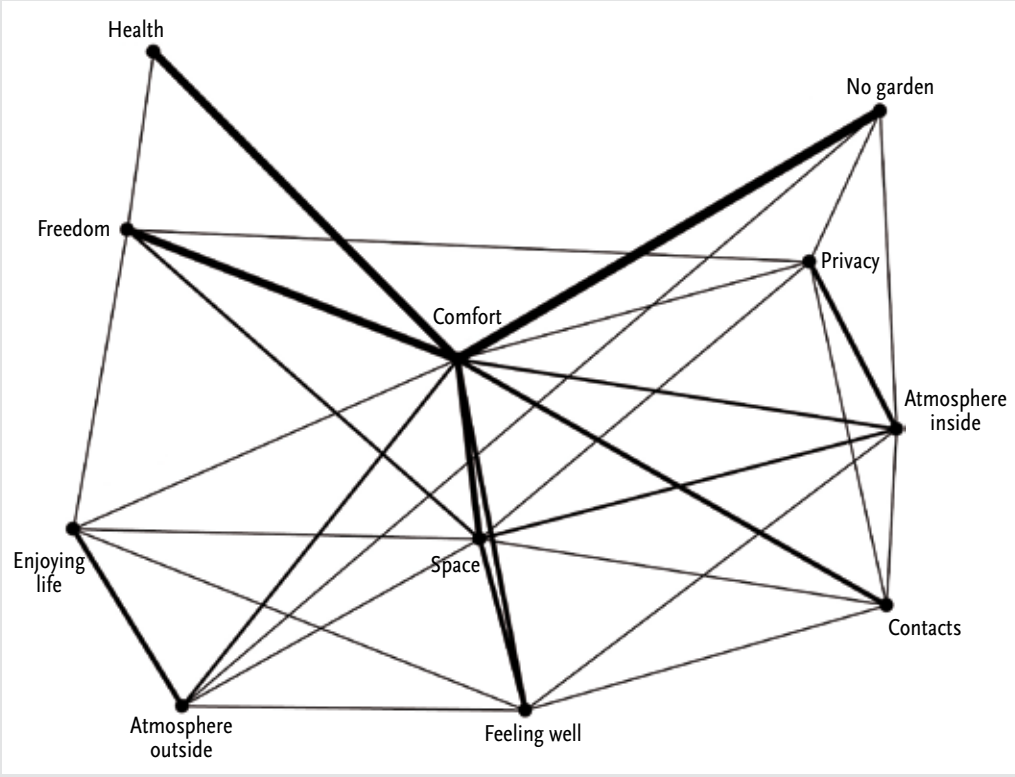
1. selection of the salient residential environment features;
2. elicitation of the preferred levels of the salient residential environment features;
3. measurement of the meaning structures.

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 and 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.

Figure 4.1 Shared meaning structure of the level apartment of the dwelling feature 'dwelling type'



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. 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.

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.

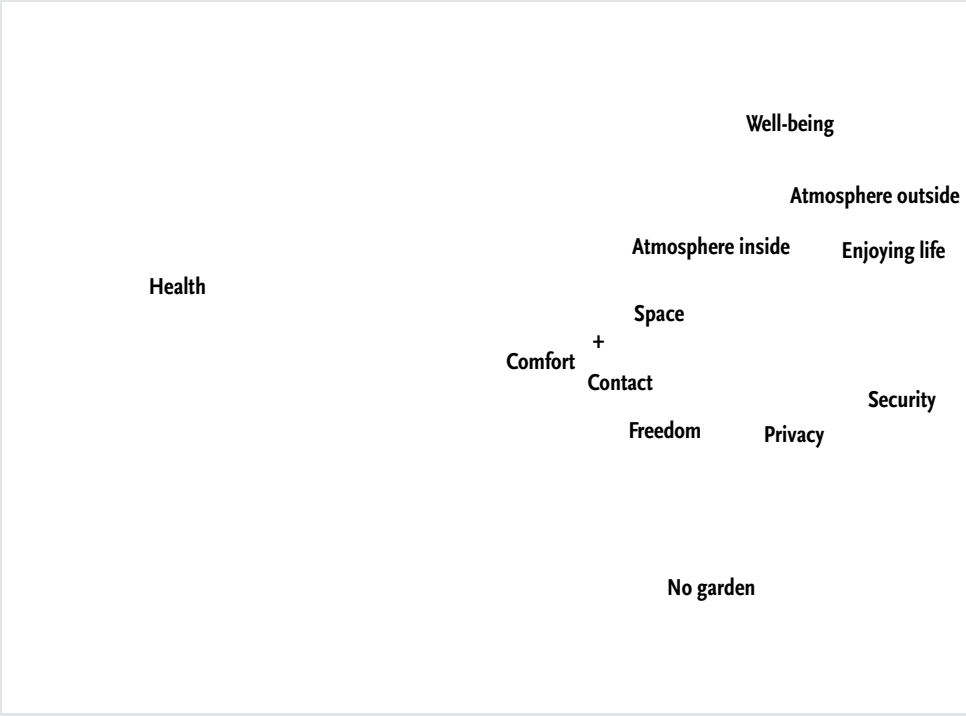
From the individual meaning structures of the level 'apartment' of the feature 'dwelling type' a shared meaning structure can be constructed. A shared meaning structure contains the links between a dwelling feature and its meanings, and possibly between separate meanings, that are shared by several people or even a group. A shared meaning structure is constructed by means of a socalled 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 4.1 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.

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 and 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

Figure 4.2 Two-dimensional solution of the correspondence analysis of the meanings of the level apartment of the dwelling feature 'dwelling type'

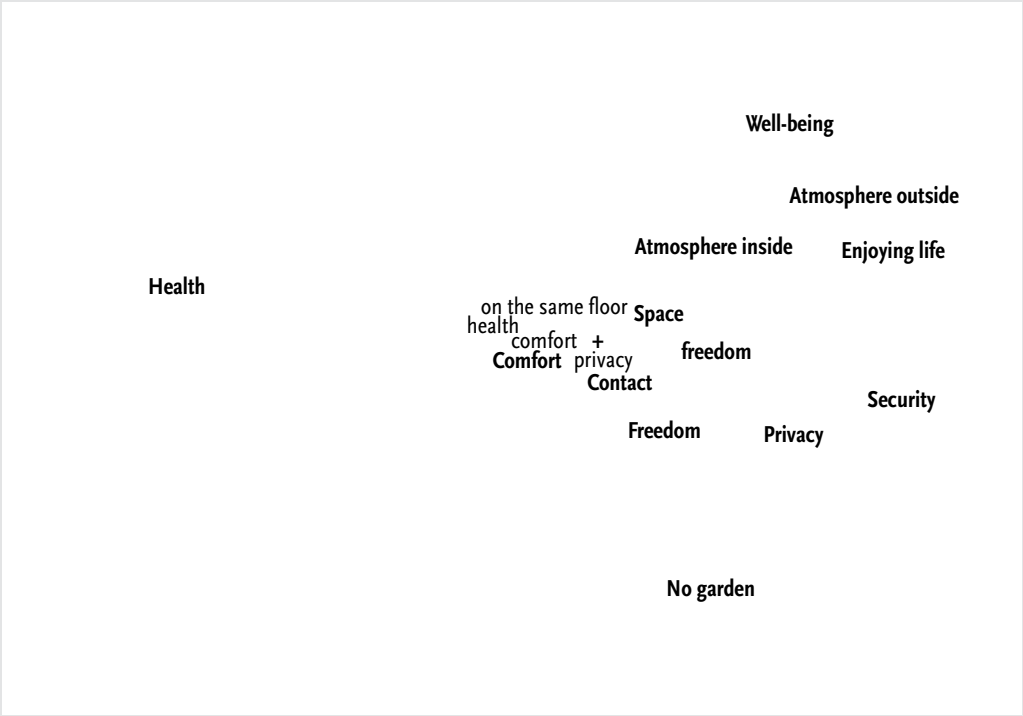


matrix can be analyzed by means of correspondence analysis (CA) (Greenacre, 1984) which is a multivariate technique for providing a spatial representation of respondent profiles in a reduced Euclidean space.

Figure 4.2 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 .62 and .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 and 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 ere closed and the respondents had to choose rom 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

Figure 4.3 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

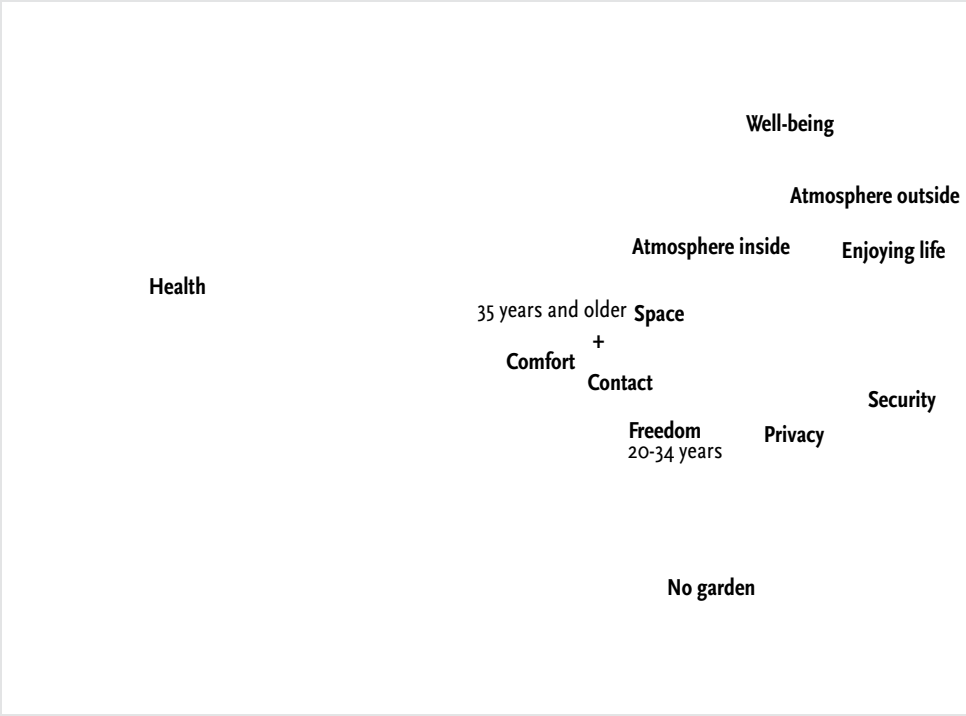


based on the meaning structures that appeared from the semi-structured interviews. Supplementary points do not contribute to the solution, and they form the centroids of the respective respondent points which are not shown in the figure.

The CA-solution with the supplementary points is depicted in Figure 4.3, 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 4.3 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.

Internal validity

Figure 4.4 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



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 and 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 4.4 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.

Statistical conclusion validity

In Figure 4.4 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 and 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 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, n1=5 respectively n2=23, and unequal. In addition, assuming that these data are normally distributed seems farfetched 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 bootstap 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.

4.6 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 and Corbin, 1998: 27-34).

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5 The meaning of dwellings: an ecological perspective

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Abstract
The meaning of dwellings has been studied from many different perspectives, such as psychology, phenomenology, sociology and environment-behaviour studies. Several authors have argued that a more integrative and interdisciplinary approach is needed, in which physical, socio-cultural, psychological and economic dimensions are interrelated. However, in these studies dwellings are mainly treated as such. What is lacking is an approach in which dwellings are considered as integral parts of the environment. An ecological approach offers such a perspective. Such an approach focuses on the individual's relationships with meaningful features of the environment; it emphasizes the intentionality of individual's actions. The reciprocity of the environment and the individual is a central feature of an ecological approach. A dwelling is an individual's primary anchor in the environment. It may serve many functions, such as shelter, privacy, security, control and status. From an ecological point of view the meaning of dwellings lies in these functional relationships between human beings and their dwellings. This paper presents the conceptual and methodological framework for studying the meaning of dwellings from an ecological perspective. This framework is illustrated with examples from the author's own research.

Keywords: meaning of a dwelling, environment-behaviour relationships, less-structured data, qualitative data analysis

5.1 Introduction

The meaning of dwellings has been studied from many different perspectives, such as psychology, phenomenology, sociology and environment-behaviour studies (Després, 1991; Moore, 2000; Mallett, 2004). Several authors have argued that a more integrative and interdisciplinary approach is needed in which physical, sociocultural, psychological and economic dimensions are inter-related (e.g. Després, 1991; Somerville, 1997). However, in these studies dwellings are mainly treated as such. What is lacking is an approach in which a dwelling is considered as an integral part of the environment. An ecological approach offers such a perspective.

An ecological approach focuses on the individual's relationships with meaningful features of the environment; it emphasizes the intentionality of individual actions. The reciprocity of the environment and the individual is a central feature of an ecological approach: "The fact is worth remembering

because it is often neglected that the words *animal* and *environment* make an inseparable pair. Each term implies the other. No animal could exist without an environment surrounding it. Equally, although not so obvious, an environment implies an animal (or at least an organism) to be surrounded." (Gibson, 1986: 8, italics in original).

A dwelling is an individual's primary anchor in the environment. It may serve many functions such as shelter, privacy, security, control and status. From an ecological point of view the meaning of a dwelling lies in these functional relationships between a human being and his/her dwelling. This paper presents the conceptual and methodological framework for studying the meaning of dwellings from an ecological perspective. This framework is illustrated with examples from the author's own research. In the next section the basic ideas of the ecological perspective are outlined. The meaning of the environment is then considered from the ecological perspective, and the meaning of a dwelling is subsequently discussed. The conceptual framework is then presented and measurement aspects are considered. The methodological approach to analysing data, obtained through our framework, as well as examples of this approach are described. The paper ends with a discussion of several aspects of the framework.

5.2 The ecological perspective

The ecological perspective on the meaning of dwellings as presented in this paper rests on five basic ideas (*cf.* Blumer, 1969; Heft, 2001):

1. The relationship between the human being and the environment is best characterized as mutual and reciprocal. At a functional level of analysis, human being and environment make an inseparable pair; each implies the other. Social and psychological processes are relational processes. There is a dynamic relationship between the human being and its environment. A human being intentionally selects or adjusts to present features of the environment, and in many instances people alter the environment to better fit with their aims.
2. The meaning of objects resides in these functional relationships between features of the environment and the needs and intentions of human beings. It is in these relationships that meanings are discovered, and where they are created
3. The meanings that objects have for human beings are central in their own right. To ignore or bypass the meaning of objects towards which people act is seen as a serious neglect of the role of meaning in the formation of action.
4. Meaning is seen as arising in the process of social interaction between people. The meaning of an object for a person grows out of the ways in which

other persons act toward the person with regard to the object. Their actions operate to define the object for the person. Thus, meanings are seen as social and cultural products, as creations that are formed in and through the defining activities of people as they interact.

5. This does not mean that the use of meaning by a person is but an application of the meaning so derived. The use of meaning by a person in his or her actions involves an interpretative process, in which the actor selects, checks, suspends, regroups and transforms meanings in the light of the situation in which he or she is placed and the direction of his or her action. Accordingly, interpretation should not be regarded as a mere automatic application of established meanings but as a formative process in which meanings are used as instruments for the guidance and formation of action.

5.3 The meaning of the environment

An individual's operating environment consists of objects, the things toward which the individual is oriented; they form the focal points around which the individual's activities become organized. An object is anything that can be referred to or designated; objects may be material or immaterial, real or imaginary, in the outer world or inside the body, have the character of an enduring substance or be a passing event. From the perspective of a human being the environment may be classified in at least five categories: other human beings, other animals, physical objects, social objects and abstract objects. If the individual notes or is aware of any one of these things, it is an object for that individual. Objects constitute the world or operating environment of the human being (Blumer, 1969). Taken together, they constitute the individual's world of existence, that is, the things the individual deals with in life activity.

Objects have value for human beings in terms of the possibilities they offer for actions and intentions; that is, an object may have certain features in relation to a goal of the individual. The concept of affordances (Gibson, 1986) most basically highlights this congruence between structural features of the environment and the intentions and goals of individuals. Affordances are relationships between features of objects and abilities of human beings (Chemero, 2003); they are attributable to the intrinsic features that objects possess by virtue of their make-up, and are specified in relation to a particular individual. For example, a firm, obstacle-free ground surface affords walking on, a chair affords sitting on, a door to a room affords opening and passage. Environmental features are experienced as having a functional meaning for the individual.

The features of the environment are only one facet of a dynamic individualenvironment relation; the other facet is intentional actions of individuals, and this aspect of the individual-environment relation becomes most apparent in the selection, the discovery, and the creation of meaningful environ-

mental features (Heft, 2001). Individuals selectively engage particular objects in their surround; individuals typically make choices from among the range of potential features in a setting to support some activity. However, individuals do not have unconstrained choice. Factors outside of their control may limit the range of socially and/or culturally sanctioned choices. So there is self-selection of affordances but often within constraints.

Intentionality is also apparent in the processes through which individuals learn about and discover the features of objects and the affordances in their surroundings. This is not a random process; which objects are selected in the first place is delimited by the perceived congruence between an object's features and the individual's functional capabilities and intentions. This reciprocity gives rise to exploration and discovery within constraints. Finding novel uses for familiar objects is a particular satisfying way for new affordances to be discovered.

Actions involving the learning about environmental features are frequently guided by others. Throughout life, most apparently during childhood, individuals are explicitly taught, often in very subtle ways, to recognize and utilize the functional features of objects. Individuals also learn about the meanings of objects by observing the actions of others.

Finally, affordances are sometimes created when the range of possibilities available in the environment are insufficient to meet certain goals. The environment is comprised of meaningful features that were created by an individual or a group of individuals at some time. This omnipresent fact about the world is one manifestation of the fundamental reciprocity of individuals and environment. Individuals do not merely take the world as they find it; the environment is continually being modified. Many of these activities are efforts to create new affordances in order to address specific individual and socio-cultural needs.

This ubiquity of affordances points to an important issue. In many cases, meaningful features of the environment that are created reflect individual's knowledge about environment-behaviour relationships. This means that a great deal of what is known is embodied in the environmental structures individuals create; we live our lives in environments rich in what might be called ecological knowledge. An ecological perspective proposes that the meanings of objects reside in the relationships between features of the environment and human beings. It is in these relationships that meanings are discovered, and where they are created.

In this functional sense every object has a meaning that distinguishes it from other objects. This meaning constitutes the nature of the object for the individual for whom the object exists. One confronts an object, sees it, refers to it, talks about it, or acts toward it in terms of the meaning it has for one. No objects exist for a person except in terms of the meaning it has for the person. Meaning is not something that is inherent in an object; it is not an intrin-

sic part or attribute of the object. The meaning of an object exists in a relationship between the object and the individual for whom it is an object; its meaning exists in how the individual designates the object, and in this sense an object may have different meaning for different human beings.

5.4 The meaning of dwellings

A dwelling is defined as the sub-system of settings, embedded in the larger system of settings called the environment, that forms the primary anchor for an individual (Rapoport, 1990a) and provides such primary functions as concealment and shelter. Defining a dwelling as a sub-system of the environment makes it possible to understand its specific functions, such as a place of retreat, not only in terms of its occupiers but also in the context of the other sub-systems in the environment. Only a subset of all human activities takes place in a dwelling. This subset of activities may be different for different individuals and the subsystem 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 aspects of the neighborhood such as shops, a school, a church, or a park.

Most previous research into the meaning of a dwelling has taken a holistic view of a dwelling (Rapoport, 1995; Moore, 2000). However, the approach in this paper deviates from this practice and focuses on features, separate settings, of dwellings. There are several reasons for studying the meaning of dwellings from the perspective of dwelling features. First, there is the heterogeneity of the category of dwelling. There are many different types of dwellings that differ mainly in their features. Single family dwellings differ not only in many features from apartments but also among themselves, for instance some have a garden, while others do not. Secondly, people perceive dwellings not only holistically but also in terms of their features, clearly demonstrated in research into the reasons for moving, where many people include dwelling features as a reason (Rossi, 1955). Thirdly, the holistic view of a dwelling and the feature view of it are just two different ways of considering the same object. Finally, a dwelling has many potential uses and people are looking for multifunctional dwellings that can have many different meanings, which are, in the First place, afforded through the features of dwellings. So, the meaning dwellings have for people lie in the functional relationships between the features of dwellings on the one hand and the goals and intentions of people on the other. The relationships between a dwelling feature and its meaning is called a meaning structure.

This conception of the meaning of dwellings is related to Rapoport's work on the meaning of the built environment (Rapoport, 1988, 1990b). According to Rapoport (1988) meaning links environments and people by providing much

of the rationale for the ways in which environments are shaped and used. He also argues that the common distinction between function and meaning is misguided, that meaning is not only part of function, but is often the most important function of the built environment. Rapoport (1988) distinguishes three levels of meaning in the built environment. High-level meanings are related to cosmologies, world views, philosophical systems, etc.; middle-level meanings such as identity, privacy, status, wealth, power, etc. which are also called latent functions; lower-level, everyday meanings, for example accessibility, seating arrangements, movement, etc., which are also called manifest functions. According to Rapoport everyday meanings have mostly been neglected in research on the meaning of the built environment, although they are essential for understanding the built environment. People's activities and built environments are primarily linked by lower-level meanings, although middlelevel meanings also tend to be important.

