

# Private and public green spaces: meaningful but different settings

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**Abstract** There is an increased demand for more dwelling space in Western countries. In the Netherlands, this is expressed as an overwhelming preference for a single-family dwelling with a garden. In contrast to these consumer preferences, governments pursue a compact-city agenda, which implies high-density and mixed-use cities. This gap between consumer preference and government policy has led many policy makers, planners and developers to design dwelling concepts for urban areas in which the private domestic garden is substituted by public green space. In this paper we investigate whether this substitution makes sense or not by comparing the meanings people attach to both concepts. Our results clearly show that unique combinations of functions and meanings are attached to the domestic garden and public green space. Key aspects of public green space are its contribution to the livability of the dwelling environment and to the experience of nature. A key feature of the domestic garden is that it is considered as an outdoor extension of the dwelling that affords casual leisure. So, public and private green spaces are not just simple substitutes for each other.

**Keywords** Housing preference · Private green space · Public green space · Meaning

## 1 Introduction

Several authors (Heins 2002; Dowling 2008) have argued that the rising wealth in Western countries has been increasing the demand for more quality in the dwelling and residential environment. This is manifest in a demand for more space. Many people prefer to live in a suburban type of residential environment, as it provides peace and quiet and green space (Rapoport 2000; Van Dam et al. 2002). In the Netherlands, this increased demand for space

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is expressed in an overwhelming preference for a single-family dwelling with a private garden. Within this context the private domestic garden turns out to be a special housing feature, because for many people it is a non-compensatory preference (Boumeester et al. 2006). This means that many people who intend to move indicate that they will not accept another dwelling without a garden. Apparently, the private domestic garden is an important aspect of the quality of the dwelling and the residential environment.

In contrast to these consumer preferences for a green, quiet neighborhood and spacious dwelling with a garden is the compact-city concept. It is an integral part of government agendas for the promotion of sustainable urban areas. There are several motives for the compact-city policy. The most often mentioned one is that making a city compact would shorten the distance between people's house, their work or school and, for example, shops for everyday items. Consequently, people would have to travel fewer kilometers on a daily basis and would thus produce less CO<sub>2</sub> emissions. Besides, it would make alternative modes of transport feasible, such as public transit or cycling. Second, and especially important in densely populated areas, compact cities would preserve the scarce open space. Thirdly, people increasingly become aware that mobility is not equal to freedom (Jager and Kers 2010). In fact, traveling for daily activities puts a heavy burden on people's available time and constrains their time budget within the household. With an increasing number of dual-earner families, having work, school, amenities and leisure facilities in the vicinity becomes a more important criterion in people's housing choice—in particular the choice of housing location (Karsten 2007). Dutch spatial planning policies implemented the compact city concept in various ways. For example, it was used in the redevelopment of already existing urban areas as well as in the development of new greenfield locations near existing cities.

Not only in Europe but also in the US and Australia, there is a strong advocacy for this compact-city concept, which implies high-density, mixed-use cities with clear boundaries (Geurs and Van Wee 2006).

In urban areas the contrast between the compact-city concept and the demand for more space and green environments leads to a gap between government policy and consumer housing preferences. Developers and planners are looking for new dwelling concepts that might be implemented in relatively high density but also respond to the growing demand for space. Building in urban areas is expensive and space is limited, so there is a tendency to develop (luxurious) multi-family dwellings. Furthermore, in these concepts, private green space is often substituted by public green space, such as a communal garden or neighborhood park. The rationale for this substitution is apparently deemed self-evident. But it is worth inquiring whether public green space can really be an adequate substitute for private green space. Research by Bernardini and Irvine (2007) performed in Leicester (UK) suggests that these types of green space might not be substitutes for each other, because the private garden and public green space serve different functions.

To understand whether and to what extent private green space can be substituted by public green space in the Netherlands, it is important to know, first, what both spaces afford to residents. Therefore we need to explore in more depth the motivations underlying people's preference for private domestic gardens and public green space. Traditionally housing preference research only focuses on *which features* people prefer (Jansen et al. 2011). This study builds on that tradition but adds another dimension by also investigating *why* people have certain preferences. It focuses on the affordances and meanings of the private domestic garden and public green space from the residents' point of view. We use a conceptual framework that relates people's housing preferences to their underlying motivations, which are called affordances and meanings (cf. Coolen 2008). In contrast to most

studies on private and public green space, we regard both the private domestic garden and public green space as an integral part of the dwelling and residential environment. By doing so, we can compare the affordances and meanings and investigate whether and to what extent public green spaces could be a substitute for private green space. Therefore, this paper addresses the following research questions: which affordances and meanings do people attach to the private domestic garden?, which affordances and meanings do people attach to public green spaces?, and what are the differences and similarities between these affordances and meanings?

The structure of the remainder of the paper is as follows. Section 2 describes the conceptual framework used in this study. The third section presents the data and method we used for empirically investigating people's housing preference and determining the underlying motives. It also presents some key features of our respondents. The fourth section investigates the affordances and meanings of the private domestic garden and public green space. We then compare the affordances and meanings of both types of green spaces and discuss to what extent public green space could be a substitute for the private domestic garden.

## 2 Theory

### 2.1 Private green space

The private domestic garden as a setting of the dwelling has received relatively little attention in housing research (Sime 1993; Gross and Lane 2007). Indeed, as Sime argues this research has mainly concentrated on the dwelling as an interior space circumscribed by the walls of the house. And if the house is contrasted with the dwelling environment as the wider context beyond the house it seems as if the garden does not exist. The dwelling and its environment are considered as central to our basic human needs, higher-order needs, social relationships and to our identity (Gunther 2000; Rapoport 1981). Yet the domestic garden is seldom treated in the same way as the interior space of the dwelling, that is, as an external setting that forms an integral part of the dwelling (cf. Bhatti and Church 2004; Gross and Lane 2007). This paper will focus on the private garden attached to the dwelling and will not deal with, for instance, allotment gardens. This latter type might be considered, at least in some respects, as an alternative to the garden attached to the dwelling. Nevertheless, this study does not deal with allotment gardens; its focus is on green spaces within the residential environment and allotment gardens in the Netherlands are often located on the outskirts of urban areas.

Housing-market research shows that in the Netherlands a little over 80% of the intentional movers prefer a house with an attached garden. Important correlates of this preference for a private garden are age, income, household size and number of children living at home (Boumeester et al. 2006). In the age groups between 30 and 60 years there is a larger preference for a private garden than in the other age groups. Higher income segments also express a larger preference. With an increase in household size, the preference for a garden also increases. And an increasing number of children living at home is associated with a larger preference for a garden. Although the overall preference for a private garden is high, these correlates make it clear that in certain phases of the life cycle, for instance when children are living at home, the preference for an attached garden is even higher.

The meaning of gardens has attracted more attention from researchers (Francis and Hester 1990; Bhatti 1999; Gross and Lane 2007). Only a small fraction of this research is devoted to the private domestic garden (Bhatti and Church 2004), however. In many of these studies, 'garden' is a generic term for different types of nature or natural settings. Moreover, the body of literature that has investigated the meaning of gardens, nature and natural settings focuses to a large extent only on various aspects of psychological well-being (Gross and Lane 2007). In recent years a growing interest in the study of the private domestic garden and its meanings seems to be developing (Bhatti 1999; Bhatti and Church 2004; Gross and Lane 2007; Meesters and Coolen 2008).

A brief survey of the literature shows that the meaning of gardens has been studied from different perspectives and with a variety of approaches. On the basis of the use of and the meanings attached to gardens by homeowners, Grampp (1990) distinguished three types of gardens: (a) the living garden, which is an outdoor extension to the dwelling more suited for domestic activity than the requirements of plants; (b) the well-tempered garden, which is a formal, ordered, neat and well-attended to garden that is hardly used for leisure; and (c) the expressionist garden, which is a place for cultivation by their owners who love gardening. Based on interviews with Californian and Norwegian gardeners, Francis (1990) distinguished ten personal meanings of the garden: (1) a place to be; (2) a place to care for growing things; (3) a place to control; (4) a place to exert creativity; (5) a place that reflects personality; (6) a place of freedom; (7) a place for productive work; (8) a place to own; (9) a place that develops over time; and (10) a place of retreat. Gross and Lane (2007) subsume several of these meanings under the themes of escapism, identity and ownership, and relationships, and show how these concepts assume different meanings at varying life stages. For example, in childhood the private garden functions as an escape through the provision of space, while adults value the seclusion and distraction from reality that absorption in the garden offers. Bhatti (1999) characterizes the functions and meanings of the garden as multifaceted and multidimensional; he focuses mainly on the naturalist and environmentalist dimensions of the garden. Coolen and Hoekstra (2001) found that dwellers who prefer a house with a garden associate such values as unity with nature, creativity, enjoying life, freedom, coziness, and true friendship with the garden. Bhatti and Church (2004) conclude from a survey among visitors to garden centers that the garden is an important site with which functions and meanings such as privacy, sociability and sensual connections to nature are associated. They showed that participation in gardening is strongly influenced by age, while participation rates also vary by social class.