It is believed that especially lower and middle level meanings are related to specific features of dwellings (Rapoport, 1988). This is not to deny that a dwelling, considered as a whole, may also have meanings. My conjecture, though, is that these will be occasionally middle and mostly higher level meanings.

5.5 Conceptual framework

The conception of meaning that has been elaborated in the previous sections results in a conceptual framework for studying the meaning of dwelling features from an ecological perspective. This framework is depicted in Table 5.1 together with an example.

The approach that is taken here deviates from the conventional practice of exploring the meaning of dwellings holistically. Instead, the holistic view of a dwelling is deconstructed, looking specifically at features of a dwelling. Based on the notion of affordances, the relationships between dwelling occupiers and dwelling features are investigated in terms of what the occupiers do, or want to do, in the dwelling. In order to do so, one needs to look at the dwelling in terms of different features and different functions.

In this approach, an investigation of meanings starts with a specific dwelling feature. The relationships between a dwelling feature and its functions for an individual, which are the meanings attached to that specific feature by the individual, may be identified by means of interviewing. For instance, an occupier may attach to the dwelling feature number of rooms such functions (meanings) as space, activities, privacy, and social contacts. These meanings express the intentions and aims the person has in mind. In other words, people's intentions and goals are reflected in their evaluation of the features of a dwelling, which they believe may facilitate or hinder the achievement of their goals (Coolen and Hoekstra, 2001).

Table 5.1 Conceptual framework for studying the meaning of dwelling features

Framework	Example
Latent functions	Privacy, Social contacts
Manifest functions	Space, Activities
Dwelling features	Number of rooms

5.6 Measurement

The measurement procedure for measuring the meaning structures of dwelling features is an adapted version of the procedure for the determination of means-end chains (Reynolds and Gutman, 1988; Coolen and Hoekstra, 2001). The measurement of the meaning structures of dwelling features takes place in three phases:

1. elicitation of the salient dwelling features;
2. elicitation of the (preferred) levels of the salient dwelling features;
3. measurement of the meaning structures.

The first step in measuring the meaning structures concerns the elicitation of salient dwelling features. Many elicitation methods are available that range from letting the respondents mention the features themselves, to presenting the respondents with a list of features (*cf.* Reynolds, Dethloff and Westberg, 2001). Since much is known about important dwelling features, two sets of cards were compiled – one set containing housing features and the other containing neighbourhood features. Respondents had to select the most important features from both sets. They also had the possibility to add features they considered important and that were not on the cards, enabling them to determine exactly what a dwelling is to them. The choice to use cards with features was enhanced by the fact that there are so many dwelling features. It was expected that, because of the limited information processing capability of human beings, sets of cards would support the respondents in conceptualizing their important dwelling features.

In the second phase the respondents are asked to indicate which level of each of the salient features they prefer. If, for example, the number of rooms was mentioned as a salient feature, then the respondent has to indicate the preferred number of rooms. Where the type of dwelling is a salient feature, either the preferred type is indicated or the dwelling type that is definitely not wanted. Allowing respondents to indicate what they definitely do not prefer, their so-called non-preference, is particularly relevant for situations in which the respondent cannot articulate their preference very well for a certain level of a salient feature. For example, some respondents know very well that they do not want to live in an apartment, but have no clear preference for either a dwelling in a row or a semi-detached dwelling.

The starting point for determining the meaning structure of each salient dwelling feature is the preferred or non-preferred level of that feature. The meaning structures are measured, in the third phase, by a semi-structured interviewing technique known as laddering (Reynolds and Gutman, 1988). The interview proceeds 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 is to determine the relationships between, on the

one hand, the preferred or non-preferred level of a salient feature and, on the other hand, the meaning or meanings this dwelling feature has for the respondent. So, if the respondent has indicated that a dwelling that has a garden is preferred, he/she is subsequently asked "Why is a garden important to you?" The why question is repeated as a reaction to the answer of the respondent. The process stops when the respondent can no longer answer the why question. Letting the interview begin at the preferred or non-preferred level of a salient dwelling feature and subsequently proceeding with several why questions allows the most closely associated meanings of the feature to be revealed. In this way meaning structures can be determined for each salient dwelling feature level and for every respondent. The meaning structures are constructed during the interview by the interviewer and the respondent together on paper. There are good reasons for constructing the meaning structures in this way. Writing each answer down on paper gives the respondent some time during the interview to reflect about his or her answer and to explore and discover other aspects of the cognitive structure under construction. It also gives the interviewer some time to reflect about the answer and to make sure he/she understood the answer correctly. If necessary, the interviewer can probe the respondent about the exact meaning of his answer. Furthermore, instead of being an interviewee who only has to answer questions passively, the respondent has a more active role in the interview and this involvement may work as a motivating factor.

5.7 Analysis

Data

The data that are used to illustrate our approach 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 mid-1990s as part of a master plan for the development of former harbour districts.

In January 2003, 1060 apartment dwellers, equally divided over both locations, were sent an introductory letter asking them to participate in the research. About 140 of these responded, and the first 30 respondents in each subgroup were contacted for an interview. In the end, a total of 45 semi-structured interviews, all of which were taped, 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 valid-

ity 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 data-set is treated as one. Since the data-set is relatively small and is used here only for illustrative purposes, the subsequent analyses focus on the most popular dwelling feature: number of rooms.

Table 5.2 The meanings of the dwelling feature 'number of rooms' and their frequency

	Number of rooms (n=32)
Privacy	14
Comfort	14
Space	13
Social contacts	13
Furnishings	14
Multi-functionality	24
Well-being	9
Clean	7
Tradition	1
Family	9
Total	118

Categorization of less-structured data

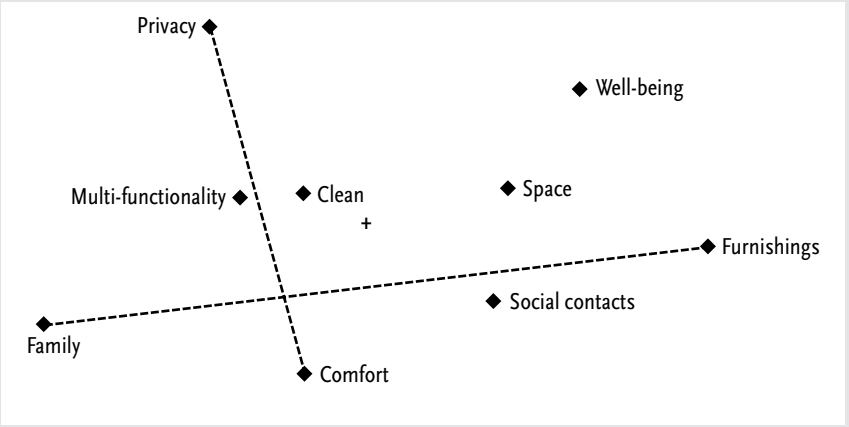
The raw data generated by the laddering interviews, both on paper and tape, are the verbalizations of the respondents. These verbalizations are so-called less-structured data, which can only be used for further analysis – description, interpretation, explanation, mathematical and statistical analysis – when they contain some minimum level of structure called a category system (Coolen, 2005). The process of developing such a category system is called categorization, which was carried out on the raw data by means of content analysis. 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. 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 meanings that the respondents associated with the dwelling feature 'number of rooms' and the frequency with which these meanings were mentioned are represented in Table 5.2.

Analysis of categorized data

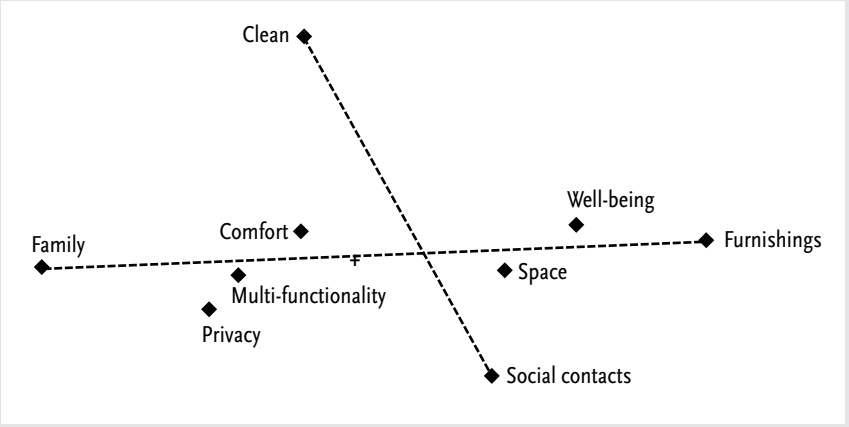
Given the categorization and coding of the meanings, the originally less-structured data can be analysed in much the same way as structured data, because categorization is a form of nominal measurement (Coolen, 2005). The category systems can be displayed in two general formats matrices and networks (Miles and Huberman, 1994), and for the analysis of both types of displays essentially the same data analysis techniques can be used as with structured data (Handwerker and Borgatti, 1998; Ryan and Bernard, 2000). So, two types of data analysis may be performed on the data: symmetrical and asymmetrical analyses. In a symmetrical analysis the structural aspects of the data, i.e. the links between the meanings, are ignored. If the purpose of the analysis is, for instance, to find similarities and differences between the meanings of a feature a symmetrical analysis is the appropriate way to proceed. To illustrate such an analysis a correspondence analysis was performed on nine meanings

Figure 5.1 Display of the solution of the three-dimensional correspondence analysis

Dimension 1 vs. Dimension 2



Dimension 1 vs. Dimension 3



Dimension 2 vs. Dimension 3

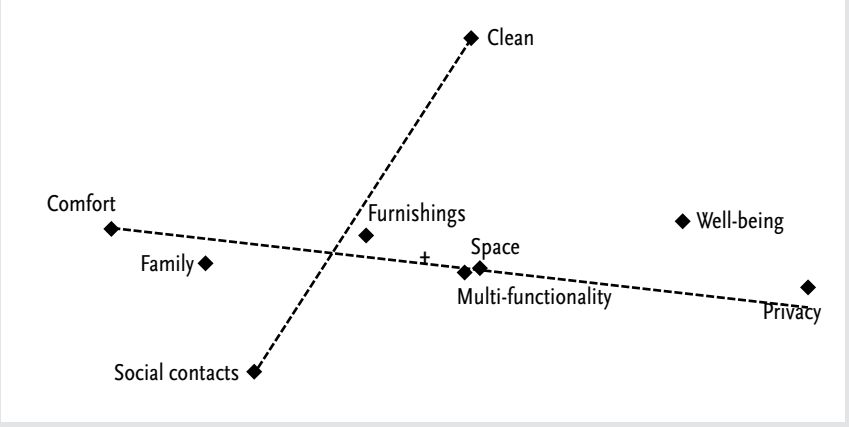


Table 5.3 Contribution of the meanings to the inertia of the dimensions

	Dimension 1 (singular value = 0.60)	Dimension 2 (singular value = 0.55)	Dimension 3 (singular value = 0.47)
Privacy	0.09	0.41	0.05
Comfort	0.01	0.28	0.02
Space	0.06	0.01	0.00
Social contacts	0.05	0.08	0.29
Furnishings	0.35	0.01	0.01
Multi-functionality	0.10	0.01	0.01
Well-being	0.10	0.12	0.02
Clean	0.01	0.00	0.60
Family	0.24	0.09	0.00
Total	1.00	1.00	1.00

of the dwelling feature number of rooms, the meaning tradition was dropped from the analysis because it was only mentioned once. Correspondence analysis is a data analysis technique for representing the Chi-squared distances between the row- and/or column-profiles of a table in a low dimensional Euclidean space (*cf.* Greenacre, 1984). The resulting graphical display may facilitate and enhance the analysis of such a table of profiles. The graphical display of the three dimensional solution is depicted in Figure 5.1, in which the (+) indicates the origin of the Euclidean space.

The three dimensions account together for 61% of the inertia (dimension 1: 25%, dimension 2: 21%, dimension 3: 15%). The contributions of the meanings to the inertia of each of the three dimensions are represented in Table 5.3. The meanings that contribute most to each dimension have been connected by dotted lines in Figure 5.1. Family and furnishings contribute most to dimension one, for dimension two privacy and comfort are the most important meanings, and the third dimension is almost completely determined by clean and social contacts. So, from the perspective of this analysis family, furnishings, privacy, comfort, clean, and social contacts are the more important meanings of the dwelling feature number of rooms.

In an asymmetrical analysis of the coded meanings one takes the structural relationships between the meanings explicitly into account, and by doing so one can construct two types of representations with meaning structures. One type represents only individual meaning structures, the other type contains the relationships between the meaning structures of all respondents and is called a meaning network. Figure 5.2 shows several examples of individual meaning structures. The individual meaning structures, which are relational data, form the basis for the construction of a meaning network. Since some structural aspects of meaning networks are discussed in this paper, some terminology about networks is outlined next (*cf.* Wasserman and Faust, 1994).

A meaning network is constructed from the individual meaning structures by means of a so-called adjacency matrix. An adjacency matrix is a square matrix that represents the relationships between the meaning categories from the meaning structures. The rows and the columns of the matrix are formed by the meanings, and the cells of the adjacency matrix show the number of

Figure 5.2 Several examples of individual meaning structures

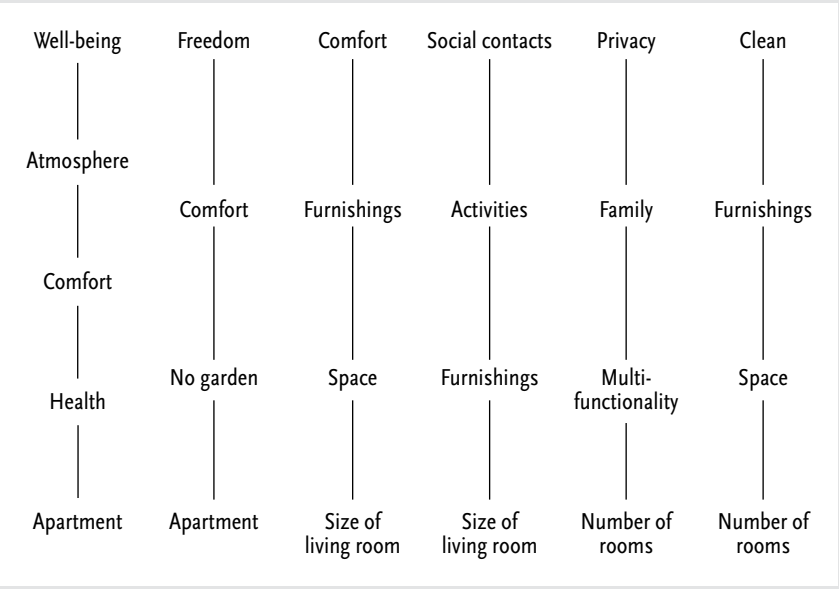


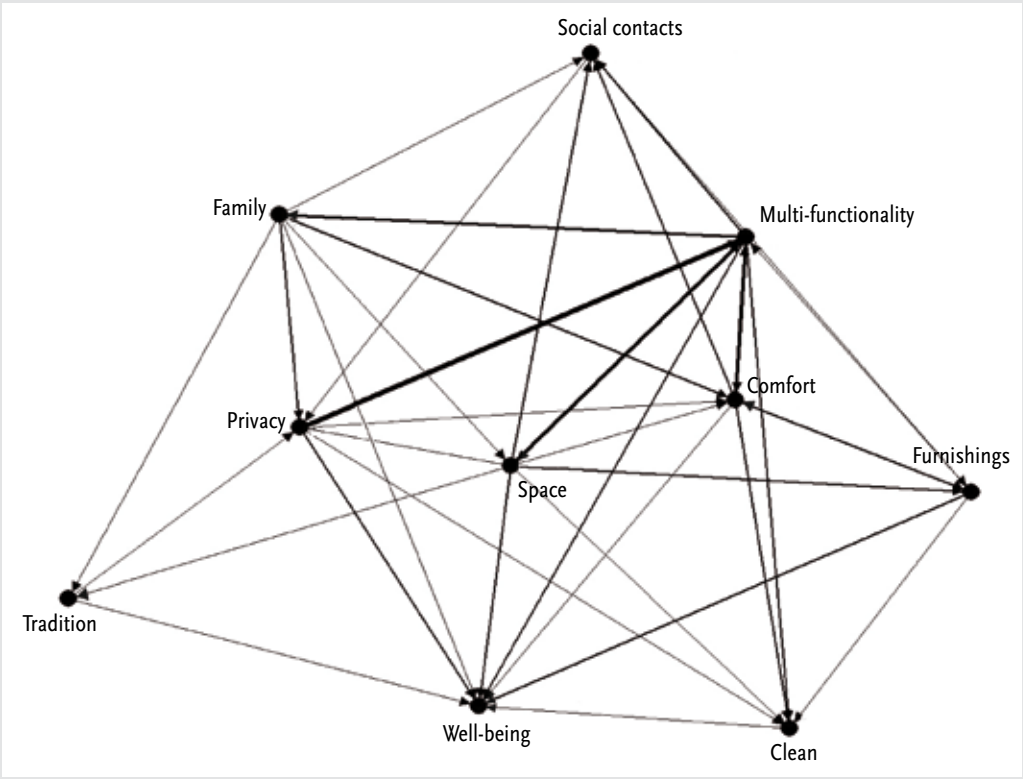
Table 5.4 Adjacency matrix for the ten meanings associated with the dwelling feature 'number of rooms'

	Multi-functionality	Family	Space	Furnishings	Tradition	Comfort	Privacy	Social contacts	Clean	Well-being	Outdegrees of the row meanings
Multi-functionality	-	4	5	1		5	8	2	2	2	29
Family		-	1		1	3	2	1		1	9
Space	1		-	3	1	1	1	2	1	2	12
Furnishings	1		1	-		2			1	2	7
Tradition					-		1			1	2
Comfort	1	1	1	2		-		2	2	1	10
Privacy	2					1	-		1	2	6
Social contacts				1			1	-			2
Clean									-	1	1
Well-being										-	0
Indegrees of the column meanings	5	5	8	7	2	12	13	7	7	12	78

direct links between the meanings in the individual meaning structures. The connections between the meaning categories can be represented graphically in a valued digraph – a network representation – in which the meanings are represented as nodes ni and the directed links between them as arcs l_k. Associated with each arc is a value v_k that indicates the number of times that the link between the two nodes connected by the arc has been observed.

Table 5.4 shows the adjacency matrix of the dwelling feature number of

Figure 5.3 Meaning network for dwelling feature 'number of rooms'



rooms. The value in cell (i,j) of the table represents the number of observed arcs directed from the meaning in row i to the meaning in column j. The indegree $d_I(n_i)$ of a node n_i is the number of nodes that are adjacent *to* n_i, so indegree is the number of arcs terminating at n_i. The indegree of a particular meaning is the number of times that the meaning is the destination of a connection with other meanings. Indegree is the column sum of a meaning in the adjacency matrix. The outdegree $d_o(n_i)$ of a node n_i is the number of nodes that are adjacent *from* n_i. The outdegree is thus the number of arcs originating from n_i. The outdegree of a particular meaning is the number of times the meaning is the origin of a connection with other meanings. Outdegree is the row sum of a meaning in the adjacency matrix. Indegree and outdegree are used to study several structural aspects of meaning networks.

The graphical display of the relationships in Table 5.4 is called a meaning network, and the meaning network for the dwelling feature number of rooms is depicted in Figure 5.3. The thicker the link between two meanings in this figure, the stronger the relation between those meanings.

A meaning structure of a dwelling feature is a representation of the meanings of this feature as perceived and conceived by an individual. As such, it might 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,

Table 5.5 Centrality of the meanings of the dwelling feature 'number of rooms'

	Number of rooms
Comfort	0.28
Space	0.25
Furnishings	0.18
Well-being	0.15
Privacy	0.24
Social contacts	0.11
Multi-functionality	0.43
Clean	0.10
Tradition	0.05
Familly	0.18

a cultural artefact (Rapoport, 1969, 1990b), one might expect that meaning structures of dwelling features contain both idiosyncratic and shared meanings. One way of investigating whether some meanings are more shared than others is by studying the centrality of meanings in a meaning network such as the one in Figure 5.3. Although this figure seems to indicate that some meanings are more central than others, we have to be careful with our conclusions since this may be the result of the way the graphical display is constructed. Therefore, a centrality measure based on indegrees and outdegrees is used. Centrality of a meaning is defined as the ratio of indegrees plus outdegrees of a particular meaning over the sum of all entries in the adjacency matrix (Wasserman and Faust, 1994). Centrality ranges from 0 to 1; the higher the index, the larger the proportion of links in the meaning network that run through the particular meaning. The centrality measures for the meanings of the dwelling feature number of rooms are depicted in Table 5.5.

Inspection of Table 5.5 shows that multi-functionality is by far the most central meaning in the meaning network for the feature number of rooms; comfort, space and privacy are also relatively central meanings in this meaning network. The meanings comfort, space and privacy were also prominent in the correspondence analysis solution, but multi-functionality did not appear to contribute much to the three dimensional solution. So, aggregating individual meaning structures of a dwelling feature into a meaning network clearly provides new and relevant information about the prominence of meanings of a dwelling feature.