Despite the fact that the meaning of gardens has been studied from different perspectives, most empirical studies that are concerned with the private garden, with the exceptions of Bhatti and Church (2004) and Gross and Lane (2007), do not treat the garden as an outdoor place that forms an integral part of the dwelling.

## 2.2 Public green space

Public green space as an integral part of the dwelling environment seems to have received attention mainly from developers and planners (cf. Pincetl and Gearin 2005), while the meaning of these settings for the inhabitants has received scant attention in the literature. One of the few exceptions we know of is the study by Burgess et al. (1988), who found that the most valued open areas are often the intimate and familiar ones which play a part in people's daily lives, rather than the distant parks and outstanding landscapes far from the dwelling. They also found that the main reasons for people to visit an open space are to get

out of the house, to take the children out, to get some exercise, and because the weather was good.

In a recent study, Bernardini and Irvine (2007) investigated the comparative value of private gardens and public parks for people's place identity from the perspective of sustainable cities. They found that gardens are integral to people's identity, providing a place to express personal values; that parks are valued by people who do not have a garden; and that they serve to bring people together. Their research in Leicester (UK) suggests that the private domestic garden and public green space are important settings of the dwelling and dwelling environment for the inhabitants, but that these settings are not substitutes for each other, since they serve different functions and have different meanings.

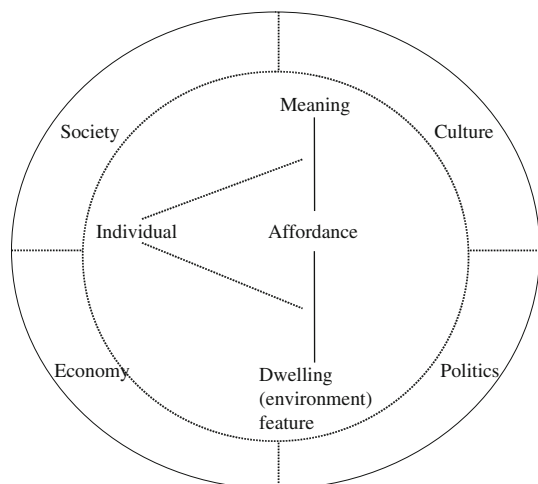
Although the study by Bernardini and Irvine (2007) is a good starting point, there is still little known about the comparative value of private gardens and public green space. Therefore, this paper will present data on the meaning of the private domestic garden as an integral setting of the dwelling and on the meaning of public green space as a setting of the dwelling environment. The data comes from a survey conducted in the Netherlands that was based on the conceptual framework presented in the next section.

### 2.3 Conceptual framework

The conceptual framework that is used here for studying the meanings of the private garden and public green space is an extension of the framework that has been introduced in the editorial by Coolen and Meesters, the guest editors of this special issue. It is depicted in Fig. 1. In this framework the environment is conceived as consisting of several subsystems, one of which is the dwelling. Another important subsystem from the perspective of the inhabitants of dwellings is the dwelling environment, which consists of those settings that afford functions that the inhabitants want to be realized in the immediate vicinity of their dwelling.

Most research into the meaning of a dwelling has taken a holistic view of a dwelling (Rapoport 1995; Moore 2000). In terms of the conceptual framework presented in the

**Fig. 1** Conceptual framework for studying the meaning of dwelling/dwelling environment features



introductory paper by Coolen and Meesters (editorial, this issue), ‘holistic’ means that the dwelling is considered as the environmental object. However, the conceptual framework in that paper also allows one to study features of dwellings, that is separate settings, since these may be treated as environmental objects too. These features will often be physical attributes—for instance, the number of rooms or the size of the living room—but may also be non-physical, 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. People are looking for multi-functional dwellings that can have many different affordances, which are, in the first place, afforded through the features of dwellings. So, the affordances dwellings provide for people lie in the relations between the features of dwellings on the one hand and the goals and intentions of people on the other.

But the affordances provided by the dwelling are not the only meanings that matter in our framework, since the affordances themselves may also have particular meanings (Coolen 2008). For instance, the activity of being outside, which is afforded by the private garden, may satisfy such values as recreation or peace and quiet. And a livable dwelling environment, which is afforded by a public green space, may satisfy a desire for nature. These meanings form the extension of the conceptual framework presented by Coolen and Meesters (this issue).

The difference between affordances and meanings is similar to Rapoport’s (1988, 1990) distinction between levels of meaning in the built environment. The basic distinction he makes is between manifest functions, or everyday meanings such as accessibility and seating arrangements, and latent functions such as identity, privacy, wealth, etc. According to Rapoport, research on the meaning of the built environment has largely neglected everyday meanings even though they are essential to an understanding of the built environment. People’s activities and built environments are primarily linked by manifest functions, although latent meanings also tend to be important. In this sense, manifest and latent functions are related to specific features of dwellings (Rapoport 1988). The term meaning is used here in very much the same way as it is used by Rapoport (1988, 1990) and Chemero (2003).

Rapoport’s conceptualization of the meaning of the built environment is very similar to our conceptualization of the meaning of the environment. Both approaches are based on a certain layering of functions or meanings. In our approach the meanings of an environmental object are denoted as affordances and meanings, while Rapoport refers to manifest and latent functions. More importantly it seems that manifest functions and affordances are very similar concepts. People’s activities and built environments are primarily linked by manifest functions, and affordances reflect this basic congruence between structural features of the environment and the intentions and goals of individuals.

So the chain comprised of dwelling (environment) feature—affordance—meaning, which is called a meaning structure, forms the basis of the conceptual framework presented in Fig. 1. This framework shows the interrelations between the individual, affordances, meanings, and dwelling (environment) features.

### 3 Data and method

#### 3.1 Data

In 2008 the OTB Research Institute for the Built Environment developed a measurement instrument called Picture Enabled Preference Survey Interface (PEPSI). It was commissioned by the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM), which since 2010 is part of the Ministry of the Interior and Kingdom Relations, and by the Association of Dutch Property Developers (NEPROM). With this instrument several aspects of people's housing preferences can be measured. What people's housing preferences are is determined by means of conjoint measurement. The extent to which the absence of a preferred housing feature may be compensated for by another feature is measured by the decision plan net approach. With PEPSI one can also determine why people have certain housing preferences, for which the meaning structure method (Coolen 2011) is used. PEPSI was tested in a pilot study and subsequently used in a survey in 2008.

For this survey the respondents were selected from the WoON 2006 database, which contains 64,000 respondents who participated in the Woon Onderzoek Nederland 2006, a large representative housing survey in the Netherlands commissioned by the Ministry of VROM and consisting of respondents 18 years and older. From the WoON 2006 database, a random sample was drawn that was stratified with respect to housing market region and household composition. Almost 76% of the participants filled out the web-based questionnaire, while the other respondents were interviewed by means of computer-aided personal interviewing. The final sample ( $n = 1,799$ ) has been weighted in order to make it representative with respect to the stratification variables of housing market region and household composition. The data presented in this paper come from this survey, and the available socio-demographic characteristics of the respondents, measured as categorical variables, are presented in Table 1.

**Table 1** Characteristics of respondents ( $n = 1,799$ )

	Relative frequency
Housing market region	
Periphery	30.3
Middle	33.6
Randstad <sup>a</sup>	36.1
Household composition	
One-person household	27.7
Couple	25.2
Couple with children	35.9
One-parent household	8.0
Non-family household	3.1
Household income	
Less than modal (<31,500 euros)	52.1
Modal—two times modal (31,500–63,000 euros)	33.3
More than two times modal (>63,000 euros)	14.6

Source: WoON 2006, Module Consumer Behavior, Ministry of the Interior and Kingdom Relations

<sup>a</sup> Highly urbanized area in the West of the Netherlands

From the questionnaire we used the questions about private and public green space and about the affordances and meanings that people attach to these spaces. The question about the private garden reads as follows: ‘Do you prefer a dwelling with a garden or a dwelling with a balcony?’. The question about public green space reads, ‘Which type of public green space do you prefer in your dwelling environment: one centrally located big park, or several smaller public green spaces, or little green space?’

Having indicated their preferred private outdoor space, the respondents were asked, ‘What is the most important reason for you to prefer a dwelling with a garden/balcony?’ The questionnaire posed a similar question on public green space. The aim of asking semi-closed-ended questions was to ascertain the affordances that people attach to respectively the private garden and public green space. The sets of response categories were compiled on the basis of several pilot projects for which semi-structured face-to-face interviews were conducted. The responses were subsequently transcribed and their content analyzed. If a respondent’s answer would not fit into one of the supplied categories, it could be marked ‘other’. After the survey it turned out that more than 96.5% of the answers fit into one of the pre-specified categories. Therefore, the ‘other’ category was not processed further.