5.8 Discussion

In this paper a conceptual and methodological framework for studying the meaning of dwellings from an ecological perspective was outlined and illustrated with data from a study about (sub)urban apartment dwellers. The reciprocity of the environment and the individual is a central facet of an ecological approach, and consequently this approach focuses on the relationships between intentional human beings and meaningful features of the environment, which are called affordances. Studying the meaning of dwellings fits neatly into this approach, and leads quite naturally to studying the meaning of features of a dwelling instead of taking a holistic view of a dwelling, which is so popular in the literature.

Although the conceptual framework only focuses on lower and middle level meanings, the measurement procedure does not exclude higher level meanings from being mentioned by respondents. Interestingly, this did not occur in our illustration, and in other studies we performed (Coolen and Hoekstra,

2001; Coolen, 2004). Rapoport (1988) suggests in this context that nowadays lower and middle level meanings are more prominent at the expense of higher-level meanings. One wonders whether this is true. Higher-level meanings – as systems of meanings – are probably so strongly internalized by people that they may give rise to almost automatic and unconscious reactions (*cf.* Kearney and Kaplan, 1997), which make them difficult to externalize. Moreover, Rapoport (2001) and Coolen and Ozaki (2004) argue that culture, which can be considered as a system of higher-level meanings (*cf.* D'Andrade, 1984), cannot be observed itself. Culture only becomes visible through its consequences, which are embodied in people's goals, values, intentions and everyday activities. Culture affects the way in which people think about and use a dwelling, and as such it influences our meanings of dwelling features. It clarifies the relationship between people and the dwelling: why people prefer certain features, how they expect to use them, and consequently, what those features mean. Culture therefore provides us with contextual information, which helps us to understand the relationships between an individual's intentions and the features of a dwelling.

In order to understand many of the meanings that were found in our example above in terms of culture, two socio-cultural developments in the Netherlands seem especially relevant (Sociaal Cultureel Planbureau, 1998). The first is the process of individualization that has resulted in, on average, smaller households and in more space per occupier in dwellings. The second development concerns the phenomenon that older people remain active and living on their own much longer, partly because of changes in their housing preferences. Since the employment of the people between 50 and 65 years of age has strongly decreased, the dwelling has become the centre of their life at a relatively young age. A large part of their daily life is spent in and around the dwelling, which forms the centre of their activities, and for which enough space is wanted. Bearing in mind that our sample consists of relatively old people, several of the meanings that are found in Table 5.2 can be interpreted against the background of these developments. The appearance of such prominent meanings as multi-functionality, comfort, furnishings, privacy and social contacts is well in line with one or both socio-cultural developments just sketched. In addition to these, meanings such as family and cleanness have a long tradition in Dutch culture, and are highly valued especially by the older generations. So, by considering culture as a higher-level meaning that provides contextual information the manifest and latent functions found in the study can be interpreted in terms of several meaning systems that have evolved in Dutch culture over the last 25 years, meaning systems which are probably also important for the perspective of the people interviewed.

The central assumption behind our approach to data analysis is that observations can only be used for any form of analysis – description, interpretation, explanation, mathematical and statistical analysis – when they con-

tain some minimum level of structure called a category system. In this context two types of data are distinguished in housing research: structured and less-structured data, which are just two ideal types with many intermediate forms. Structured data arise when the researcher has an *a priori* category system or measurement scale available for collecting the data, examples are questionnaires and official statistics. When such an a priori system or scale is not available the data are called less-structured. Less-structured data arise for instance from open interviews and documents. Since all observation is idea-driven (Hanson, 1958), less-structured data must also be based on some sort of a category system, but this system will be much more open 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 less-structured data have been collected it is the researcher's task to prepare these 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 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 necessary process of categorization 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 and Huberman, 1994). For the analysis of both types of displays essentially the same collection of data analysis techniques can be used as with structured data (*cf.* Handwerker and Borgatti, 1998; Ryan and Bernard, 2000).

In evaluating the empirical results reported in this paper one has to keep in mind that they were presented only for illustrative purposes, and that they are based on small-scale exploratory studies. One consequence of this is that the empirical results are somewhat speculative and should be treated with care, since little can be said about their robustness. Follow-up research is planned in which a survey will be administered (*cf.* Bagozzi and Dabholkar, 2000).

In this paper the study of the meaning of dwellings has been approached in a deconstructed way and from an ecological perspective. The meaning of a dwelling is believed to lie in the relationships between the features of the dwelling on the one hand and people's goals and intentions on the other. Studying the meaning of dwellings from this perspective enhances our knowledge, because it sheds light not only on what dwelling features people want but also on why these features are wanted. Since the framework is conceptualized at the level of the individual user of a dwelling it can also serve many other purposes. The individual's collection of meaning structures of dwelling features can be considered as his/hers preferred dwelling-quality profile. This

profile may contain valuable information for architects and planners when designing new dwelling projects, redesigning already existing dwellings and restructuring neighbourhoods. The conceptual and methodological framework can also be used for evaluating dwelling satisfaction or quality by comparing meaning structures of the current dwelling features with those of the preferred ones. Finally, the meaning structures of dwelling features can form the basis for studying intra- and inter-cultural differences of the meaning of a dwelling, since these differences are probably best understood by studying the manifest and latent functions of dwelling features (Rapoport, 1988).

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6 The meaning of intended tenure

(submitted)

Abstract
Dwelling is clearly an important aspect of people's everyday life. The dwelling is for many people their primary anchor in the environment, and many daily activities take place in or around it. It is therefore not surprising that the preference for and the choice of different dwelling aspects have attracted the interest of many housing researchers. Tenure is one of the most prominent of these aspects. It has been studied from different theoretical perspectives and with a great variety of methodological approaches.

This paper shows that there is no apparent gap between two frequently employed perspectives to studying tenure if one considers tenure from an ecological point of view and that it is rather straightforward from this approach to include meanings into the analysis when studying tenure as the dependent variable. The paper also presents empirical data which show that including meanings together with socio-demographic characteristics into the analysis enhances the explanation and interpretation of intended tenure.

Keywords: tenure, meaning, ecological approach, affordances, intended tenure

6.1 Introduction

Dwelling is clearly an important aspect of people's everyday life. For many people the dwelling is their primary anchor in the environment, and many daily activities take place in or around it. It is therefore not surprising that the preference for and the choice of different dwelling aspects have attracted the interest of many housing researchers. Tenure is one of the most prominent of these aspects (Clapham, 2005). It has been studied from different theoretical perspectives and with a great variety of methodological approaches, both quantitative and qualitative. Economists have either focused on house prices, often in the form of hedonic analyses (Follain and Jimenez, 1985; Sheppard, 1999), or they have stressed the importance of tenure from the perspective of consumption and investment (Henderson and Ioannides, 1983, 1987). Geographers and sociologists on the other hand have mainly concerned themselves with studying housing choices made by individual households (Clark and Dieleman, 1996; Mulder and Dieleman, 2002). The approach in this paper is related to this tradition.

In many studies by geographers and sociologists, whether it concerns tenure choice, tenure preference or tenure change, one of these characteristics is the dependent variable that is being explained. This perspective goes back to Rossi's (1955) classical book *Why People Move*, and many relevant results

are summarized in Clark and Dieleman (1996). These studies are concerned with tenure choice, or preference, of individual households and the focus is on socio-demographic characteristics, often combined in the career-lifecycle of households. Studies on tenure in which career-lifecycle characteristics are incorporated can be divided into two main approaches. First, there is an immense amount of cross-sectional studies which are essentially static in nature, and in which the career-lifecycle appears through such characteristics as age, income and household composition (Boumeester, 2004). An alternative and dynamic approach is called life course analysis. It is also based on the lifecycle idea but studies the outcomes in the housing market of several processes – household structure, occupational career, and housing career – simultaneously (Mulder, 1993). In a methodological sense these studies have been characterized as quantitative (Winstanley, Thorns and Perkins, 2002), and clearly the emphasis is on multivariate statistical analysis and mathematical modelling. What both approaches have in common is that they pay little or no attention to the influence of motivational factors, such as meanings, on tenure choice or preference.

From a quite different perspective researchers have studied the meaning of tenure (Saunders, 1989, 1990; Somerville, 1994). Although the studies within this perspective seem to be in a class of their own, they fit well in the body of literature that is concerned with the meaning of home (Després, 1991; Moore, 2000). Here the aim of the analysis is to describe and explain the influence of the different categories of tenure on such phenomena as identity, privacy, ontological security, and freedom. In this type of research the role of tenure in the achievement of certain goals and values is highlighted. Methodologically speaking two approaches are discernable. In the one (Winstanley, Thorns and Perkins, 2002) the so-called qualitative ethnographic method is applied in which excerpts from open interviews are analysed and interpreted. The other approach (Saunders, 1990; Somerville, 1994) is survey-oriented with open-ended questions on relevant aspects of meaning, which are subsequently categorized and analyzed in terms of frequency distributions and bivariate associations with other characteristics such as type of tenure, gender and household composition.

This paper shows that there is no apparent gap between these two perspectives on studying tenure if one considers tenure from an ecological perspective (Coolen, 2006), and that it is rather straightforward from this approach to include meanings into the analysis when studying tenure as the dependent variable. The central claim of the ecological approach is that at a functional level of analysis the individual and the environment make an inseparable pair. Each implies the other (Gibson, 1986). For example, human beings can only perform their dwelling activities because the environment affords these activities in a functional sense, and since humans need environmental features to do their activities they seek out or adjust to these features, and, not seldom, alter the environment to better fit with their aims. These functional

relationships between individuals and features of the environment are called affordances (Gibson, 1986).

For many individuals a dwelling is their primary anchor in the environment that serves such basic functions as shelter and concealment. It may also serve many other functions, such as privacy, control and freedom. These functions are afforded, in the first place, through the features of dwellings. From an ecological point of view the meaning of dwellings lies in these functional relationships between human beings and the features of dwellings. The meaning of a thing consists of what it affords (Gibson, 1982).

Tenure is probably one of the most studied features of dwellings, not the least because of the fact that the transition from renting to owning is considered as very important in one's housing career (Clark and Dieleman, 1996). Moreover, the different categories of tenure have been at the forefront of political debate on housing (Clapham, 2005). Therefore, in this paper the meaning of the different categories of tenure will be empirically analyzed in terms of what they afford the dweller. The specific goal is to assess whether the meanings people attach to the different categories of tenure are related to their tenure preference while controlling for the most important socio-demographic variables.

The structure of this paper is as follows: first, the meaning of the environment, the meaning of dwelling features and in particular the meaning of tenure from an ecological perspective will be discussed in Sections 6.2, 6.3 and 6.4. Subsequently, in Section 6.5, the sample and method for analysing the data are described. The results of the analysis are presented in Section 6.6.

6.2 The meaning of the environment

An individual's operating environment consists of objects, the things toward which the individual is oriented, they form the focal points around which the individual's activities become organized. An object is anything that can be referred to or designated; objects may be material or immaterial, real or imaginary, in the outer world or inside the body, have the character of an enduring substance or be a passing event. From the perspective of a human being the environment may be classified in at least five categories: other human beings, other animals, physical objects, social objects, and abstract objects. If the individual notes or is aware of any one of these things, it is an object for that individual. Objects constitute the world or operating environment of the human being. Taken together, they constitute the individual's world of existence, that is, the things the individual deals with in life activity.

Objects have meaning for human beings in terms of the possibilities they offer for actions and intentions; that is, an object may have certain features in relation to a goal of the individual. The concept of affordances (Gibson, 1986) most basically highlights this congruence between structural features of the

environment and the intentions and goals of individuals. Affordances are relations between features of objects and abilities of human beings (Chemero, 2003); they are attributable to the intrinsic features that objects possess by virtue of their make-up, and are specified in relation to the individual. For example, a firm, obstacle free ground surface affords walking on, a chair affords sitting on, a door to a room affords opening and passage, a dwelling affords shelter, a room affords privacy, a certain form of tenure affords independence. So affordances are mutual relationships that point both at environmental features and at human beings. At a functional level of analysis environmental features are experienced in terms of their affordances, i.e. their meaning, for the individual.

The features of the environment are only one facet of an individual-environment relation; the other facet is intentional actions of individuals, and this aspect of the individual-environment relation becomes most apparent in the selection, the discovery, and the creation of meaningful environmental features (Heft, 2001).

According to this theory of affordances the meanings of objects (and places) reside in the relations between features of the environment and human beings (Chemero, 2003). It is in these relations that meanings are discovered, and where they are created. In this functional sense every object has a meaning that distinguishes it from other objects. This meaning constitutes the nature of the object for the individual for whom the object exists. One confronts an object, sees it, refers to it, talks about it, or acts toward it in terms of the meaning it has for one. Meaning is not something that is inherent in an object; it is not an intrinsic part or attribute of the object. The meaning of an object exists in a relation between the object and the individual for whom it is an object; its meaning exists in how the individual designates the object, and in this sense an object may have different meaning for different human beings, or it may have different meanings for the same human being in different situations.

6.3 The meaning of dwelling features

A dwelling is defined as the subsystem of settings, embedded in the larger system of settings called the environment, in which certain systems of activities take place (Rapoport, 1990). It forms the primary anchor for many individuals in the environment and provides such primary functions as concealment and shelter. Defining a dwelling as a sub-system of the environment makes it possible to understand its specific functions, such as a place of retreat, not only in terms of its occupiers but also in the context of the other sub-systems in the environment. Only a subset of all human activities takes place in a dwelling. This subset of activities may be different for different individuals

and the subsystem of settings that makes up the dwelling may also vary. An a priori assumption about what a dwelling is, therefore, can not be made. It may include for instance, a garden, a driveway, a garage, a certain number of rooms, an attic, and many other settings.

Most previous research into the meaning of a dwelling has taken a holistic view of a dwelling (Rapoport, 1995; Moore, 2000). However, the approach in this paper deviates from this practice and focuses on features of dwellings. These features will often be physical ones, for instance the number of rooms or the size of the living room, but may also be non-physical in nature as in the case of the feature tenure. There are several reasons for studying the meaning of dwellings from the perspective of dwelling features. First, there is the heterogeneity of the category of dwelling. There are many different types of dwellings that differ mainly in their features. Secondly, people perceive dwellings not only holistically but also in terms of their features, clearly demonstrated in research into the reasons for moving, where many people include dwelling features as a reason (Rossi, 1955). Thirdly, the holistic view of a dwelling and the feature view of it are just two different ways of considering the same object: every dwelling is made up of a certain collection of features. And last but not least, a dwelling has many potential uses and people are looking for multi-functional dwellings that can have many different meanings, which are, in the first place, afforded through the features of dwellings. So, the meaning dwellings have for people lie in the functional relations between the features of dwellings on the one hand and the goals and intentions of people on the other.

Rapoport (1988, 1990), who holds a similar view on the meaning of the built environment, distinguishes three levels of meaning in the built environment. High-level meanings are related to cosmologies, world views, philosophical systems, etc.; middle-level meanings such as identity, privacy, status, wealth, power, etc. which are also called latent functions; lower-level, everyday meanings, for example accessibility, seating arrangements, movement, etc. which are also called manifest functions. According to Rapoport these everyday meanings have mostly been neglected in research on the meaning of the built environment, although they are essential for understanding the built environment. People's activities and built environments are primarily linked by lower-level meanings, although middle-level meanings also tend to be important. In this sense especially lower and middle level meanings are related to specific features of dwellings (Rapoport, 1988). The emphasis in this paper is on the dwelling feature tenure and on the lower- and middle-level meanings of this feature.

6.4 The meaning of intended tenure

The conception of meaning that has been described in the previous sections results in a basic conceptual framework for studying the meaning of tenure

Figure 6.1 Basic conceptual framework for studying the meaning of tenure

from an ecological perspective. This framework is depicted in Figure 6.1: it shows the interrelations between the individual, affordances and tenure.

Tenure potentially may have many and diverse affordances. These affordances may be activities, but can also be other functions and even values. For instance, a certain type of tenure may afford maintenance, financial security later, freedom, and so on. Whenever a function is assigned to a feature a relationship arises between the feature and the function, which is called an affordance (*cf.* Chemero, 2003). This relationship originates from the individual that assigns the function, and it is relative to the individual in the sense that the relationship between a function and a feature may be possible for some individuals but not for others, the dotted line in Figure 6.1 indicates this relativity of the individual-environment relationship. For instance, a certain type of tenure may afford freedom for some individuals but not for others due to the size of the dwelling. In this sense affordances may be considered as basic meanings (*cf.* Chemero, 2003), because they form the primary relationship between individual and environment.

The relativity of the individual-environment relationship, which has so far been illustrated in terms of abilities or attitudes, is also relevant in another sense. This concerns the so-called socio-demographic variables, for instance income, age, household composition. These variables condition individual-environment relations in the sense that they determine to a certain extent whether potential affordances may become actual affordances. For instance, a certain dwelling may potentially afford all the affordances one is looking for, but these affordance may not materialize because one cannot afford the dwelling financially. And a certain size of tenure may afford financial security later to some individuals and not to others due to their age. So, the model presented in Figure 6.1 seems in all its simplicity to take many relevant aspects into account.

The approach that is taken here deviates in important respects from the more conventional approaches to studying tenure or the meaning of tenure, in which meaning is considered either as an inherent attribute of tenure or as a disposition in the mind of the individual. Based on the notion of affordances, the relationship between dwellers and tenure is characterized as mutual, and this relationship consists of the meaning tenure has for the dweller. This means that an investigation of tenure or the meaning of tenure should contain all three aspects of the framework: tenure, the dweller, and meaning, simultaneously, and that an analysis that lacks one of these aspects is incomplete, since it misses an essential facet of people-environment relations. This

fundamental mutuality between dweller and dwelling leads to different perspectives from which tenure can be investigated. These have been briefly sketched in the introduction as the two perspectives for studying tenure and the meaning of tenure. These apparently different approaches fit neatly within the framework in Figure 6.1 and differ only with respect to the angle of the investigation. In studies on the meaning of tenure meaning is what one might call the dependent variable, while different forms of tenure and characteristics of individuals form the explanatory variables, as for example in the study by Somerville (1994). When the aim of the investigation is to explain tenure both the characteristics of individuals and meanings should form the explanatory variables. But motivational factors, such as meanings, are hardly ever taken into account when tenure is studied from this angle. To fill up this lacuna, this paper gives attention to the meanings of tenure in attempting to explain intended tenure.

Although the concepts of preference and choice are widely used in housing studies these terms do not always seem to be clearly distinguished from each other. In contrast with this practice in this study preference, intention and choice are conceptually distinguished (Ajzen and Fishbein, 1980; Ajzen, 1988). Preference refers to the relative attractiveness of an object, while intention refers to the relative strength of behavioral tendencies, and choice is concerned with actual behavior. Preference may guide intention and choice as it is an expression of evaluation about an object. The evaluation involved in preference is, however, assumed to take place whether one actually has an intention or a choice or not. Thus one has affective feelings about, for instance, dwellings one sees even though there is no choice to be made about them. Preference, intention and choice all involve expressions of evaluation. The most important difference between preference on the one hand and intention on the other is that preference is a relatively unconstrained expression of evaluation, while intention is found to be a better predictor of behaviour (Ajzen, 1991). This distinction between preference and intention is similar to the one made in housing research between the ideal and the aspiration picture (Priemus, 1986).

In housing research there is a distinction between stated and revealed intentions (Timmermans, Molin and Van Noortwijk, 1994). Revealed intentions are inferred from a housing choice after the choice has actually been made. This means that the evaluations involved in choice are considered to be the same as the ones that are involved in intention. In contrast, stated intentions are expressions of evaluation when a choice still has to be made. This is the intention concept as it has been defined here, viz. distinguished from choice. Since intentions are found to be better predictors of actual behaviour than preferences (Ajzen, 1991), in this paper the concern is with stated intentions about tenure.

Explaining these stated intentions about tenure at the micro-level from an

ecological perspective requires the assessment of the influence of the meaning of tenure. But intentions are not only influenced by meanings. Many studies have also shown the influence of such micro-level factors as age, income, household composition, and current housing situation (Clark and Dieleman, 1996; Deurloo, 1987). So these factors are also incorporated in the analysis. In the remainder of the paper the focus is on the prediction of intended tenure at the micro-level, and on the predictor side the emphasis is on the meaning of tenure, the current tenure situation, and household characteristics. Given the availability of data the analyses are cross-sectional in nature.

6.5 Sample and method

Sample

For more than a decade now the OTB has been conducting a large telephone housing survey for the Netherlands Association of Developers and Building Contractors (NVB). The emphasis in this survey, which was held annually until the turn of the century and bi-annually since among approximately 2000 respondents with a modal or above modal income, is on preferences and intentions with regard to housing. In the 2006 survey the respondents were asked whether they wanted to take part in a follow-up survey about the meaning of dwelling, and more than 90% answered positively. This follow-up survey among 659 respondents was mainly about the activities that people perform in their dwelling and residential environment and their meaning, while a small part of the survey was dedicated to dwelling features one of which being tenure. For the analysis that is reported in Section 6.6 only the respondents who answered that they are planning to move within two years (n = 239) are used.

Method

One of the most popular techniques for describing the relationship between a response variable and a set of predictor variables is linear regression analysis. The classical regression model has the form:

$$Y = b_1X_1 + b_2X_2 + \ldots + b_mX_m + e \quad (1)$$

All the variables in the model are treated as numerical and the parameters $b_1 \ldots b_m$ are estimated in such a way that the sum of the squared residuals is minimized, or equivalently the squared multiple correlation (R^2) is maximized.

Many of the variables that are used in the subsequent analysis are categorical. For instance, the response variable 'intended tenure choice' has three categories (1. own, 2. rent, 3. no preference).

Linear regression analysis can also be used when one or more of the variables are categorical, as long as the response variable is polytomous (Gifi, 1990). In that case there no longer exists a unique solution for the regression coefficients and for the multiple correlation, because for categorical variables with a nominal or ordinal measurement level there exists no unique coding system (Gifi, 1990).

For the analysis of our categorical data linear regression analysis with optimal scaling (Young, De Leeuw and Takane, 1976; Young, 1981; Gifi, 1990) is used. This technique makes nominal and ordinal variables suitable for regression analysis. The general idea behind optimal scaling is to scale the variables in a way that optimizes an objective criterion. A scaling (quantification, transformation) of a variable is a real-valued function defined on its codes. For a scaling we use the notation S_j: X_j => **R**. The type of scaling that is employed will be determined by the measurement level we associate with a variable.

For nominal variables the transformation of such a variable is required to maintain the equivalence structure of the original codes. Let '~' be the relation 'has the same code as', then this restriction can be expressed as:

$$x_{ij} \sim x_{kj} \Rightarrow S_j(x_{ij}) = S_j(x_{kj}) \quad (2)$$

For ordinal variables we require in addition that the transformations be monotonous with the order of the original codes. If '<' denotes the empirical order relation, the additional constraint for ordinal variables becomes:

$$x_{ij} < x_{kj} \Rightarrow S_j(x_{ij}) \leq S_j(x_{kj}) \quad (3)$$

For numerical variables the transformations are required to be linear, as is the case in the classical regression model. For a more elaborate treatment of measurement levels and optimal scaling the reader is referred to Young (1981) and Gifi (1990).

The regression analysis with optimal scaling model has the following form:

$$S(Y) = b_1S_1(X_1) + b_2S_2(X_2) + \ldots + b_mS_m(X_m) + e \quad (4)$$

The parameters that have to be estimated are now the regression coefficients $b_1 \ldots b_m$ and the transformations (scalings) $S(Y)$, $S_1(X_1) \ldots S_m(X_m)$, while the assumed measurement level of a variable determines the type of transformation that is permitted. The regression coefficients and the transformations are estimated in such a way that the sum of the squared residuals is minimized, or equivalently the multiple correlation is maximized. The estimation of the regression coefficients and the optimal scalings of the variables is performed alternatingly by means of an alternating least squares algorithm (Gifi, 1990).

When presenting the results of the regression analysis with optimal scaling

in Section 6.6 in addition to the beta coefficients and their respective F-values also Pratt's measure of relative importance is shown for each predictor variable (Pratt, 1987). In contrast to the regression coefficients it defines the importance of the predictors additively, that is, the importance of a set of predictors is the sum of the individual importances of the predictors. Pratt's measure equals the product of the regression coefficient and the zero-order correlation of a predictor. These products add to the squared multiple correlation, so dividing each importance by R^2 means that they sum to one for the set of predictors. For each predictor the importance measure thus indicates its contribution, expressed as a percentage, to R^2.

6.6 Results

It has been argued in Section 6.4 that the fundamental mutuality between dweller and dwelling leads to two perspectives from which tenure may be studied, either tenure is the dependent variable while the meaning of tenure and characteristics of individuals form the explanatory variables, or the types of tenure and the characteristics of the individuals form the explanatory variables for the prediction of the meaning of tenure. In the analyses presented here the angle of the investigation is the prediction of intended tenure, while controlling for what seem to be the most important socio-demographic variables (Deurloo, 1987; Clark and Dieleman, 1996; Mulder and Dieleman, 2002). The variables and their categories, the frequency distribution of each variable, the original coding of the categories, and the measurement level that is assumed for each variable are shown in Table 6.1.

The response variable 'intended tenure' has three categories (1. rent, 2. no preference, 3. own) and is treated as a numerical variable. Although one might have expected this variable to be treated as ordinal the reason for treating it as numerical is that it is the response variable. The prediction of the differences between the categories of the response variable is best attained by treating these categories as different as possible which requires this variable to be treated as numerical, since treating it as ordinal or nominal does not require the categories to be equally distant (Meulman and Heiser, 2005). Current tenure is a dichotomous variable, which is indicated by the current tenure position. Since it does not matter what measurement level one assumes for dichotomous data, the measurement level for this variable has been specified as numerical. As household characteristics the variables income, age (of the oldest person of the household), and household composition have been selected. Income and age are assumed to be ordinal variables, while household composition will be treated as nominal. For income we have used the current income as reported by the respondents; other forms of income such as permanent income could not be estimated, because the underlying vari-

Table 6.1 Variables, relative frequencies and measurement levels

Variable	Relative frequency (%)	Measurement level
Intended tenure		Numerical
1. Rent	12	
2. No preference	19	
3. Own	69	
Current tenure		Numerical
1. Rent	25	
2. Own	75	
Income (in euros per month)		Ordinal
1. < 2,000	23	
2. 2,000-2,500	22	
3. 2,500-3,000	22	
4. 3,000-4,000	20	
5. > 4,000	13	
Age		Ordinal
1. < 35	15	
2. 35-45	25	
3. 45-55	28	
4. 55-65	22	
5. > 65	10	
Household composition		Nominal
1. One person, or other	15	
2. Two partners	37	
3. Two partners with children	48	
Meaning of tenure		Nominal
1. Financial burden now	24	
2. Financial security later	36	
3. Maintenance	3	
4. Independence	9	
5. Freedom	9	
6. Wealth	2	
7. No choice	4	
8. Tradition	2	
9. Own home	2	
10. Other	9	

ables, such as education an occupation (Goodman, 1988) were not available. The categories of these variables are also represented in Table 6.1. The variable 'meaning of tenure' has ten categories, and is assumed to be a nominal variable. The composition and measurement of this variable need some illumination.

In the survey respondents were first asked whether they intended to move within two years. Subsequently, the intended movers were asked which tenure they preferred after moving: renting or owning, while they could also indicate having no preference. Having indicated their preferred tenure the respondents were asked 'What is the most important reason for you to prefer renting/owning your next dwelling?'. This was an open-ended question. For the coding of the answers we applied in the first instance 'field coding', which comprises that the interviewer is supplied with a set of categories in which he/she has to try to code the answer given by the interviewee. If an answer cannot be coded into one of the supplied categories, the interviewer has to note down the answer of the respondent. The set of categories for the survey was compiled on the basis of several pilot projects in which semi-structured face-to-face interviews were conducted, which were subsequently transcribed and content analyzed. The interviewers who conducted the survey were trained in field-coding the answers to the open-ended question. After the survey it turned out that 85% of the answers were coded in one of the pre-specified categories. A content analysis was performed on the other answers, which resulted in three additional categories: no choice, tradition, and own home. The remaining answers were too

Table 6.2 Results of regression analyses with optimal scaling for 'intended tenure'

Predictor variable	Beta	F-value	Importance	Tolerance
Model 1:				
Current tenure	0.38	65.30	0.41	0.97
Income	0.15	10.08	0.08	0.98
Age	-0.39	64.80	0.45	0.89
Household composition	0.10	3.72	0.06	0.89
Model 1 summary: $R^2 = 0.40$, $F = 18.48$, $p < 0.001$				
Model 2:				
Current tenure	0.30	36.01	0.25	0.93
Income	0.10	4.06	0.04	0.97
Age	-0.38	54.88	0.37	0.87
Household composition	0.10	3.74	0.05	0.90
Meaning of tenure	-0.31	39.08	0.29	0.90
Model 2 summary: $R^2 = 0.51$, $F = 12.48$, $p < 0.001$				

idiosyncratic to be categorized and were collected in the category 'other'. The nine resulting meaning categories, see Table 6.1, that are used in the analysis represent the affordances 'financial burden now', 'financial security later', 'maintenance', 'independence', 'freedom', 'wealth', 'no choice', 'tradition', and 'own home'. The affordances of a feature can be positive, for instance 'freedom', or negative as in the case of the meaning 'no choice' (Gibson, 1986).

In order to be able to point out the influence of the meaning of tenure as clearly as possible the response variable intended tenure was first regressed on the set of predictors without meaning of tenure (model 1), and subsequently on the whole set of predictors (model 2). The main results of both analyses are depicted in Table 6.2. A comparison of models 1 and 2 shows that the model without meaning of tenure explains 40% of the variance, while model 2 with the inclusion of meaning of tenure explains 51%. This is not only a statistically significant increase in R^2, but also a substantial increase in explained variance due to only one variable. Moreover, the importance measures show that the variable meaning of tenure accounts for 29% of the explained variance, which makes it the next most important variable in the regression. Age is the most important variable in the analysis and accounts for 37% of the explained variance. Three of the five predictor variables, namely age, meaning of tenure and current tenure, account for 91% of the explained variance, which implies that income and household composition play only a marginal role in the explanation of intended tenure. The relatively small importance of the variable income in this study may be, at least partially, explained by the fact that the sampled population consisted of respondents with an above-modal income, which makes the sample relatively homogeneous with respect to income.

In order to investigate the stability and robustness of the estimated model diagnostic tests have been performed for multicollinearity and hetroskedasticity. Tolerance reflects how much the independent variables are related to one another, and gives a good indication of the presence or absence of multicollinearity. This measure is the proportion of a variable's variance not accounted for by other independent variables in the equation. Table 6.2 also shows the tolerance for each predictor in the estimated model. All of these measures are very high, which indicates that none of the predictors is predicted very well by the other predictors, and multicollinearity is not present.

Table 6.3 Results of regression analyses with optimal scaling for 'intended tenure' after correction for heteroskedasticity

Predictor variable	Beta	F-value	Importance	Tolerance
Current tenure	0.30	27.84	0.25	0.93
Income	0.10	3.64	0.04	0.97
Age	-0.38	49.35	0.37	0.87
Household composition	0.10	4.73	0.05	0.90
Meaning of tenure	-0.31	42.69	0.29	0.90
Model summary: $R^2 = 0.51$, $F = 11.77$, $p < 0.001$				

Another problem that might occur in cross-sectional analyses is that of heteroskedasticity, which means that the assumption of constant variance of the regression model is violated. The Breusch-Pagan Lagrange Multiplier test statistic with a value of 33.1 (df = 5) is significant, which indicates the presence of heteroskedasticity in the model. This means that, although the ordinary least squares estimators of the parameters are still unbiased and consistent, the F-tests for model and parameters may be biased. If the source of the heteroskedasticity can be identified this can be corrected for by using weighted least squares instead of ordinary least squares (Greene, 2003). Inspection of the plots of the residuals against each of the predictor variables did not give an indication of the source of the heteroskedasticity. Subsequent regression analyses, as suggested by White (1980), of the squared residuals on the predictor variables, the squares of these variables and all the two-variable interactions of the predictors did not result in a clear indication of the source either. So, weighted least squares does not provide a solution.

Since the source of the heteroskedasticity cannot be identified, which is by the way not uncommon, we resorted to robust estimation of the standard errors of the regression coefficients. One way to do so is to compute White's heteroskedasticity corrected variance-covariance matrix for the ordinary least squares coefficient vector. White (1980) has demonstrated that this variance-covariance matrix is consistent regardless of the structure of the heteroskedasticity. The results of this procedure are presented in Table 6.3.

Because the correction for heteroskedasticity only influences the standard errors of the regression coefficients the only differences between Tables 6.2 and 6.3 are the F-values of the coefficients and of the model, which are in both cases all significant at the 5% level.

When examining the results of the analysis in more detail one has to keep in mind that the regression equation has two sets of parameters: the regression coefficients and the optimal transformations of the variables. This implies that one cannot interpret the regression solution by only looking at the coefficients; one has to take the optimal transformations simultaneously into account. These are presented in Figure 6.2. Examining Table 6.3 and Figure 6.2 simultaneously the regression analysis with optimal scaling tells us that current owner-occupiers have the intention to own, whereas current renters tend to have the intention to rent or to have no preference. The relationship between income and intended tenure is positive and monotone, as one might expect. This means that with increasing income, respondents tend more towards owning. The optimal transformations show that in our sample it is especially the lowest income group that differs with respect to intend-

ed tenure from the other income groups. The negative regression coefficient for age indicates that the lower age categories go together with an intention for owning, whereas older respondents, 55 years of age and older, are more inclined towards renting. As far as household composition is concerned, respondents forming a household with just another partner intend to rent, while respondents from other types of households intend to own. For the meaning of tenure the following picture emerges from the analysis if we take both the regression coefficient and the optimal transformations of this variable into account. Respondents that attach the meaning 'own home', 'independence', 'financial security later', or 'freedom' to tenure are more inclined towards owning, while respondents who intend to rent are more motivated by meanings such as 'maintenance' and 'no choice'. The meanings 'financial burden now', 'wealth', and 'tradition' do not seem to differentiate very well between respondents who intend to rent or who have no preference for either form of tenure.

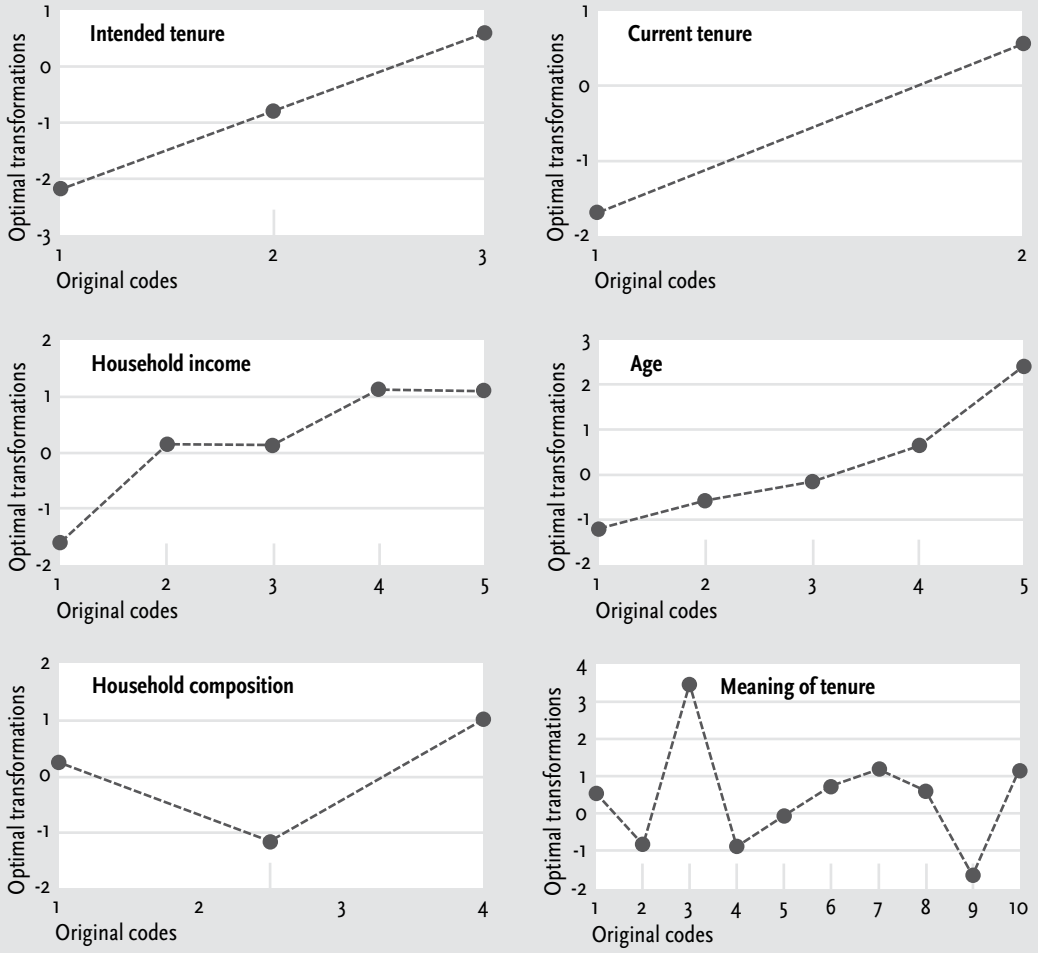
6.7 Conclusions

In this paper an ecological approach, in which the mutuality of the individual and the environment at a functional level of analysis is a central aspect, has been presented. The functional relationships between individuals and features of the environment are called affordances, and the meaning of environmental features lies in these relationships. Whatever the angle of the investigation might be, the ecological approach requires the analysis to contain environmental features, individuals, and meanings. The focus in this paper has been on dwelling features and in particular on intended tenure. We investigated the influence of the affordances of the feature tenure on intended tenure together with socio-demographic factors such as age, income and household composition. This ecological model was operationalized in a survey, and the results of the empirical analyses show the indispensability of the meanings of tenure.

It is not surprising that in the prediction of intended tenure choice the variables age, current tenure, income, and household composition account for 71% of the explained variance. Their influence is well documented in the literature on housing choice (Deurloo, 1987; Clark and Dieleman, 1996). In a cross-sectional study these variables represent the influence of the different processes that are studied simultaneously in life course analysis. The relatively small importance of the variable income in this study may be, at least partially, explained by the fact that the sampled population consisted of respondents with an above-modal income, which makes the sample relatively homogeneous with respect to income.

The addition of the variable meaning of tenure to the well-known set of

Figure 6.2 Optimal transformations of the variables



micro-level variables makes quite a difference. The explained variance of intended tenure increases from 40% to 51%, and the variable meaning of tenure is rather influential in the final solution, since it accounts for 29% of the explained variance which makes it the next most important variable in the regression analysis. The result that the meanings 'own home', 'independence', 'financial security later', and 'freedom' are more associated with the intention to own, while the meanings 'maintenance' and 'no choice' are more related to the intention to rent, is very much in line with the tentative empirical findings of Somerville (1994). This lends external validity to both his and our results as far as meaning of tenure is concerned. Since our results are based on a multivariate analysis, while Sommerville's are mainly based on bivariate analyses, the analysis in our paper not only replicates his' but also makes a stronger case for the importance of meaning of tenure. By taking the most relevant variables simultaneously into account the analysis in our paper controls for the relations between the predictor variables, which makes it possible to isolate the importance of each of these predictor variables separately.

By doing so the relative importance of meaning of tenure was established.

The analysis in this paper also seems to confirm a surmise by Coolen, Van Driel and Boelhouwer (2002). They investigated the influence of value orientations and goals such as 'power and achievement', 'family values', 'wealth', and 'harmonious family life', on intended tenure choice, and found that on top of the well-known socio-demographic variables these value orientations and goals contributed only 9% to the explained variance of intended tenure choice. They surmised that this result might be due to the very general and abstract nature of the questions about values and goals in their survey, which made the value and goal variables in the analysis too general and abstract for a micro-level analysis of intended tenure choice. The results of our analysis support this surmise. The question on meaning we presented to the respondents was very specific and completely focused on tenure, which resulted in a contribution to the explained variance that was more than three times larger than in their case.

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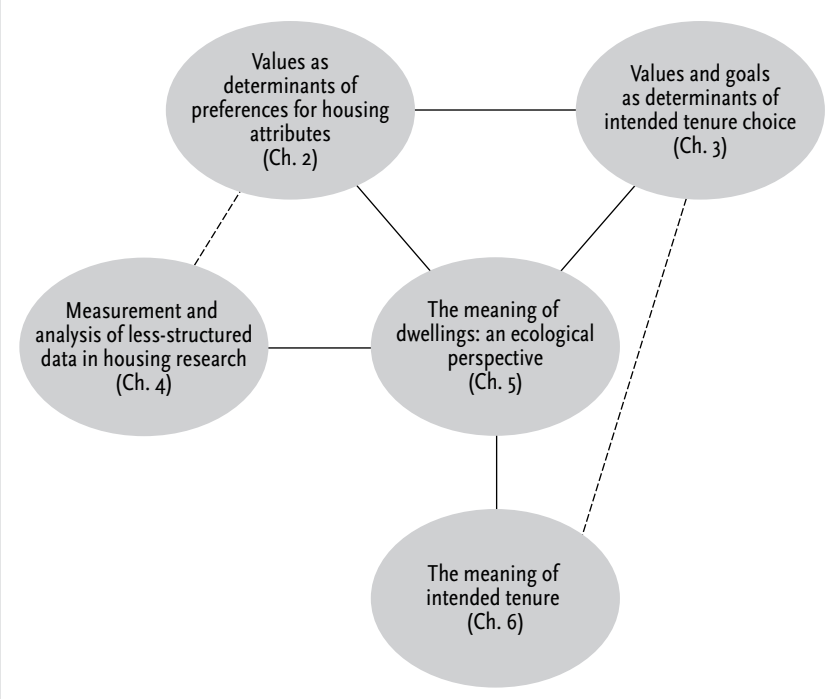
7 Conclusions and discussion

The goal of this study has been to develop a conceptual and methodological framework for studying the meaning of preferences for features of a dwelling. These features are viewed as functional for achieving the goals and values that people pursue. The meaning of dwelling features lies in these functional relationships. The framework presented in this study therefore relates the preferences for the features of a dwelling to the meaning they have for people. Chapters 2 through 5 of this study have already been published as articles in scientific journals, while Chapter 6 has been submitted for publication. The relationships between the different chapters in this book are depicted in Figure 7.1.