Once it was known what the most important affordance was for both the private garden and public green space, people were subsequently asked, ‘Why is the reason you just mentioned, namely [fill in the affordance just mentioned], important to you?’ This semi-closed-ended question was put to the respondents for both the most important affordance of the private garden and the most important affordance of public green space. It was aimed at determining the meaning that people attach to these spaces. For both questions, the category systems were similar to those used for the affordance question, while the category ‘other’ was hardly marked by the respondents and was not further analyzed either.

### 3.2 Method

Following the procedure that was described in the previous section, for every respondent a meaning structure, consisting of an affordance and a meaning, was collected for the feature private garden and for the feature public green space. These meaning structures can be analyzed in several ways (Coolen 2006). One way is to ignore the relationships between feature, affordance and meaning but just analyze each of these elements of the meaning structure in a univariate way. For instance, one could inspect the frequency distributions of features, affordances and meanings separately. Another way is to take the relational aspects of the meaning structures explicitly into account, which may result in a meaning network. This is accomplished by collecting the individual affordance—meaning relationships for either the garden or public green space in a valued adjacency matrix (Wasserman and Faust 1994). In such a matrix, the rows are formed by the affordances, the columns by the meanings, and a non-zero cell entry indicates the frequency with which a certain relation has been mentioned by the respondents. As an example, the valued adjacency matrix of the private garden is presented in Table 2.

Adjacency matrices can be analyzed in several ways (Wasserman and Faust 1994). In this paper the affordances and meanings are analyzed both separately and in conjunction. We also study correlates of the affordances, meanings and their combinations with such socio-demographic variables as household composition and household income, as well as over- or under-representation of certain groups of respondents by means of Chi-square analyses. We only report the relationships that are significant at the 5% level.



**Table 2** Affordances and meanings of the private domestic garden

Affordances	Meanings										Total
	Being outside	Hobby	Activities	Freedom	Peace and Quiet	Enjoying life	Nature	Privacy	Recreation	Health	
Being outside	-	2	8.3	7.5	3.2	16.4	5	0.8	5.3	2	50.6
Gardening	3.2	3.5	1.6	0.4	0.4	1.4	1.2	0.1	0.3	0	11.9
Playground	2.3	0	1.5	0.5	0.2	1.5	0.1	0.2	0.1	0.3	6.5
Freedom	2.6	0.5	2	0	2.1	5.3	1.2	1.6	0.5	0.4	16.1
Nature	3.2	0.4	0.7	0.3	1.4	2.6	0	0.2	0.4	0.6	9.7
Privacy	0.4	0.1	0.5	1.4	1.2	0.9	0.3	0	0.2	0.2	5.2
Total	11.5	6.5	14.6	10	8.4	28.2	7.8	2.8	6.8	3.5	(n = 1,332)

Source: WoOn 2006, Module Consumer Behavior, Ministry of the Interior and Kingdom Relations

## 4 Results

This section presents a discussion of the affordances and meanings of the private domestic garden and public green space. It first explores why people would prefer a garden and public green space. It then compares the affordances and meanings of the private domestic garden and public green space to investigate to what extent public green spaces can be a substitute for a private domestic garden.

### 4.1 Affordances and meanings of the private domestic garden

#### 4.1.1 Preference for a private domestic garden

Of all the people who participated in our study, almost 80% preferred a garden, whereas 20% preferred a balcony. This preference for a garden is in line with figures from the UK, where 84% of all households have access to a garden (Bhatti and Church 2004). The preference for a garden or a balcony is affected by the socio-demographic characteristics of income and household composition. With increasing income, people more often prefer a garden instead of a balcony. Couples with children and single-parent families show a higher than average preference for a garden over a balcony, while one-adult households tend to prefer a balcony to a garden.

#### 4.1.2 Affordances of the private domestic garden

People attach many diverse affordances and meanings to the private domestic garden. Table 2 shows all the affordances and meanings mentioned for the private domestic garden. Clearly one affordance stands out: half of all respondents want a garden for being outside. Freedom is mentioned as an affordance by 15% of the respondents, while the affordances gardening and nature come third and fourth in terms of relative frequency. The affordances playground and privacy are relatively less important. These results seem to suggest that the respondents consider the garden in the first place as an 'outdoor room' (cf. Bhatti and Church 2000). The results with respect to gardening and nature are noteworthy, given the importance that is generally attributed to these affordances in the literature (Francis and Hester 1990; Gross and Lane 2007; Bernardini and Irvine 2007). Bhatti and Church (2004) report mixed results with respect to the popularity of gardening and find similar results with respect to nature.

There is no relationship between income and the affordances of the garden. Gardening is mentioned more often than average by couples without children and less often than average by couples with children. Playground is mentioned less often by one-adult households and couples without children and more frequently by couples with children. The affordance nature is mentioned more often than average by one-adult households and less often than average by couples with children. Finally, couples without children mention the affordance privacy more often than average.

Although households with children prefer a garden more often than other households, and although these households also mention the affordance playground more frequently than other households, this affordance is still mentioned relatively infrequently compared to the other affordances. It seems that affordances other than the playground are considered more important.

### 4.1.3 Meanings of the private domestic garden

The most important meaning that people attach to the private garden is enjoying life (see Table 2). Other relatively important meanings are activities, being outside and freedom. Either peace and quiet or privacy is mentioned by 11.2% of the respondents as the most important meaning. This signifies that quite a few people consider the garden as a place where they want to be undisturbed (cf. Bernardini and Irvine 2007). Respondents in the highest income group mention hobby less frequently and privacy more frequently as a meaning of the garden. As far as household composition is concerned, one-parent households mention freedom less frequently and recreation more frequently, while one-adult households mention nature and health more often than average. The important meanings of the garden support the idea that the garden is seen in the first place as an ‘outdoor room’.

The relationships between the affordances and meanings of the private domestic garden are represented in the cells of Table 2. The relative frequencies of the cells are calculated in terms of the total of the table ( $n = 1,332$ ), because we are interested here in the popularity of the combinations of affordances and meanings. The most frequently mentioned relationship is being outside—enjoying life (16.4%). Other combinations mentioned relatively frequently (i.e., by 5% or more of the sample) are being outside—activities, being outside—freedom, being outside—recreation, being outside—nature, and freedom—enjoying life.

The overall picture that emerges from the interrelations between affordances and meanings in Table 2 is that a large portion of the respondents consider the garden to be a setting where one can be outside in freedom to enjoy life and do all kinds of activities, a place for casual leisure (cf. Bhatti and Church 2004).

Clearly, the affordance being outside is not only the most frequently mentioned one but also takes a central position in Table 2. It is linked to many meanings. The link that dominates the table is the one between being outside and enjoying life. Among the respondents who have mentioned this link, the ones from the higher-income groups are over-represented, respondents from one-adult households are under-represented, while couples with children are over-represented.

The combination being outside—activities shows an over-representation of couples with children and respondents with a high income and an under-representation of one-adult households and respondents with a low income. Among the respondents who mention the combination being outside—freedom, couples with children are over-represented, while one-adult households and single-parent families are under-represented. Families with children are over-represented among those who mentioned the combination being outside—recreation, while one-adult households are under-represented. Finally, the combination freedom—enjoying life has been mentioned more frequently than average by couples with children and higher-income respondents and less frequently than average by one-adult households and low-income respondents.

Summarizing the results for the private domestic garden, we see that people attach many affordances and meanings to the private domestic garden. The great variety of affordances and meanings is in line with the findings of Francis (1990). Given the type of affordances and meanings that are most frequently mentioned, the concept of the living garden as an extension of the house (Grampp 1990) seems to be appropriate for the Netherlands. The affordances and meanings vary from leisure pastimes like being outside and enjoying life to activities and freedom.

In fact, many of the affordances and meanings of the garden are also important affordances and meanings of the living room. In the living room these are leisure pastimes

(recreation, hobby), enjoying life, and peace and quiet (Meesters 2009). So we may conclude that the garden is not only an enclosed extension of the dwelling but it also seems to be, like the living room, an essential setting of the dwelling.

## 4.2 The affordances and meanings of public green space

### 4.2.1 Preference for public green space

More than two-thirds of the respondents prefer to have several small public green spaces in their dwelling environment (69%). Still, 30% of all respondents prefer a centrally located big park. Hardly any of the respondents prefer to have little green space in their residential environment (1%). Bernardini and Irvine (2007) found similar preferences in the UK. According to these authors, most people prefer to have several small public green spaces in the dwelling environment because people understand that a single space cannot satisfy all the needs of a varied and complex community.