The goal of this study makes Chapter 5, in which the conceptual and methodological framework is presented, the central part of this study. Chapters 2 and 3 also contain certain aspects of the framework and have been instrumental in developing it. In Chapter 2 the conceptual and methodological feasibility of the means-end approach to the field of housing preference is investigated. And in Chapter 3, which still leans heavily on the means-end mod-

Figure 7.1 Relationships between the chapters of the book



el, tenure preference is considered and an assessment made of whether goals and values contribute to its explanation while controlling for well-known socio-demographic factors such as income and household composition. After the introduction in Chapter 5 of the conceptual framework Chapter 6 assesses whether meanings as conceptualized in the framework contribute to the explanation of tenure preference while controlling for well-known socio-demographic factors.

The methodological part of the framework concerns not only measurement aspects but also facets of data analysis. Since the measurement and analysis aspects of the framework are closely related to the conceptual facets they have been dealt with in the relevant chapters of this study. However, there is one methodological aspect that I felt needed separate treatment. This concerns the distinction between qualitative and quantitative measurement and analysis of data. I have elaborated my ideas about the qualitative-quantitative distinction in Chapter 4.

In the current chapter the main conclusions about the conceptual and methodological framework are presented for the conceptual framework and for the research methodology separately. The presentation of the conclusions is followed by a discussion about several aspects of the framework. In the final section several ideas for follow-up research are presented.

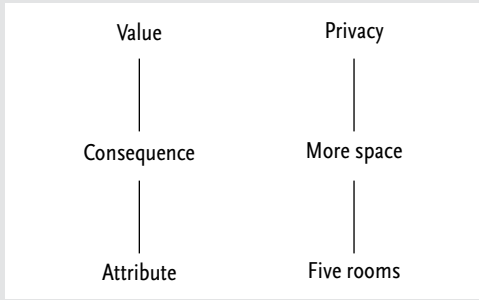
7.1 Conclusions about the conceptual framework

The conceptual framework rests on three pillars: means-end theory (Gutman, 1982; Reynolds and Gutman, 1988), the conceptualization of the meaning of the built environment as developed by Rapoport (1988; 1990b; 1995), and on the theory of affordances (Gibson, 1986).

7.1.1 Means-end theory

Means-end theory describes the relationships between goods and consumers. A good is defined by a collection of attributes. These attributes yield consequences when the good is used. The importance of consequences is based on their ability to satisfy people's personally motivating values and goals. Thus, in means-end theory the relationships between the attributes of goods and the values is indirect, and the intervening category called consequences is very broad and may encompass everyday activities but also consequences that are more functional or psychosocial in nature. Moreover, the means-end approach is a bottom-up approach in the sense that the meaning a good has for an individual is investigated from the point of view of the individual. Which attributes, consequences and values turn out to be relevant is determined in the

Figure 7.2 Means-end chain



first place by the individuals that are investigated and not by the researcher.

A means-end chain is a model that provides a way of relating the choice of a good to its contribution to the realization of objectives and values. Means in this context are goods which people consume and activities that they carry out. Ends are positively evaluated beliefs such as freedom, privacy and friendship. The most important linkages between values and objectives on the one hand and behavior and preferences on the other form the elements of the means-end chain model.

The original means-end chain model (Gutman, 1982) has three levels: product attributes – consequences – values. A simple example of a means-end chain model related to dwelling would be: five rooms (attribute) – more space (consequence) – privacy (value) (see Figure 7.2).

The research reported in Chapter 2 is a straightforward application of the classical means-end model and its measurement approach to housing and housing attributes. Since the means-end model stems from marketing and consumer research and had until then only be applied to consumer goods, the main purpose of the investigation reported in this chapter is to assess the feasibility of the means-end approach to the field of housing preference.

The main conclusion from the study is that the means-end approach is applicable to the field of housing preferences, but that both its theory and its method need certain adaptations in order to make it a feasible approach for the field to which it was applied here.

In particular the study shows that preferences for the housing attribute garden are motivated by a broad spectrum of consequences that differ tremendously in nature; the consequences found for this housing feature garden comprise the category of everyday activities, as in the study by Lindberg *et al*. (1987), but also comprise functional and psychosocial factors.

The study also shows that respondents are very well able to express the values that motivate their preferences and that the values found for the feature garden such as freedom, enjoying life, and unity with nature, are interpretable and in line with other research into the garden (*cf*. Francis and Hester, 1990).

The MEC-model does not always represent the relations between housing features and dwellers well, sometimes there are no intervening consequences which makes the relationship between attribute and value direct, a good example is the direct relationship between the attribute garden and the value freedom, and sometimes there seems to be no values involved, leaving only a relation between attribute and consequence, for instance the relationship between garden and space for animals. Similar results have been reported by Snelders and Schoorman (2004) who showed that the assumed relations between concrete and abstract attributes in means-end chains are not always

found. It seems that the MEC-model needs to be adapted in such a way that it also makes these relationships possible.

Since the research presented in Chapter 2 lies mainly within the context of discovery, it was suggested that research was also established that would take socio-demographic factors into consideration and would focus more on the context of justification; this research line has materialized partly in this study in Chapters 3 and 6 and partly in the companion study by Meesters (forthcoming).

In Chapter 3 the standard means-end model is further elaborated, resulting in an extended means-end model. This model is subsequently applied to one housing feature, tenure preference, using a different measurement approach – a structured questionnaire – than the one used in Chapter 2. The purpose of this chapter is to assess whether goals and values contribute to the explanation of tenure preference while controlling for well-known socio-demographic factors such as income and household composition. Since tenure preference is an extensively investigated housing feature much is known about its relevant socio-demographic variables, which makes it an interesting feature for assessing the influence of values and goals. So the research in this chapter lies more within the context of justification.

The main conclusion from this investigation is that values and goals contribute to the explanation of tenure preference, but this contribution is limited. The well-known socio-demographic variables income, age, and household composition and the variable current tenure account for 91% of the explained variance in intended tenure choice. The value orientations power and achievement and family values, and the goals wealth and harmonious family life contribute another 9% to the explained variance of intended tenure choice.

7.1.2 The meaning of the built environment

The second pillar of the conceptual framework is Rapoport's conceptualization of the meaning of the built environment. He defines a dwelling as the sub-system of settings, embedded in a larger system of settings called the environment, in which certain systems of activities take place (Rapoport, 1990a). The dwelling forms the primary anchor for many individuals in the environment and provides such basic functions as concealment and shelter. Defining a dwelling as a sub-system of the environment makes it possible to understand its specific functions, such as a place of retreat, in the context of other sub-systems in the environment. Only a subset of all human activities takes place in a dwelling. This subset of activities may be different for different individuals and the subsystem 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, for instance, a garden, a driveway, a garage, a certain number of rooms, an attic, and many other settings.

Rapoport emphasizes the importance of meaning in understanding the built environment (Rapoport, 1988, 1990b). Meaning is one of the central mechanisms in linking built environments and people by providing much of the rationale for the ways in which built environments are shaped and used. He also argues that the common distinction between function and meaning is misguided, because function has mainly been identified with manifest aspects of the built environment, while more latent aspects may also help us understand built form, which implies that meaning is not only part of function, but is often the most important function of the built environment. He distinguishes three levels of meaning in the built environment. 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, and which concern the latent aspects of activities and behavior; lower-level, everyday and instrumental meanings, for example accessibility, seating arrangements, movement, etc. which are also called manifest functions. According to Rapoport everyday meanings have mostly been neglected in research on the meaning of dwellings, although they are essential for understanding the built environment. People's activities and built environments are primarily linked by lower-level meanings, although middle-level meanings also tend to be important. This distinction in level of meanings clearly shows Rapoport's concern with the purposes of the built environment and his emphasis on the active role of users.

7.1.3 The theory of affordances

Gibson's theory of affordances forms the third pillar of the conceptual framework; its focus is people-environment relations. An individual's operating environment consists of objects, the things toward which the individual is oriented, the focal points around which the individual's activity becomes organized. An object is anything that can be referred to or designated; objects may be material or immaterial, real or imaginary, in the outer world or inside the body, have the character of an enduring substance or be a passing event. From the perspective of a human being the environment may be classified in at least five categories: other human beings, other animals, physical objects, social objects, and abstract objects. If the individual notes or is aware of any one of these things, it is an object for that individual. Objects constitute the world or operating environment of the human being. Taken together, they constitute the individual's world of existence, that is, the things the individual deals with in life activity.

Objects have value for human beings in terms of the possibilities they offer for actions, intentions, goals, and values; that is, an object may have certain features in relation to an individual's goal. The concept of affordances (Gibson, 1986) most basically highlights this congruence between structur-

al features of the environment and the intentions and goals of individuals. Affordances are relations between features of the environment and the abilities of human beings (Chemero, 2003); they are attributable to the intrinsic features that objects possess by virtue of their make-up, and are specified in relation to a particular individual. In this sense environmental features are experienced as having a functional meaning for the individual.

The features of the environment are only one facet of a dynamic individual-environment relation; the other facet is the intentional actions of individuals, and this aspect of the individual-environment relation becomes most apparent in the selection, the discovery, and the creation of meaningful environmental features (Heft, 2001).

According to this theory of affordances the meanings of objects (and places) reside in the relations between the features of the environment and human beings (Chemero, 2003). It is in these relations that meanings are discovered, and where they are created. In this functional sense every object has a meaning that distinguishes it from other objects. This meaning constitutes the nature of the object for the individual for whom the object exists. One confronts an object, sees it, refers to it, talks about it, or acts toward it in terms of the meaning it has for one. Meaning is not something that is inherent in an object; it is not an intrinsic part or attribute of the object. The meaning of an object exists in the relation between the object and the individual for whom it is an object; its meaning exists in how the individual designates the object, and in this sense an object may have different meanings for different human beings, or it may have different meanings for the same human being in different situations.

7.1.4 Meaning and levels of meaning

The term meaning is used here in very much the same way the concept is used by Rapoport (1988; 1990b) and Chemero (2003). Meanings may be defined as beliefs about the relations between environmental features and human abilities and about the consequences of these relations. Meaning is considered to be a function of dwellings and dwelling features. Dwellings are shaped in such a way that they can afford the activities that people want to perform in them and that they can also satisfy other manifest and latent functions that people expect them to fulfill. And if a dwelling does not satisfy the desired manifest and latent functions this results in what Priemus (1986) has called cumulative stress (Huff and Clark, 1978) which may lead to, for instance, adjustment of the dwelling in such a way that it better fulfills these functions or moving to another dwelling.

Both means-end chain theory and Rapoport's conceptualization of meaning are based on a certain layering of functions or meanings. In means-end chain theory the meanings of an attribute are denoted as consequences and values,

Table 7.1 Levels of meaning

Rapoport's scheme	Example	Means-end chain model
High-level meanings	Self-direction	Value orientations
Middle-level meanings/Latent functions	Privacy	Values
Lower-level meanings/Manifest functions	More space	Consequences
Dwelling features	Five rooms	Attributes

while Rapoport refers to lower-level, middle-level and high-level meanings. The relationships between the two conceptualizations are depicted in Table 7.1.

In both conceptualizations a notion of hierarchy seems to be underlying this layering of meanings. This is more explicit in means-end theory than in Rapoport's scheme. In a means-end chain the attribute, its consequences, and the related values are hierarchically linked to each other, which can clearly be seen in a hierarchical value map, which is a tree-diagram where all the relations between the attributes, consequences and values of a good are hierarchically ordered. Although Rapoport (1988) distinguishes three levels of meaning, which by naming them higher-level, middle-level and lower-level meanings suggests a certain hierarchy, he is less clear about the possible relationships between these levels of meaning.

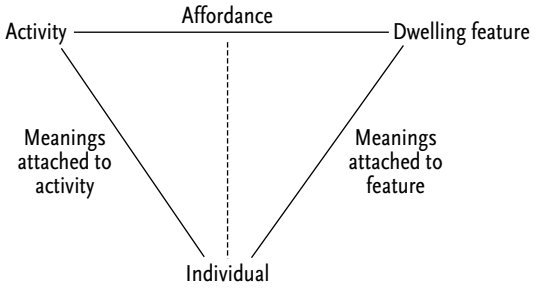
It was noted in Chapter 2 that the means-end model needed adaptation, since attributes of goods are sometimes also directly related to values. For instance, in Chapter 2 this occurs in the hierarchical value map of the garden in which this feature is directly related to the value freedom. The need for adjustment of the means-end model is, at least partly, due to the values category, which is a substantial category making everything else into a consequence. This use of a substantial category instead of an analytical one in the means-end model makes it less flexible than Rapoport's scheme, in which more analytical categories are used. This implies that what is a manifest function for one person may be a latent function for another person, and this flexibility of the scheme does not detract from its usability and generality.

Van Rekom and Wierenga (2007) recently investigated the hierarchy assumption in means-end theory. For the cases they studied the hierarchy hypothesis had to be rejected. Moreover, as Cohen and Warlop (2001) have argued, in many research situations one does not have to assume hierarchy in means-end relations at all in order to achieve meaningful and relevant answers to research questions. This is exactly why I have introduced the concept of a meaning structure in Chapter 5. The hierarchy assumption is not made for meaning structures; hierarchical relations can occur in a meaning structure but it is not necessary as several of our examples clearly show.

7.1.5 Conceptual framework

The research presented in this study forms part of a project entitled 'Housing experience and housing choice behavior' which has been subsidized by the Netherlands Organization for Scientific Research (NWO). Another part of this project is the companion study by Meesters (forthcoming). Figure 7.3 represents the main aspects of the conceptual framework as it has been devel-

Figure 7.3 Conceptual framework



oped in this study and as it is used in the companion study by Meesters. It shows the interrelations between the individual, activities and dwelling features.

Whenever an activity is undertaken a relationship arises between the feature and the activity, which is called an affordance (*cf.* Chemero, 2003). Dwelling features potentially afford many activities, for instance the living room may afford having dinner, entertaining family and friends, watching television, reading, playing, listening to music, and the garden may afford gardening, entertaining family and friends, children playing, relaxation, and so on. The relationship originates from the individual that undertakes the activity, and it is relative to the individual in the sense that the relationship between an activity and a feature may be possible for some individuals but not for others, the dotted line in Figure 7.1 indicates this relativity of the individual-environment relationship. For instance, a garden may afford riding a bicycle for small children but not for grown-ups due to the size of the garden and/or the spatial arrangement of plants, trees and other objects. So the term affordance is reserved here for the relation between a feature and an activity that originates from an individual. In this sense affordances may be considered as basic meanings (Chemero, 2003); they make in a geographer's terms a space into a place (Cresswell, 2004), and in the terminology of housing researchers a house into home (Clapham, 2005). In Rapoport's scheme of meanings affordances form the relationship between dwelling features and manifest functions, and in means-end theory they are represented by the link between attributes of goods and consequences.

But affordances are not the only meanings that occur. Activities often also have meaning for the individuals that undertake them. For instance the activity of entertaining family and friends, afforded by the garden, may satisfy such desires as being together with the family or having contact with friends. These meanings, which are represented in Figure 7.3 by the link between activities and the individual, are called latent functions by Rapoport, and in means-end theory they are supposed to be values.

Moreover, it seems that dwelling features have meanings beyond the activities that they afford and the meanings that these activities have. For instance, in Chapter 2 we saw that the interviewees related the feature garden to activities such as gardening and sitting in the garden, but also to other types of manifest functions such as space for animals, sun and shade, and looks nice. The meanings that are attached to dwelling features beyond the activities and their meanings will most likely be more psychosocial functions and/or latent functions.

In this study the focus has been on the meaning of dwelling features in general without any limitations on the type of meanings involved. The meanings may be activities and values but may also encompass psychosocial functions. This research line forms only the right hand side of the framework in Figure 7.3. The other side – activities and the meanings of activities – is investigated in the companion study by Meesters (forthcoming).

This conceptual framework for studying the meaning of dwellings was presented in Chapter 5. The research presented in that chapter is a generalization of the ideas put forward in Chapters 2 and 3 on the relationship between values and housing preferences, and the chapter relates the research areas of housing preference and the meaning of dwellings with each other. Although the model may be used for investigating the meaning of dwelling features in general the focus in this study remains the preferences for dwelling features.

The study shows that both the conceptual and the methodological facets of the framework 'work', which means that data gathered on the basis of the framework lead to representations of these data that are understandable and interpretable in terms of the framework. The framework focuses on lower- and middle-level meanings, but the measurement procedure does not exclude the measurement of higher-level meanings. Interestingly, these meanings did not occur in the studies we have so far carried out.

This conceptual framework has subsequently been applied to intended tenure preference, whereby the measurement of the relevant variables was performed by computer aided telephone interviewing. The main goal of this chapter is to assess whether meanings, as conceptualized in the conceptual framework, contribute to the explanation of intended tenure preference while controlling for well-known socio-demographic factors such as income and household composition. Moreover, the analyses performed in this chapter will also put us in a position to evaluate the surmise in Chapter 3 that the measurement of values and goals may have been too general for a well-balanced evaluation of their role in the explanation of intended tenure preference.

We may conclude from Chapter 6 that the addition of the variable meaning of tenure to the well-known set of socio-demographic variables makes quite a difference as the explained variance of intended tenure preference increases from 40% to 51%. The socio-demographic variables age, current tenure, income, and household composition account for 71% of the explained variance, while the variable meaning of tenure accounts for 29% of the explained variance in the final solution.

The fact that by emphasizing feature-specific meanings instead of more general values and goals the percentage of the explained variance increases, while the contribution of the meanings to the explained variance is significant, seems to confirm the surmise in Chapter 3 that values and goals were operationalized too generally in that analysis.

7.2 Conclusions on the research methodology

From the first application of the laddering method in Chapter 2, through the use of the adapted method in Chapter 5, and the application of the CATI-method using field coding in Chapter 6, the method of collecting data has undergone adaptations and changes. The same can be said for the methods of representing and analyzing the data; for instance, the paper-and-pencil method for creating hierarchical value maps in Chapter 2 was replaced in Chapter 5 by the method of graph analysis, which is a more systematic method for representing and analyzing this type of data. Moreover, it was shown that other types of methods are also suitable for analyzing laddering-type of data. In this section the conclusions about the research methodology will be put into perspective.

7.2.1 Measurement of meaning structures

The procedure for measuring the meaning structures of dwelling features as presented in Chapter 5 is an adapted version of the procedure for the determination of means-end chains (Reynolds and Gutman, 1988) used in Chapter 2. This adaptation was based on the conclusion in that chapter that the whole procedure – semi-structured interviewing, transcription of the interviews, and the processing of the transcribed interviews – was very time-consuming. The measurement of the meaning structures of dwelling features takes place in three phases:

1. elicitation of the salient dwelling features;
2. elicitation of the (preferred) levels of the salient dwelling features;
3. measurement of the meaning structures.

The first step in measuring the meaning structures concerns the elicitation of salient dwelling features. Many elicitation methods are available that range from letting the respondents mention the features themselves, to presenting the respondents with a list of features (*cf.* Reynolds, Dethloff and Westberg, 2001). Since much is known about important dwelling features in this study lists of features or sets of cards containing features were compiled. Respondents had to select the most important features from these lists or sets. They also had the possibility to add features they considered important and that were not on the lists/cards, enabling them to determine exactly what a dwelling is to them. The choice to present list/cards with features was enhanced by the fact that there are so many dwelling features. It was expected that, because of the limited information processing capability of human beings, lists/cards would support the respondents in conceptualizing the dwelling features important to them.

In the second phase the respondents are asked to indicate which level of

each of the salient features they prefer. If, for example, the number of rooms was mentioned as a salient feature, then the respondent has to indicate the preferred number of rooms. Where the type of dwelling is a salient feature, either the preferred type is indicated or the dwelling type that is definitely not wanted. Allowing respondents to indicate what they definitely do not prefer, their so-called non-preference, is particularly relevant for situations in which the respondent cannot articulate their preference for a certain level of a salient feature very well. For example, some respondents know very well that they do not want to live in an apartment, but have no clear preference for either a dwelling in a row or a semi-detached dwelling.

The starting point for determining the meaning structure of each salient dwelling feature is the preferred, and sometimes the non-preferred, level of that feature. The meaning structures are measured, in the third phase, by a semi-structured interviewing technique known as laddering (Reynolds and Gutman, 1988). The interview proceeds 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 is to determine the relationships between on the one hand the preferred, or non-preferred, level of a salient feature and on the other hand the meaning or meanings this dwelling feature has for the respondent. So, if the respondent has indicated that a dwelling that has a garden is preferred, he/she is subsequently asked 'Why is a garden important to you?' The why question is repeated as a reaction to the answer of the respondent. The process stops when the respondent can no longer answer the *why* question, or after a certain predetermined number of *why* questions. Letting the interview begin at the preferred or non-preferred level of a salient dwelling feature and subsequently proceeding with several *why* questions allows the most closely associated meanings of the feature to be revealed. In this way meaning structures can be determined for each salient dwelling feature level and for every respondent.