Among respondents with a middle income a centrally located big park is a little less popular, while several small public green spaces are a little more popular than average. There are no differences in the preference for public green space among household groups. Respondents who prefer a balcony instead of a private garden prefer a centrally located big park a little more frequently. Respondents preferring a private garden tend to prefer several small public spaces in their residential environment.

### 4.2.2 Affordances of public green space

Having a park or other green areas close by the dwelling contributes positively to a sense of nature (35.8%) and to the livability of the neighborhood (19.9%). Together these affordances have been mentioned by more than half of the respondents (see Table 3). But it also invites people to go outside, and it contributes positively to a sense of space. Apparently, people feel that public green spaces contribute to a pleasant residential environment, which is also indicated by the affordances enjoying life and peace and quiet.

Respondents with a less than a modal income mention the affordances livability and playground less frequently than expected. People with a middle income mention livability more frequently and being outside less frequently than expected as affordances of public green space. Couples with children mention the affordance enjoying life less frequently and playground more frequently than expected. The latter affordance is mentioned less frequently by one-adult households and couples without children.

### 4.2.3 Meanings of public green space

Enjoying life (21.5%) and livability (20%) are the most frequently mentioned meanings of public green space (see Table 3). Being outside is mentioned a little less often (15.9%), while nature and peace and quiet are mentioned by some 10% of the respondents. Respondents in the higher income group mention hobby less frequently and privacy more frequently as a meaning of the garden compared with the other income groups. The meanings nature and health are mentioned more frequently than expected by one-adult households, while freedom is mentioned less frequently and recreation more frequently by one-parent households.

The relationships between the affordances and meanings of public green space are represented in the cells of Table 3. The relative frequencies of the cells are, again,

**Table 3** Affordances and meanings of public green space

Affordances	Meanings										Total
	Nature	Enjoying life	Space	Social contact	Peace and quiet	Freedom	Livability	Being outside	Playground		
Nature	-	11.1	2.8	0.1	5.0	1.0	8.2	6.0	1.5		35.8
Enjoying life	1.9	-	0.4	0.4	0.8	0.6	1.7	1.0	0.1		6.9
Space	1.2	1.5	-	0.2	1.4	1.3	3.2	1.2	0.2		10.2
Social contact	0	0.1	0.1	-	0	0.1	0.8	0	0		1.0
Peace and quiet	1.0	1.6	0.3	0	-	0.6	2.8	0.3	0		6.6
Freedom	0.4	0.3	0.2	0.1	0.4	-	0.6	0.1	0.1		2.1
Livability	3.5	3.9	2.6	0.6	1.8	1.2	-	4.6	1.7		19.9
Being outside	2.9	2.1	0.9	0.4	0.6	1.3	1.5	-	0.6		10.2
Playground	0.6	0.8	0.6	1.0	0	0.4	1.3	2.8	-		7.4
Total	11.3	21.5	7.9	2.8	10.0	6.5	20.0	15.9	4.1		(n = 1,630)

Source: WoOn 2006, Module Consumer Behavior, Ministry of the Interior and Kingdom Relations

calculated in terms of the total of the table ( $n = 1,630$ ), because we are only interested in the popularity of the combinations of affordances and meanings. The most frequently mentioned combinations are nature—enjoying life, nature—livability, nature—being outside, nature—peace and quiet, livability—being outside, livability—enjoying life, livability—nature, and space—livability. The link nature—being outside is mentioned less frequently than expected by couples with children and more frequently by one-adult households and couples without children. Respondents with a less than modal income mention the relationship space—livability less frequently than expected. Among the respondents who mention the relation livability—nature, those with a less than modal income are under-represented. These respondents also mention livability—being outside less frequently, while the highest-income respondents mention this relationship more frequently.

Table 3 clearly shows that the most frequently mentioned affordances and meanings—namely, nature, livability and enjoying life—are all related in a complex, reciprocal manner. So for some people nature affords livability, while for others livability affords nature. This means that there is no strict hierarchy in these affordances and meanings of public green space. Nature is much more prominent as an affordance or a meaning of public green space than of the private garden. The importance of livability, both as an affordance and a meaning, and its relations with other affordances and meanings clearly shows how important public green space is for the well-being of residents. The great variety of affordances and meanings and their interrelations in Table 3 underlines the conclusion by Bernardini and Irvine (2007) that public green spaces are supposed to satisfy diverse needs and functions.