The meaning structures are constructed during the interview by the interviewer and the respondent together on paper. There are good reasons for constructing the meaning structures in this way. Writing each answer down on paper gives the respondent some time during the interview to reflect about his or her answer and to explore and discover other aspects of the cognitive structure under construction. It also gives the interviewer some time to reflect about the answer and to make sure he/she understood the answer correctly. If necessary, the interviewer can probe the respondent about the exact meaning of his answer. Furthermore, instead of being an interviewee who only has to answer questions passively, the respondent has a more active role in the interview and this involvement may work as a motivating factor.

This measurement procedure differs in several respects from the original laddering-procedure described by Reynolds and Gutman (1988). The elicitation of salient dwelling features is much less open-ended than is often the case

in means-end studies, mainly due to the fact that so much is already known about important dwelling features. Furthermore, the procedure by which the meaning structures are constructed on paper during the interview by the interviewer and the interviewee is new, and can be considered as a new form in between so-called hard and soft laddering which worked very well.

In the computer-aided telephone survey, of which some results are presented in Chapter 6 and many more in the companion study by Meesters (forthcoming), the number of features was limited and the semi-structured interviewing format was again adapted. Only eight important dwelling features were part of the questionnaire: tenure, number of rooms, size of living room, dwelling type, garden, type of neighborhood, type of location, and type of architecture. For each of these features respondents were first asked what level they preferred. Having indicated their preferred level the respondents were subsequently asked what the most important reason was for preferring this level. This was an open-ended question, while for the coding of the answers 'field coding' was applied, which comprises that the interviewer is supplied with a set of categories in which he/she has to try to code the answer given by the interviewee. If an answer cannot be coded into one of the supplied categories, the interviewer has to note down the answer of the respondent.

The set of categories for the survey was compiled on the basis of several pilot projects in which semi-structured face-to-face interviews were conducted without previously determined categories, which were subsequently transcribed and content-analyzed. The interviewers who conducted the survey were trained in field-coding the answers to the open-ended question. After the survey it turned out that between 80% and 85% of the answers were coded in one of the pre-specified categories. A content analysis was performed on the other answers, which resulted in very few additional categories. The remaining answers were too idiosyncratic to be categorized and were collected in the category 'other'. It is evident that the pilot studies were instrumental in achieving these results in the survey.

7.2.2 Processing of the data

The raw data generated by the less-structured laddering interviews, both on paper and tape, are the verbalizations of the respondents. These verbalizations are so-called less-structured data, which, as is argued in Chapter 4, can only be used for further analysis – description, interpretation, explanation, mathematical and statistical analysis – when they contain some minimum level of structure called a category system. The process of developing such a category system is called categorization, which is carried out on the raw data by means of content analysis. This results in a set of categories that is used for all respondents. Subsequently, the meaning structures of each respondent can be coded according to the set of categories.

The original processing of the data – transcription of the interviews, categorizing and coding of the transcribed interviews – that was applied in Chapter 2 turned out to be very time-consuming. It was suggested there that to have the meaning structures constructed on paper by the interviewee, supported by the interviewer, may save considerable in time, because the categorizing and coding of the data could then take place immediately after the interview(s) without transcription, while the tapes of the interviews could be consulted only in case of uncertainty about the interpretation of an aspect of a papered meaning structure. This procedure was applied in the pilot study that is reported in Chapter 5 and in other studies (Boumeester *et al.*, 2006). As expected the new procedure saved considerable processing time, and it seemed that the interviewees liked the procedure better than the original one in which they had a relatively passive role.

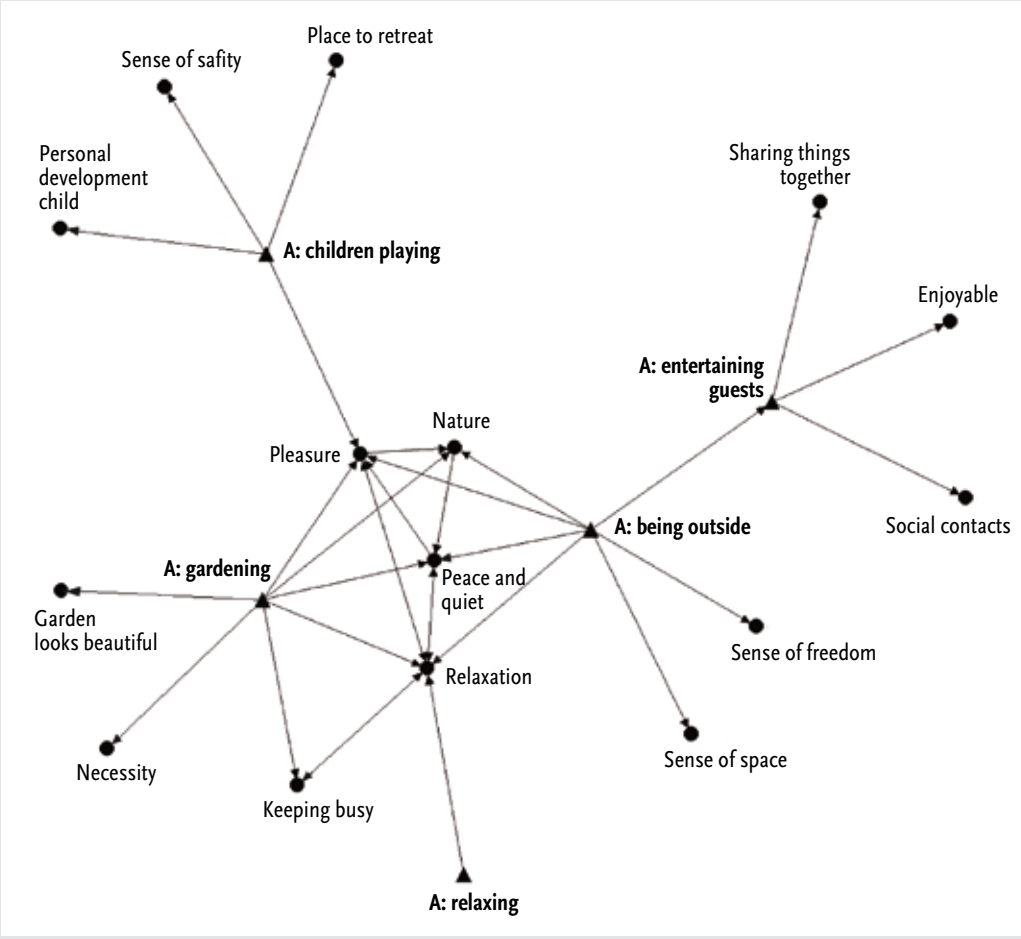
7.2.3 Analysis of meaning structures

The categorization and coding of the data result in meaning structures per individual and per dwelling feature. In means-end chain theory these meaning structures are called ladders and the ladders of the individual respondents are aggregated by means of a so-called implication matrix. An implication matrix is a square matrix that represents the relationships between the elements from the ladders. The rows and the columns of the matrix are formed by arranging the elements from the ladders into attributes, consequences, and values. The cells of the implication matrix show the number of direct and possible indirect links between the elements of the ladders. The dominant connections are subsequently graphically represented in a tree diagram known as a hierarchical value map, which is constructed by a paper-and-pencil method described in Reynolds and Gutman (1988). This procedure was attempted in Chapter 2, but it was concluded that the dwelling is a too complex and heterogeneous good to make this feasible. It was therefore decided to only construct hierarchical value maps of separate dwelling features.

There was also another reason for desiring a different method for constructing these tree diagrams. From a methodological point of view the paper-and-pencil method contains some arbitrary aspects, which is less desirable from the perspective of intersubjectivity. For instance, at certain points in the implication matrix it may occur, due to the fact that two or more consequences or values have the same frequency, that which node comes next in the tree diagram depends on the researcher, so that one and the same implication matrix may result in different hierarchical value maps. Graph analysis provided a solution to this problem (*cf.* Valette-Florence and Rapacchi, 1991).

Graph analysis takes an adjacency matrix, which is equivalent to the implication matrix, as its starting point for the representation and analysis of networks. For the visual representation of adjacency matrices into networks sev-

Figure 7.4 The meaning of activities in the garden



eral algorithms are available, which emphasize different aspects of a network and consequently make the networks look visually different, but the characteristics and structure of the network remain the same, whatever the visual representation looks like, because they are based on the underlying adjacency matrix. Since the pilot study reported in Chapter 2 all the tree diagrams or networks have been constructed by means of network diagrams.

7.3 Discussion about the conceptual framework

In this study the focus has been on the meaning of dwelling features, which is only one side of the conceptual framework as depicted in Figure 7.3. The other part – activities and the meanings of activities – is investigated in a companion study by Meesters (forthcoming). To illustrate the similarities and differences between both lines of inquiry some results for the feature garden are presented in terms of meaning networks in Figures 7.4 and 7.5 and are con-

cisely discussed here (see also Meesters and Coolen, 2008b).

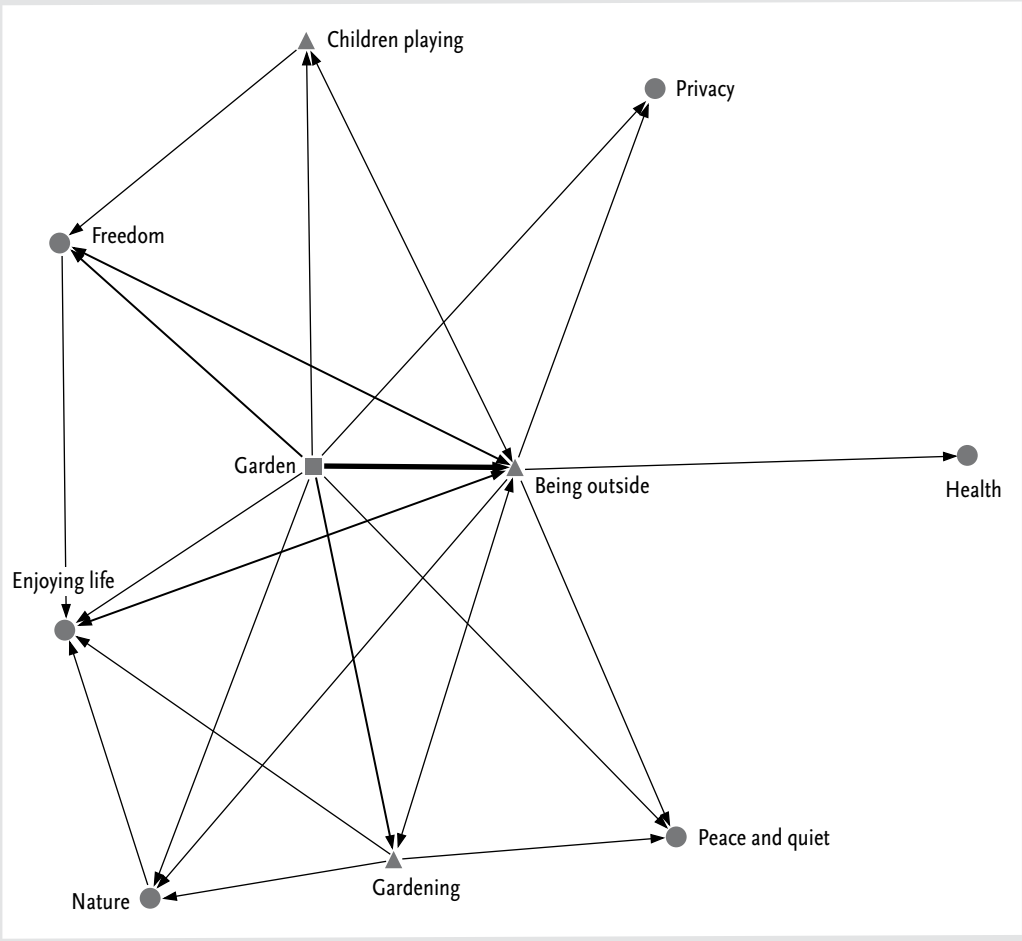
Figure 7.4 represents the meanings of activities in the garden. It is based on a particular sequence of questions in the questionnaire. Respondents were first asked which activities they undertake in and around their dwelling. Subsequently, for each mentioned activity, they were asked in which setting(s) this activity was done, and why that activity was important to them. So instead of dwelling features activities are taken as the starting point of the investigation. This way of assessing the meaning of a dwelling feature was referred to in Chapter 2 as the middle-out approach.

Many different activities take place in the garden, but the activities gardening and being outside are dominant. A little over half of the activities mentioned concern gardening, while being outside was mentioned 27% of the time. The other activities – children playing, entertaining guests, hobby, relaxing, being together with the nuclear family, and eating – were mentioned less frequently. These are activities that may also take place in other settings, and actually several were also mentioned as activities in the living room (Meesters and Coolen, 2008a). They, probably, only take place in the garden when the weather allows this. With respect to these activities the garden may be considered as the living garden: an outdoors extension of the living room (Grampp, 1990).

Given the dominance of the activities gardening and being outside, it is evident that these activities have a central position in the meaning network (see Figure 7.3). Values associated with these activities are relaxation, pleasure, peace and quiet, nature, freedom, space, and beauty. Quite some respondents consider gardening to be a necessity in the sense of a chore. The activities children playing and entertain guests seem to take up isolated positions in the network. Since the activity children playing is most likely only relevant for people having smaller children, the relatively isolated position of this activity makes sense. The relatively isolated position of the activity entertain guests, which turns out to be the only activity with socially oriented values, may be caused by the fact that due to the unstable weather circumstances in the Netherlands this activity primarily takes place in the living room.

For the meaning structure depicted in Figure 7.5 the setting garden has been taken as a starting point. Respondents having a dwelling with a garden as well as respondents searching for a dwelling with a garden were asked why the garden was important to them. Subsequently they were asked why the reason just mentioned was important for them. The meaning structure of the setting garden in Figure 7.5 shows a clear distinction between the manifest functions being outside, gardening and children playing, and the values privacy, freedom, health, enjoying life, nature and peace and quiet. Of the ties that emanate from the feature garden 78% are linked to one of the manifest functions, which seems to indicate that most of our respondents consider the garden in the first place as action and as a place (*cf.* Francis and Hester,

Figure 7.5 The meaning of the garden



1990). Being outside is the most popular manifest function, mentioned almost four times as often as gardening, which in turn is almost twice as popular as children playing. This popularity of the manifest function being outside seems to indicate that the garden has more functions than gardening, and that the meaning of the garden resides in more than just the activity gardening as Franscis and Hester (1990) claim. It also signifies that the garden as an enclosed outdoor space is considered as an integral part of the dwelling that differs from other dwelling settings because of its open sky. 22% of the ties that originate from the node garden are directly linked to one of the values privacy, freedom, enjoying life, peace and quiet and nature. Enjoying life and freedom were the most popular values, followed by nature and peace and quiet, while privacy and health were mentioned the least. Apparently one fifth of the respondents in our sample associates one of these values directly with the garden as an idea. Direct relations between the feature garden and values have also been reported in Chapter 2.

Figure 7.5 also shows that the manifest function children playing is linked

to the value freedom and to being outside; and the manifest function gardening is related to the values nature, peace and quiet, and enjoying life and being outside. Being outside itself is the only node in the network that is linked to all the values associated with the setting garden and in addition it is the only node linked to the value health. Together with the popularity of the function being outside, this signifies the importance and centrality of this aspect of the garden as a setting of the dwelling. It also explains why in the Netherlands so many dwellers looking for a single family dwelling only want such a dwelling if it has a garden.

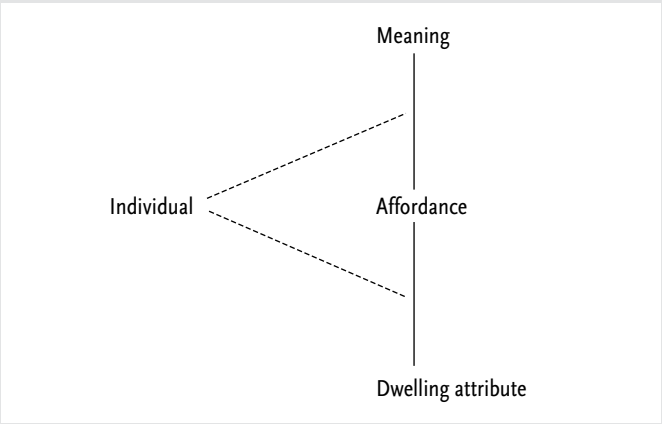
Several of the meanings that are represented in Figure 7.5 have also been reported in other research on specific meanings of more or less public gardens or natural settings. For instance in research on the healing aspects of gardens (Lewis, 1990; Kaplan and Kaplan, 1990), values such as health and peace and quiet play a prominent role, but as far as I know have not been presented yet in the context of the domestic private garden.

The value nature is not mentioned very often by the respondents in our sample, which seems to undermine the argument by Francis and Hester (1990) that gardens are so important to individuals because they are people's most immediate and sustained contact with nature through which people create their own idealized order of nature. It seems that the idea of the living garden as an enclosed outdoors extension of the dwelling, and the living room in particular, seems a more appropriate interpretation of the domestic private garden, at least in the Netherlands.

It was concluded in Chapter 2 that the means-end model does not always represent individual-dwelling relations well, since dwelling features are sometimes also directly related to values without intervening consequences. For instance, in Chapter 2 this occurs in the hierarchical value map of the garden in which this feature is directly related to the value freedom. And in Figure 7.5 above 22% of the ties that originate from the node garden are directly linked to one of the values in the meaning network. This aspect of the means-end model is, at least partly, due to the values category, which is a substantial category making everything else into a consequence. This use of a substantial category instead of an analytical one in the means-end model makes it less flexible than Rapoport's scheme, in which more analytical categories are used, such as manifest and latent functions, or lower- and middle-level meanings.

It has also been noted in this study that in means-end theory a hierarchical relationship is assumed between the attribute, its consequence, and the related value, which results in an aggregated level in a hierarchical value map. And, although Rapoport is less clear about the hierarchical aspect in his conceptualization of the meaning of the built environment, it seems that hierarchy is implicitly assumed in his levels of meaning. This hierarchy assumption was, albeit implicitly, dropped in Chapter 5 in which the concept of meaning structure was introduced. Recently Van Rekom and Wierenga (2007) have

Figure 7.6 Adapted conceptual framework



investigated the hierarchy assumption in means-end theory. For the cases they studied the hierarchy hypothesis had to be rejected. Moreover, as Cohen and Warlop (2001) have argued, in many research situations one does not have to assume hierarchy in means-end relations at all in order to achieve meaningful and relevant answers to research questions, so I shall now explicitly drop the hierarchy assumption.

These points of criticism in combination with the remaining lack of clarity in terminology was a reason for me to adapt the conceptual framework in Figure 7.3. The adapted version of this framework is presented in Figure 7.6, and it shows the interrelations between the individual, affordances, meanings, and dwelling features. Dwelling features potentially have many and diverse affordances. These affordances may be activities, but can also be psychosocial functions and even values. For instance, the garden may afford gardening, entertaining family and friends, children playing, peace and quiet, nature, health, and so on. So, the term affordance is used here for an analytical category that may contain activities but also other functions. Whenever a function is assigned to a feature a relationship arises between the feature and the function, which is called an affordance (*cf.* Chemero, 2003). This relationship originates from the individual that assigns the function, and it is relative to the individual in the sense that the relationship between a function and a feature may be possible for some individuals but not for others. The lower dotted line in Figure 7.6 indicates this relativity of the individual-environment relationship. For instance, a garden may afford peace and quiet for some individuals but not for others due to its size. So the term affordance is reserved here for the direct relation between a feature and a function that is assigned to it by an individual, whatever the nature of that function may be. In this sense affordances may be considered as basic meanings (*cf.* Chemero, 2003), but they will not be called meanings here but affordances because they form the primary relationship between individual and environment.

Given an affordance the function, which is one of the relata in the affordance relation, may have meaning for the individual. This may be the case for activities, but other functions may also have meaning for the individuals that assign these functions. For instance the activity of entertaining family and friends, afforded by the garden, may have such meanings as being together with the family or having contact with friends; or the function being outside, afforded by the garden, may have such meanings as privacy and free-

dom. These meanings, which are represented in Figure 7.6 by the link between affordance and meaning, are also relative to the individual. The chain 'dwelling feature – affordance – meaning' will be called a meaning structure.

The relativity of the individual-environment relationship, which has so far been illustrated in terms of abilities or attitudes, is also relevant in another sense. This concerns the so-called socio-demographic variables – for instance income, age, household composition – that have been introduced in Chapters 3 and 6. These variables condition individual-environment relations in the sense that they determine to a certain extent whether potential affordances may become actual affordances. For instance, a certain dwelling may potentially afford all the affordances one is looking for, but these affordance may not materialize because one cannot afford the dwelling financially. And a certain dwelling may afford a separate room for every family member to some families and not to others due to the size of the household. So, the model presented in Figure 7.6 seems in all its simplicity to take many aspects that have been dealt with in this study into account.

7.4 Discussion about the research methodology

In Subsection 7.2.3 several reasons were mentioned for replacing the paper-and-pencil method for constructing hierarchical value maps by graph analysis, which was subsequently applied in Chapter 5 and in other studies (Boumeester *et al.*, 2006; Meesters and Coolen, 2008a, 2008b; Meesters, forthcoming). As it turned out graph analysis also has other advantages, that were already utilized in Chapter 5 but which were not described there because it was not the focus of that study. Since several of these advantages have recently been spelled out by Van Rekom and Wierenga (2007), I shall draw attention here to two important advantages.

The first one is directly related to the argument above about the arbitrary aspects of the paper-and-pencil method for constructing hierarchical value maps. The paper-and-pencil method always leads to a hierarchical value map, whether the underlying implication matrix is hierarchical in nature or not, while a network representation would reveal the fact that an implication matrix is non-hierarchical by having nodes that have links directed at each other as is the case in Figure 7.3 in Chapter 5 for the link between space and multi-functionality, and in Figure 7.5 above for the link between being outside and gardening. However, by only focusing on this hierarchy aspect Van Rekom and Wierenga (2007) suggest that only for non-hierarchical means-end relations is a network representation more appropriate. In my view a network representation of means-end relations is always superior to a hierarchical value map, because it avoids the arbitrary aspects mentioned above, and because it can represent both hierarchical and non-hierarchical means-end relations.

The second important advantage of using graph analysis rather than the hierarchical value map is that graph analysis provides us with an abundance of analytical tools (Harary, 1969; Wasserman and Faust, 1994) that the hierarchical value map methodology almost completely lacks. On the basis of a hierarchical value map the prominence of concepts is determined heuristically by considering the highest-level concepts in the map. In networks, on the other hand, the prominence of the nodes in a network is determined analytically by computing, for instance, the centrality of the nodes, as was done in Chapter 5 (*cf.* Pieters *et al.*, 1995). In this context Van Rekom and Wierenga (2007) clearly demonstrate that determining prominence heuristically or analytically may lead to entirely different results and conclusions.

In Chapters 4 and 5 I have argued that given the categorization and coding of the meanings, the originally less-structured data can be analyzed in much the same way as structured data. The analysis of the data contained in the meaning structures may proceed along two different lines. In a more structural analysis one takes the structural aspects of the data, i.e. the links between the meanings, into account. This happens, for instance, in graph analysis which is in my view, so far, the best method for representing and analyzing meaning structures, and the analyses by means of regression analysis presented in Chapter 6 are also an example of analyzing structural aspects of the data. For other types of research questions in which the structural aspects of the data may be less important, for instance questions about similarities and differences between meanings or about the differences between subgroups of respondents with respect to meanings, graph analysis is as yet less appropriate. These types of questions can better be addressed by using such methods as correspondence analysis, multidimensional scaling, or certain forms of nonlinear principal components analysis.

A last point in this subsection concerns a remark made by Hartig (2006) about the methodological problems of the integration between settings and aggregation across settings. This point is relevant because in this study all the examples concern only one feature (= setting). The easiest way to see how one could generalize the analytical framework in terms of integration between settings and aggregation across settings is to consider the adjacency matrix in Chapter 5. This is the adjacency matrix of one dwelling feature aggregated over all participants. Starting with all the meaning structures obtained from a single individual, one can also make such an adjacency matrix for this person across all salient settings and meanings. This integration between settings comes down to collecting per individual his meaning structures in an adjacency matrix. Aggregating this matrix across participants, which is the same as aggregating the adjacency matrix across different features, results in an adjacency matrix that contains all features and all meanings for all participants. Although these may become large matrices their representation and analysis should not be a problem given the developments in modern informa-

tion technology. So if one wants to retain the structural aspects of the meanings, generalization of the network approach is possible and is the appropriate way to go (*cf.* Bagozzi and Dabholkar, 2000). Several ways of aggregating meaning structures have been elaborated in the companion study by Meesters (forthcoming).

7.5 Follow-up research

The research presented in this study forms part of a project entitled 'Housing experience and housing choice behavior' which has been subsidized by the Netherlands Organization for Scientific Research (NWO). The emphasis has been on developing a conceptual and methodological framework for studying the meaning of preferences for dwelling features. The dwelling features that have been presented in the course of this study are mainly included for expository reasons. We are currently engaged in a systematic investigation of the meanings of each of the eight features included in the survey (Meesters and Coolen, 2008a, 2008b). This investigation will also involve the aggregation of meaning networks across settings resulting in, for instance, a meaning network of the dwelling. Since the conceptual framework is conceptualized at the level of the individual dweller one may also combine the individual's collection of meaning structures of dwelling features into the individual's dwelling profile. Subsequent analysis of these individual profiles is also dawning.

The networks that have been presented in this study are all so-called one-mode networks. A one-mode network is a network that consists of one set of nodes, in this study this set consists of the meanings, and the links between these nodes. A one-mode network representation was possible, because only meaning networks of one feature at the time were presented. As soon as more features are involved, for instance in the case of a meaning network of the dwelling involving all features, the network becomes a so-called two-mode network consisting of a set of meanings and a set of features with links between the two sets of nodes. Moreover, the links will be valued, because they represent the frequency with which they are mentioned by the respondents. There is, however, a flagrant lack of relevant notions and tools for analyzing these valued two-mode networks (Latapy *et al*., 2008). This means that on the basis of relevant research questions new notions and tools for the analysis of these networks will have to be developed in order to make the analysis of the above mentioned networks possible at all. This is also part of the follow-up research that is taking place.

In this study it has been shown that affordances of dwelling features consist of activities and other functions. The emphasis has been on dwelling features, their affordances and the meanings of these affordances in general. In the companion study by Meesters (forthcoming), which forms the oth-

er part of the NWO-project 'Housing experience and housing choice behavior', the focus is on the activities that are afforded by different settings in and around the dwelling, and on the meanings of these activities. Combining the results of both studies will result in an overview of dwelling features, their affordances and their meanings. This overview might be the input for new research projects in which, in accordance with the perspective developed in this study, affordances and meanings become an integral part of the research design. Since the framework depicted in Figure 7.6 is conceptualized at the level of the individual, this means that it is suitable for incorporation in other, possibly more encompassing, frameworks that are also framed at the level of the individual.

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De betekenis van woningkenmerken

Enkele conceptuele en methodologische vraagstukken

Dutch summary

Henny Coolen

Dit onderzoek gaat over de betekenis van woningkenmerken. Het verbindt onderzoek naar woonvoorkeuren en onderzoek naar de betekenis van een woning met elkaar en tevens met aspecten van de *means-end theory* zoals die wordt toegepast in marketingonderzoek. Het resultaat is een conceptueel en methodologisch kader waarmee de betekenis van woningkenmerken kan worden bestudeerd.

Woonvoorkeuren en de betekenis van een woning zijn twee belangrijke onderzoeksthema's bij zowel onderzoek naar het wonen als bij omgevingsstudies. Woonvoorkeuren zijn bestudeerd vanuit verschillende theoretische perspectieven (Mulder, 1996) en met een verscheidenheid aan methodologische benaderingen (Timmermans e.a., 1994). De relaties tussen woonvoorkeuren, factoren op macroniveau (bijvoorbeeld de huizenmarkt en de economische situatie) en factoren op microniveau (zoals leeftijd, inkomen en samenstelling van het huishouden) zijn uitgebreid onderzocht (Clark en Dieleman, 1996). Er is echter relatief weinig aandacht besteed aan cognitieve factoren op microniveau zoals doelen, functies en waarden, die ons iets kunnen zeggen over de betekenis van woonvoorkeuren voor mensen. Met uitzondering van een klein aantal studies (De Jong en Fawcett, 1981; Lindberg e.a., 1987) is 'verhuisredenen' de meest onderzochte cognitieve factor, die echter slechts één aspect belicht van de motieven die mensen kunnen hebben. Dit betekent dat er weinig bekend is over de relaties tussen cognitieve factoren zoals waarden, doelen en functies aan de ene kant en woonvoorkeuren aan de andere kant.

Er bestaat ook een groot aantal onderzoeken naar de betekenis van een woning, gebaseerd op een grote verscheidenheid aan onderzoekstradities uit uiteenlopende disciplines als psychologie, sociologie, geografie, fenomenologie en omgevingsstudies (Després, 1991; Moore, 2000; Mallet, 2004; Blunt en Dowling, 2006). Betekenis wordt gezien als een centraal onderwerp in omgevingswetenschappen, omdat het een schakel vormt tussen de gebouwde omgeving en de mens. In de relatie tussen mensen en woningen levert betekenis een belangrijk deel van de beweegredenen voor de manieren waarop deze woningen worden vorm gegeven en gebruikt (Rapoport, 1988). Hoewel ze een belangrijke rol lijken te spelen in deze relaties, zijn bij het onderzoek naar de betekenis van een woning de kenmerken van een woning in het algemeen, en fysieke kenmerken in het bijzonder, slechts van ondergeschikt belang geweest (Rapoport, 1995; Moore, 2000). Dit betekent dat er ook weinig bekend is over de relaties tussen de kenmerken van woningen en de beteke-

nis die deze kenmerken hebben voor de bewoners.

Het doel van dit onderzoek is het ontwikkelen van een conceptueel en methodologisch kader voor het bestuderen van de betekenis van voorkeuren voor kenmerken van een woning. Deze kenmerken worden beschouwd als functioneel voor het bereiken van doelen en waarden die mensen nastreven. De betekenis van de woningkenmerken ligt in deze functionele relaties. Het in dit onderzoek gepresenteerde model relateert derhalve voorkeuren voor woningkenmerken aan de betekenis die deze kenmerken hebben voor mensen. Deze relaties heten betekenisstructuren. In het onderzoek worden ook verscheidene aspecten van het conceptueel kader empirische nader bekeken. Sommige van de in deze dissertatie gepresenteerde hoofdstukken zijn al eerder gepubliceerd als artikelen in wetenschappelijke tijdschriften, terwijl hoofdstuk 6 inmiddels ter publicatie is ingediend. In deze samenvatting wordt een beknopt overzicht van het onderzoek gegeven.

Woonvoorkeuren

De onderwerpen woningkeuze en woonvoorkeuren hebben traditioneel de aandacht getrokken van onderzoekers uit verschillende disciplines, en doen dat nog steeds. Beide onderzoeksonderwerpen zijn vanuit verschillende theoretische perspectieven bestudeerd (Mulder, 1996; Clark en Dieleman, 1996; Boumeester, 2004). Economen hebben zich voornamelijk gericht op huizenprijzen en op de manier waarop woonkosten bepalend zijn voor de keuze tussen een huur- of koopwoning. Sociologen en geografen daarentegen hebben zich met name beziggehouden met het bestuderen van woningkeuzes van individuele huishoudens en de woonruimteverdeling onder de bevolking. Hun focus ligt op de sociaaleconomische en demografische variabelen die in de levenscyclus van huishoudens worden gecombineerd. Studies naar wonen en eigendomskeuze, die gebaseerd zijn op de levenscyclusbenadering, kunnen worden onderverdeeld in twee categorieën. Allereerst bestaat er een groot aantal cross-sectionele studies die statisch van aard zijn. Een alternatieve en dynamische benadering is de zogeheten levensloopanalyse, die de idee van de levenscyclus bevat en waarbij verscheidene processen (gezinssamenstelling, huisvesting, banen) tegelijkertijd worden bestudeerd. De focus ligt hierbij op gebeurtenissen in elk van de bestudeerde processen die veranderingen in een van de processen of in alle andere processen tot gevolg hebben. Zelfs wanneer ze hetzelfde perspectief hanteren, richten verschillende onderzoekers zich op uiteenlopende aspecten van woningkeuze en woonvoorkeuren. Sommige onderzoekers specialiseren zich in woonvoorkeuren, waarbij de woning in de regel wordt gezien als een verzameling van kenmerken. Anderen kijken naar het proces van woningkeuze. En weer anderen richten zich op de uitkomsten van het proces van woningkeuze.

Hoewel de concepten voorkeur en keuze alom worden gebruikt bij onderzoek over wonen, lijken deze termen niet altijd even duidelijk van elkaar

onderscheiden te worden. In tegenstelling tot deze min of meer gangbare praktijk worden voorkeur, intentie en keuze in dit onderzoek op conceptueel niveau onderscheiden (Ajzen en Fishbein, 1980; Ajzen, 1988). Voorkeur refereert hierbij aan de relatieve attractiviteit van een object, terwijl intentie verwijst naar de relatieve sterkte van gedragsneigingen, en keuze heeft betrekking op daadwerkelijk gedrag. Bij elk van de concepten voorkeur, intentie en keuze gaat het om afwegingingen over attractiviteit. Het belangrijkste verschil tussen voorkeur aan de ene kant en keuze aan de andere kant ligt in het feit dat voorkeur een relatief onconditionele evaluatie van attractiviteit is. In het geval van een woning, bijvoorbeeld, vallen onder intentie en keuze factoren als de huidige marktsituatie, de financiële mogelijkheden van de betreffende persoon en zijn voorkeuren. Door ons te richten op voorkeur krijgen we een duidelijker beeld van de kwaliteitseisen die mensen aan hun woning stellen.

Er bestaat ook een grote variëteit in methodologische benaderingen voor het meten van woonvoorkeuren (Timmermans, e.a., 1994). In deze context zijn er twee belangrijke facetten te onderscheiden:

1. compositionele en conjuncte benaderingen voor het meten van woonvoorkeuren;
2. *stated* en *revealed* voorkeuren.

In compositionele benaderingen worden woonvoorkeuren gemeten door voor elk woningkenmerk afzonderlijk te bepalen hoe mensen dit kenmerk evalueren en soms ook welk belang men aan elk kenmerk hecht. Vervolgens worden deze afzonderlijke evaluaties van elk woningkenmerk volgens een bepaalde rekenregel samengevoegd tot een overall beoordeling van een woning. Jansen (2008) heeft onlangs een goed voorbeeld van deze benadering laten zien in een onderzoek waarin zij deze *multi-attribute utility theory* heeft toegepast op de voorkeur van mensen voor woningkenmerken. In de conjuncte benadering van het meten van woonvoorkeuren daarentegen worden de voorkeuren van mensen voor woningprofielen gemeten. Elk profiel bestaat uit een aantal woningkenmerken waarvoor de totale voorkeur in één keer wordt gemeten. Vervolgens kan er een voorkeursfunctie worden geschat, door middel van regressieanalyse of logististische regressieanalyse, die leidt tot afzonderlijke evaluaties van elk woningkenmerk dat deel uitmaakt van het oorspronkelijke profiel. De meting van woonvoorkeuren in deze studie past binnen de compositionele benadering. *Revealed* voorkeuren zijn gebaseerd op daadwerkelijke woningkeuzes; woonvoorkeuren van mensen worden afgeleid van hun woningkeuzes nadat deze keuzes daadwerkelijk zijn gemaakt. Dit betekent dat de evaluaties die bij keuze en bij voorkeur spelen als vergelijkbaar worden beschouwd. *Stated* voorkeuren daarentegen zijn uitdrukkingen van een evaluatie wanneer er nog een keuze moet worden gemaakt of wanneer er een hypothetische keuze wordt gemaakt. In dit onderzoek houden we ons voornamelijk bezig met *stated* voorkeuren.

Stated woonvoorkeuren zijn uitgebreid onderzocht en er is veel literatuur over dit onderwerp (Mulder, 1996). Door dit type woonvoorkeuren te verklaren hebben onderzoekers de invloed aangetoond van zowel factoren op macroniveau (woningmarkt, huisvestingsysteem, economische situatie) als factoren op microniveau zoals leeftijd, samenstelling van het huishouden en huidige woonsituatie (Clark en Dieleman, 1996). Hoewel er een grote hoeveelheid onderzoeksresultaten over dit type woonvoorkeuren bestaat, lijkt daarin relatief weinig aandacht te zijn geschonken aan onderliggende motieven op microniveau zoals doelen, functies en waarden. Uitzonderingen in deze context zijn de studies van De Jong en Fawcett (1981) en van Lindberg e.a. (1987).

Het doel van het onderzoek van De Jong en Fawcett (1981) was om motieven voor verhuizen te identificeren die kunnen worden gebruikt in een *value-expectancy* model voor besluitvorming over verhuizen. Op microniveau hangt de mate van een neiging om op een bepaalde manier te handelen af van de verwachting dat het gedrag zal worden gevolgd door een bepaald doel en de waarde die dat doel heeft voor het individu. Met betrekking tot verhuizen vraagt het model om een specificatie van de persoonlijk gewaardeerde doelen waaraan zou kunnen worden voldaan door te verhuizen. Daarnaast vraagt het model om een afweging van het vermeende verband, in termen van verwachting, tussen verhuisgedrag en het bereiken van doelen op alternatieve woonlocaties. In deze benadering wordt verhuizen beschouwd als instrumenteel gedrag. De basiscomponenten van het *value-expectancy* model zijn derhalve doelen (waarden, doelstellingen) en verwachtingen (subjectieve waarschijnlijkheden).

Hoewel de formulering van het *value-expectancy* model relatief eenvoudig lijkt, komen er bij het daadwerkelijk gebruik ervan een aantal problemen kijken. Een van de belangrijkste van deze problemen is de specificatie van de relevante waarden of doelen. De Jong en Fawcett pakken dit probleem aan door de relevante literatuur erop na te slaan, wat leidt tot een zeer lange lijst met potentiële waarden en doelen. Deze lijst wordt vervolgens teruggebracht tot zeven conceptuele categorieën die psychologisch betekenisvolle clusters lijken te vertegenwoordigen: rijkdom, status, comfort, stimulering, autonomie, verwantschap en moraal. Ze presenteren ook een verzameling potentiële indicatoren voor elk van de zeven categorieën.

Het *value-expectancy* model vereist dat voor elke waarde-indicator het belang ervan wordt gemeten en een bijbehorende verwachting worden verkregen. In de context van verhuizen verwijst deze verwachting naar de subjectieve waarschijnlijkheid dat een bepaald soort verhuisgedrag zal leiden tot de gewaardeerde uitkomst. Door voor elke verhuisoptie het belang en de verwachting van elke waarde-indicator te meten, kan er een totaalscore voor elke optie worden berekend. Deze score wordt in het *value-expectancy* model weergegeven als de som van belang en verwachting. Hoewel De Jong en Fawcett de basis leggen voor een empirische analyse van het *value-expectancy* model die is

toegepast op verhuizen, blijft hun uiteenzetting voornamelijk theoretisch. Het belang van hun studie is er echter in gelegen dat zij verhuizen beschouwen als instrumenteel gedrag voor het bereiken van bepaalde doelen en waarden.

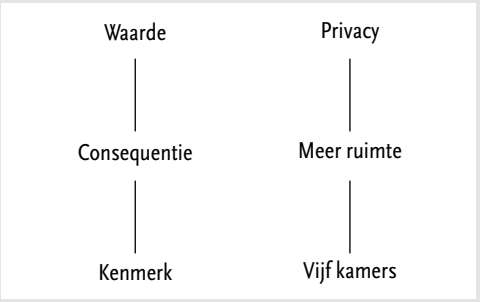
Lindberg e.a. (1987) onderzoeken de subjectieve *beliefs* en waarden die ten grondslag liggen aan de evaluaties die mensen maken van woningkenmerken. Een basisaanname in hun onderzoek is dat het variërende belang dat door een individu wordt toegeschreven aan verschillende levenswaarden wordt weerspiegeld in zijn of haar afwegingen van omstandigheden waarvan hij/zij denkt dat ze het bereiken van deze waarden mogelijk maken of juist belemmeren. Dat wil zeggen: hoe belangrijker een waarde, hoe meer de factoren die het bereiken van die waarde mogelijk maken positief beoordeeld worden en hoe meer belemmerende factoren negatief worden beoordeeld. Hun onderzoek ondersteunt de aanname dat mensen *beliefs* hebben over hoe belangrijke waarden kunnen worden bereikt en dat deze *beliefs* invloed uitoefenen op hun beoordeling van verschillende middelen voor het vervullen van die waarde.

Hun onderzoek heeft ook aangetoond dat de beoordelingen van respondenten voor een groot aantal alledaagse activiteiten redelijk goed konden worden voorspeld aan de hand van hun overtuigingen wat betreft causale verbanden tussen de prestatie van deze activiteiten en het bereiken van verschillende waarden. Eén implicatie van hun conceptueel model is de aanname dat mensen alledaagse activiteiten opvatten als de primaire middelen om levenswaarden te realiseren. Een andere implicatie is dat de attractiviteit van verscheidene woningkenmerken voortkomt uit het aan hen toegedichte vermogen om deze activiteiten mogelijk te maken. Zodoende worden de relaties tussen woningkenmerken en waarden hoofdzakelijk als indirect beschouwd, met alledaagse activiteiten als interveniërende factoren.

Afgezien van deze relaties gaan zij ook uit van een aantal indirecte relaties tussen woningkenmerken en alledaagse activiteiten. In hun model worden twee extra sets interveniërende factoren aangeduid: persoonlijke hulpbronnen (creativiteit, onafhankelijkheid) en niet-persoonlijke hulpbronnen (geld, familie, vrienden). De relaties tussen elk woningkenmerk en de alledaagse activiteiten, samen met de relaties tussen de alledaagse activiteiten en de waarden, worden evenals de andere relaties in hun model uitgedrukt in termen van *value-expectancy* modellen. Deze modellen lijken goed te werken voor het in kaart brengen van de afwegingen die mensen maken tussen individuele woningkenmerken en wijzen er sterk op dat het nuttig is om deze afwegingen aan woningkenmerken te relateren.

De studies van De Jong en Fawcett en van Lindberg e.a. vormen echter uitzonderingen; er is relatief weinig bekend over de invloed die motieven op microniveau, zoals waarden en doelen, hebben op woonvoorkeuren. Rokeach (1973) en Bettman (1979) hebben aangetoond dat doelen en waarden een belangrijke rol spelen in het gedrag en voorkeuren van mensen. Voorkeuren van mensen voor bepaalde objecten zijn niet neutraal. Mensen prefere-

Figuur 1 Voorbeeld van een doel-middelketen



ren bepaalde objecten, omdat zij geloven dat deze objecten bijdragen aan het bereiken van hun doelen en waarden. In hoofdstuk 2 en 3 van dit onderzoek is een eerste stap gezet om waarden en doelen via een andere benadering te relateren aan woonvoorkeuren. Voor dit doel wordt een theoretisch perspectief gebruikt, de zogeheten *means-end theory*, waarin motieven op microniveau (zoals doelen en waarden) worden gerelateerd aan voorkeuren. De *means-end theory* (Gutman, 1982; Reynolds en Olson, 2001) verklaart de relaties tussen goederen en consumenten. Een goed wordt gedefinieerd als een verzameling kenmerken, die consequenties opleveren wanneer er gebruikt wordt gemaakt van het goed. Het belang van de consequenties hangt af van hun vermogen om de waarden die een individu motiveren te bevredigen. Een doel-middelketen is dan een reeks van kenmerk, consequenties en waarden die een relatie oplevert tussen een goed en een consument. Omdat de waarde het relatieve belang bepaalt van de consequenties en daardoor ook het belang van de kenmerken, kunnen doel-middelketens eraan bijdragen om voorkeuren van consumenten te begrijpen. Een doel-middelketen is dan een model om de voorkeur voor een goed te relateren aan zijn bijdrage aan het realiseren van waarden. Deze denkbeelden worden in deze studie toegepast op voorkeuren voor woningkenmerken. Een voorbeeld van een doel-middelketen met betrekking tot wonen is weergegeven in figuur 1: vijf kamers (kenmerk) – meer ruimte (consequentie) – privacy (waarde).

Hoewel de *means-end theory* zich ook richt op waarden en kenmerken, verschilt ze in verschillende opzichten van de benadering van Lindberg e.a. (*cf.* Lindberg e.a., 1989). De *means-end theory* verklaart de relaties tussen goederen en consumenten. Een goed wordt gedefinieerd als een verzameling kenmerken. Deze kenmerken leveren consequenties op wanneer gebruik wordt gemaakt van het goed. Het belang van de consequenties is gebaseerd op hun vermogen om te voldoen aan de persoonlijke motiverende waarden en doelen van mensen. In de *means-end theory* zijn derhalve de relaties tussen de kenmerken en de waarden eveneens indirect, maar de interveniërende categorie, consequenties, is veel breder dan in het conceptueel model van Lindberg e.a. Het kan alledaagse activiteiten omvatten maar ook gevolgen die meer functioneel of psychosociaal van aard zijn. Ook is de *means-end* benadering veel directer in de zin dat de betekenis die een goed heeft voor een individu ook wordt bekeken vanuit het perspectief van het individu en het goed. Welke kenmerken, consequenties en waarden relevant blijken te zijn, wordt in eerste instantie bepaald door het individu en niet door de onderzoeker.

In hoofdstuk 2 is het klassieke *means-end* model en de bijbehorende meetprocedure toegepast op wonen en woningkenmerken. Aangezien het *means-end* model voortkomt uit marketing- en consumentenonderzoek en tot dus-

ver alleen is toegepast op consumentengoederen, is het belangrijkste doel van het in dit hoofdstuk vermelde onderzoek de geschiktheid te bepalen van de *means-end* benadering voor het terrein van woonvoorkeuren.

In hoofdstuk 3 is het standaard *means-end* model verder uitgewerkt tot een *extended means-end* model. Dit model is vervolgens toegepast op eigendomsvorm door gebruik te maken van een andere meetprocedure, namelijk een survey, dan in hoofdstuk 2 is gebruikt. Het voornaamste doel van dat hoofdstuk is vast te stellen of doelen en waarden bijdragen aan de verklaring van de voorkeur voor huren of kopen, waarbij rekening wordt gehouden met bekende sociaaldemografische factoren zoals inkomen en samenstelling van het huishouden. Aangezien eigendomsvorm een woningkenmerk is dat uitgebreid is onderzocht, is er veel bekend over de relevante sociaaldemografische variabelen ervan, hetgeen het tot een interessant kenmerk maakt om de invloed van waarden en doelen vast te stellen.

De betekenis van een woning

De betekenis van een woning is vanuit veel verschillende perspectieven bestudeerd, zoals psychologie, sociologie, geografie, fenomenologie en omgevingsstudies (Després, 1991; Moore, 2000; Mallet, 2004; Blunt en Dowling, 2006). Bij het merendeel van deze onderzoeken naar de betekenis van een woning wordt er op holistische wijze naar een woning gekeken (Rapoport, 1995; Moore, 2000). De benadering in deze dissertatie wijkt echter af van deze praktijk en richt zich op kenmerken, afzonderlijke settings, van woningen.

Er zijn verscheidene redenen om betekenis te bestuderen vanuit het perspectief van woningkenmerken. Op de eerste plaats is er de heterogeniteit van de categorie woning. Er zijn verschillende soorten woningen die voornamelijk verschillen in kenmerken. Eengezinswoningen verschillen niet alleen in veel kenmerken van appartementen maar verschillen ook onderling; sommige hebben bijvoorbeeld een tuin en andere niet. Op de tweede plaats zien mensen woningen niet alleen holistisch maar ook in termen van hun kenmerken. Dit is duidelijk aangetoond in onderzoek naar verhuisredenen waarbij veel mensen woningkenmerken opgaven als een van de redenen (Rossi, 1955). Op de derde plaats zijn de holistische kijk op een woning en het kijken naar kenmerken eigenlijk twee verschillende manieren om hetzelfde object te beschouwen. Tot slot kan een woning veel verschillende soorten gebruik bieden en zoeken mensen naar multifunctionele woningen die verschillende betekenissen kunnen hebben, en die betekenissen komen allereerst uit de kenmerken van woningen voort.

Een woning wordt gedefinieerd als een subsysteem van settings, die ingebed liggen in het grotere systeem van settings dat de omgeving wordt genoemd, waarin bepaalde systemen van activiteiten plaatsvinden. Het vormt voor veel individuen de primaire ankerplaats in de omgeving (Rapoport, 1990, 1995) en biedt primaire functies als beschutting en onderdak. Door een woning te defi-

niëren als een subsysteem van de omgeving, kunnen we specifieke functies, zoals een plaats om je terug te trekken, begrijpen in de context van de andere subsystemen in de omgeving. Slechts een deel van alle menselijke activiteiten vindt plaats in een woning. Deze activiteiten kunnen per individu verschillen en het subsysteem van settings die samen de woning vormen, kunnen ook variëren. Er kan derhalve geen *a priori* aanname worden gemaakt over wat een woning is, hoewel sociale, culturele en wettelijke regels en tradities in het algemeen de variaties binnen een woonsysteem beperken.

De relatie tussen het individu en de omgeving is het meest fundamenteel geconceptualiseerd in de theorie over *affordances*, die de reciprociteit van het individu en de omgeving benadrukt (Gibson, 1986). De omgeving waarin een individu opereert, bestaat uit objecten, de dingen waar het individu zich op oriënteert en die de richtpunten vormen waaromheen de activiteiten van een individu worden georganiseerd. Een object is iets waarnaar kan worden verwezen of dat kan worden aangeduid; objecten kunnen materieel of immaterieel zijn, echt of denkbeeldig, zich in de buitenwereld of juist binnen het lichaam bevinden, een blijvend karakter hebben of een voorbijgaande gebeurtenis betreffen. Vanuit het perspectief van een mens kan de omgeving worden geclassificeerd in minimaal vijf categorieën: andere mensen, andere dieren, fysieke objecten, sociale objecten en abstracte objecten. Als het individu een van deze dingen opmerkt of er zich bewust van is, is het een object voor dat individu. Objecten vormen de wereld van de mens of de omgeving waarin hij opereert. Samengevoegd vormen zij de bestaanswereld van het individu, dat wil zeggen: de dingen waar het individu in het dagelijks leven mee te maken heeft.

Objecten hebben waarde voor mensen wat betreft de mogelijkheden die ze bieden voor acties en intenties. Met andere woorden: een object kan bepaalde kenmerken hebben die passen bij een doel van het individu. Het concept *affordance* (Gibson, 1986) brengt op fundamentele wijze deze congruentie tussen structurele kenmerken van de omgeving en de intenties en doelen van individuen tot uitdrukking. *Affordances* zijn relaties tussen kenmerken van objecten en capaciteiten van mensen (Chemero, 2003). Ze zijn toe te schrijven aan de intrinsieke kenmerken die objecten bezitten, louter vanwege hun samenstelling, en worden gespecificeerd in relatie tot het individu. In deze zin worden omgevingskenmerken ervaren als zaken die een functionele betekenis hebben voor het individu.

De relaties tussen goederen en consumenten, zoals voorgesteld in de *means-end theory*, zijn evenals de ideeën over de relatie individu-omgeving die in de theorie over *affordances* naar voren worden gebracht, nauw verwant aan Rapoport's conceptualisering van de betekenis van de gebouwde omgeving (Rapoport, 1988, 1990, 2005). Volgens Rapoport is betekenis een van de centrale mechanismes bij het verbinden van omgevingen en mensen; betekenis levert een groot deel van de beweegredenen voor de manieren waarop omgevingen

worden vormgegeven en gebruikt. Hij stelt ook dat het gebruikelijke onderscheid tussen functie en betekenis misleidend is. Functie wordt voornamelijk geïdentificeerd met manifeste aspecten van de omgeving, terwijl meer latente aspecten ons ook kunnen helpen de gebouwde omgeving te begrijpen. Dit impliceert dat betekenis niet alleen deel uitmaakt van functie maar vaak ook de belangrijkste functie van de gebouwde omgeving is. Rapoport onderscheidt drie betekenisniveau's in de gebouwde omgeving. *High-level* betekenissen zijn gerelateerd aan kosmologieën, wereldvisies, filosofische systemen, etc. *Middle-level* betekenissen zoals identiteit, status, rijkdom, macht, etc. worden ook wel latente functies genoemd. Alledaagse en instrumentele betekennissen zijn *lower-level* betekenissen en worden ook wel manifeste functies genoemd. Volgens Rapoport zijn alledaagse betekenissen grotendeels verwaarloosd bij het onderzoek naar de betekenis van woningen, hoewel ze essentieel zijn om de gebouwde omgeving te begrijpen. Activiteiten van mensen en gebouwde omgevingen zijn voornamelijk verbonden aan de hand van *lower-level* betekenissen, hoewel *middle-level* betekenissen vaak ook belangrijk zijn.

Zowel Rapoport als Gibson beschouwen betekenis in functionele zin waarbij elk object een betekenis heeft die het onderscheidt van andere objecten. Deze betekenis vertegenwoordigt de aard van het object voor het individu voor wie het object bestaat. Iemand komt tegenover een object te staan, verwijst ernaar, praat erover of reageert erop in termen van de betekenis die het voor hem of haar heeft. Geen enkel object bestaat voor een persoon anders dan in termen van de betekenis die het object heeft voor die persoon. Betekenis is niet iets wat inherent is aan een object; het is geen intrinsiek onderdeel of kenmerk van het object. De betekenis van een object bestaat in de relatie tussen het object en het individu voor wie het een object is. De betekenis ervan bestaat uit hoe het individu het object bestempelt en in deze zin kan een object verschillende betekenissen hebben voor verschillende mensen.

De ideeën over de betekenis van de gebouwde omgeving van Gibson en Rapoport impliceren een generalisatie van de conceptualisering van de relaties tussen de voorkeuren voor woningkenmerken en de doelen en waarden die aan de orde zijn gekomen in de hoofdstukken 2 en 3 van deze dissertatie. Deze generalisatie is voor woningkenmerken uitgewerkt in hoofdstuk 5. Het doel van dit hoofdstuk is om een conceptueel kader te presenteren voor het bestuderen van de betekenis van woningen en om zowel aspecten van het meten als van de analyse voor dit kader te beschrijven. De focus blijft hierbij liggen op voorkeuren voor kenmerken van een woning en de centrale idee blijft dat voorkeuren van mensen voor woningkenmerken niet neutraal zijn. Mensen prefereren bepaalde kenmerken, omdat ze geloven dat deze kenmerken bijdragen aan het realiseren van hun doelen en waarden. Gebaseerd op het begrip *affordance* is zodoende de relatie tussen bewoners en woningkenmerken het centrale onderwerp van dat hoofdstuk.

Dit kader is vervolgens in hoofdstuk 6 getest op de voorgenomen eigen-

domsvorm. Hoofddoel van dit hoofdstuk is om vast te stellen of betekenis, zoals dat in hoofdstuk 5 als concept is ontwikkeld, bijdraagt aan de verklaring van de voorgenomen eigendomsvorm waarbij rekening wordt gehouden met de bekende sociaaldemografische factoren. Aangezien dit hoofdstuk beschouwd kan worden als 'Terug naar hoofdstuk 3', stellen de hier uitgevoerde analyses ons tevens in de gelegenheid om de veronderstelling uit hoofdstuk 3 te evalueren: dat het meten van waarden en doelen, zoals dat in hoofdstuk 3 is gebruikt, wellicht te algemeen is geweest voor een evenwichtige evaluatie van hun rol bij het verklaren van de voorkeur voor eigendomsvorm.

Onderzoeksmethodologie

De gegevens die in dit onderzoek worden gepresenteerd, zijn zowel afkomstig uit vragenlijsten als uit minder gestructureerde interviews. Gegevens uit vragenlijsten krijgen vaak het etiket kwantitatief, terwijl minder gestructureerde gegevens kwalitatief worden genoemd. De manier waarop minder gestructureerde gegevens in deze dissertatie worden geanalyseerd, kan worden gekarakteriseerd als de analyse van kwalitatieve gegevens met behulp van kwantitatieve methoden. Ik ben hier bij verschillende gelegenheden op aangesproken, bijvoorbeeld op internationale onderzoeksconferenties waar ik mijn onderzoek heb gepresenteerd en waar mij werd gevraagd of het mogelijk is om kwalitatieve gegevens op een kwantitatieve manier te analyseren en zelfs of het toegestaan is om dit te doen. Klaarblijkelijk hanteren onderzoekers bij woononderzoek nog altijd een scherpe scheidslijn tussen kwalitatief en kwantitatief onderzoek (bijvoorbeeld Kemeny, 1992; Winstanley e.a., 2002; Johansson, 2007). Ik heb dit standpunt nooit begrepen en heb het verschil tussen kwalitatief en kwantitatief altijd beschouwd als een gradueel verschil en niet als een absoluut verschil.

De voornaamste reden waarom ik het scherpe onderscheid tussen kwalitatief en kwantitatief niet begrijp, is het feit dat categorisatie tot een van de meest fundamentele cognitieve processen behoort zonder welke het geestelijk leven, en misschien wel alle leven, van mensen chaotisch zou zijn (Malt, 1995). Categorisatie is het opdelen van de omgeving (of aspecten van de omgeving) in categorieën waardoor niet-identieke objecten als equivalent kunnen worden beschouwd op een kenmerk of een verzameling kenmerken. Een categorie bestaat daarbij uit de objecten die als equivalent worden beschouwd op een bepaald kenmerk of combinatie van kenmerken. Categorieën worden meestal aangeduid met namen en ons gebruik van taal is gebaseerd op categorisatie. Zowel kwalitatieve als kwantitatieve gegevens kunnen alleen worden geanalyseerd wanneer deze soorten gegevens gecategoriseerd zijn. Voor kwantitatieve gegevens vindt deze categorisatie vaak plaats voordat de gegevens worden verzameld, terwijl categorisatie van kwalitatieve gegevens vaak wordt uitgevoerd nadat de gegevens zijn verzameld. Gezien het feit dat beide soorten gegevens moeten worden gecategoriseerd, kan de analyse

langs vergelijkbare lijnen verlopen (*cf.* Miles en Huberman, 1994). En als dit niet het geval is, zijn de verschillen toe te wijzen aan andere aspecten van de gegevens dan hun kwalitatieve of kwantitatieve aard.

Aangezien ik zowel zogeheten kwalitatieve als kwantitatieve gegevens in dit onderzoek gebruik, die op vergelijkbare wijzen worden geanalyseerd, heb ik mijn ideeën over het onderscheid kwalitatief-kwantitatief uiteengezet in hoofdstuk 4, dat een meer methodologisch georiënteerd karakter heeft.

Belangrijkste conclusies

Een van de belangrijkste conclusie van het onderzoek is dat de *means-end* benadering toepasbaar is op voorkeuren voor woningkenmerken, maar dat de benadering aanpassing behoeft om haar geschikt te maken voor onderzoek in het woondomein. De belangrijkste aanpassing behelst de doel-middelketen: kenmerk – consquentie – waarde. De gevonden ketens blijken niet altijd deze vorm te hebben. Soms vinden we alleen een kenmerk – consequentieketen en soms vinden we een kenmerk – waardeketen. Verder bleek de handmatige methode voor het construeren van een *hierarchical value map* niet te werken op het niveau van een woning, omdat de woning een te complex product blijkt te zijn.

In hoofdstuk 3 zagen we dat enkele algemene waarden en doelstellingen een, zij het beperkte, bijdrage leveren aan de statistische verklaring van de voorkeur voor een bepaalde eigendomsvorm hetgeen aangeeft dat ze een rol spelen bij het tot stand komen van voorkeuren.

Het in hoofdstuk 5 gepresenteerde conceptuele en methodologische kader blijkt te 'werken': data verzameld op basis van het conceptuele kader leiden tot representaties die begrijpelijk en interpreteerbaar zijn. Verder blijkt ook in dit hoofdstuk dat respondenten zeer wel in staat zijn hun voorkeuren te motiveren. Een andere belangrijke conclusie uit dit hoofdstuk is dat het vervangen van de handmatige methode voor het aggregeren van individuele betekenisstructuren door netwerkanalyse een aanzienlijke methodologische verbetering is.

In hoofdstuk 6 is de analyse van eigendomsvorm uit hoofdstuk 3 herhaald met dien verstande dat de algemene waarden en doelstellingen uit dat hoofdstuk vervangen zijn door meer specifiekere betekenissen van eigendomsvorm. De analyse laat zien dat deze wijziging in het model tot een betere voorspelling van de voorkeur voor een bepaalde eigendomsvorm leidt.

Op basis van de bevindingen in dit onderzoek is in het slot hoofdstuk een aangepast conceptueel kader gepresenteerd, waarin de begrippen *affordance* en *betekenis* een belangrijke plaats in nemen.

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Curriculum Vitae

Henny Coolen was born in Amsterdam on January 16 1949. He went to elementary school in Amsterdam en received his VWO diploma from the Sint Ignatius College in the same city in 1967. He studied political science (algemene politieke en sociale wetenschappen) at the University of Amsterdam from where he graduated (with honour) in 1977 with a specialization in research methodology and statistics. From 1977 until 1987 he worked at the Faculty of Social Sciences of the Erasmus University in Rotterdam where he taught courses on research methodology and statistics at both the under-graduate and the graduate level. In 1987 he obtained his current position at the OTB Research Institute for Housing, Urban and Mobility Studies of Delft University of Technology as the head of the department of Research Methodology and Informatics which he then at that time established. In this function he provides methodological and statistical consultancy to researchers, teaches courses on research methodology and statistics for post-graduate students, and was responsible for the ICT-infrastructure of OTB until 2006. Since 2002 he teaches a course on research methodology at the Faculty of Architecture in the MSc Real Estate & Housing. He has been a member of the management team of OTB since 2000.

Since working at OTB Henny Coolen has also been involved in both fundamental and contract research. His research interests are in the fields of housing preferences, housing choice, the meaning of housing, and in the qualitative-quantitative divide in the behavioral sciences. In 2004 he founded the working group Residential Environments and People of the European Network for Housing Research (ENHR), for which he has since organized workshops at the annual International ENHR Conferences. His publications involve articles in refereed journals, book chapters, conference papers, and research reports.

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This study is about the meaning of dwelling features. It relates the research areas of housing preferences and the meaning of a dwelling with each other and with aspects of the means-end approach as applied in marketing research. It results in a conceptual and methodological framework for studying the meaning of preferences for dwelling features. These features are viewed as functional for achieving the goals and values that people pursue. The meaning of dwelling features lies in these functional relationships. The model presented in this study therefore relates preferences for the features of a dwelling to the meaning they have for people. These relationships are called meaning structures. Meaning structures are measured by a semi-structured interviewing technique, which is an adapted version of the laddering technique for measuring means-end chains, and network methods are used for the representation and analysis of these meaning structures.

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