So, in the Netherlands people prefer public green spaces in their residential environment because they contribute to their sense of nature and to the livability of the environment, thereby helping them enjoy life.

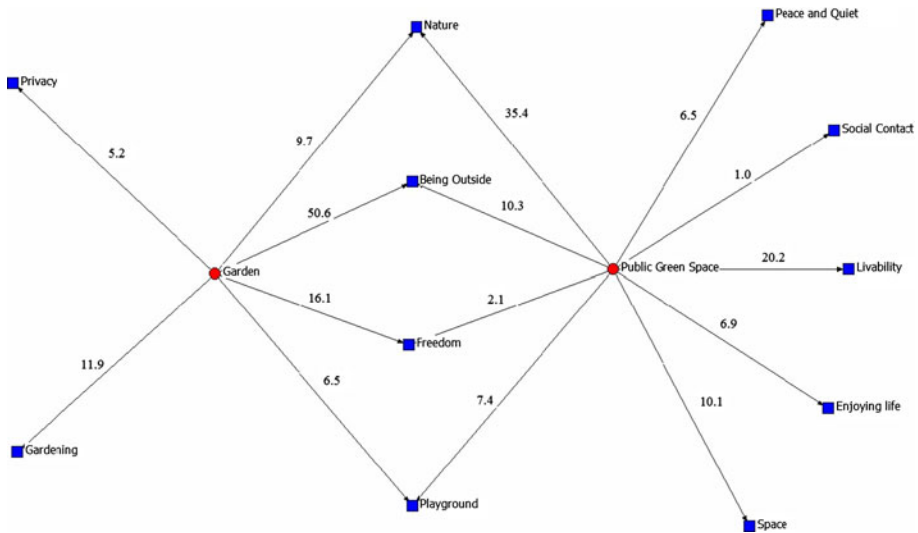
#### 4.3 Comparing the meaning of the private domestic garden and public green space

The previous analyses showed that both the private domestic garden and public green space are important settings of the dwelling and dwelling environment for the inhabitants. We now compare the affordances and meanings of the private domestic garden and public green space in order to be able to evaluate to what extent public green space can be a substitute for the private domestic garden.

Figure 2 contains all affordances of both private and public green space; the affordances playground, being outside, freedom and nature are afforded by both the private domestic garden and public green space. Playground is an almost equally important affordance for both private and public green space. Being outside and freedom are predominantly afforded by the garden, while nature is mainly afforded by public green space.

Besides these shared affordances the private domestic garden and public green space also have unique affordances. Gardening and privacy are only afforded by the garden. Gardening is of necessity unique to the garden, since it cannot be afforded by any other setting of the dwelling. The unique affordance privacy seems to refer to the ability to be outside unobserved by non-household members as well as being able to control the space (cf. Bernardini and Irvine 2007).

The single most important unique affordance of public green space is livability. Since most respondents prefer to have several smaller green plots in the dwelling environment, they apparently feel that these contribute positively to their well-being, as is also suggested by such affordances as space, enjoying life and finding peace and quiet.



**Fig. 2** Relative frequencies of shared and unique affordances of the private garden and public green space. *Source:* WoOn 2006, Module Consumer Behavior, Ministry of the Interior and Kingdom Relations

In order to further explore the similarities and difference between the private garden and public green space, the relative frequencies of the meanings of the shared affordances for both settings are shown in Table 4. The common affordances share the meanings being outside, freedom, peace and quiet, enjoying life and nature. Yet it is clear from Table 4 that the emphasis in the garden is more on enjoying life and being outside, while the affordances of public green space are more related to the shared meaning nature. The unique meanings of the shared affordances for either the garden or public green space do not detract from the picture we sketched of these settings in the previous sections.

The overall picture that emerges from this comparison of affordances and meanings of the private garden and public green space further supports the views about the role of these settings that emerged in the previous sections. The private domestic garden seems to be the place for casual leisure. As such it forms an integral setting of the dwelling that affords being outside in a private setting to enjoy life and where one has the freedom to do as one likes. In many ways it may be considered as an outdoor extension of the living room, which is used as such when the weather permits. Public green space, mainly in the form of several smaller green spaces instead of one larger park, is considered by our respondents as an integral part of the dwelling environment that contributes to the livability of the dwelling environment. As such, it seems to invite people to spend time outside to, among other things, experience nature. For our respondents, the experience of nature is related much more to public green space than the private garden. This diverges from findings in many studies on the garden in which nature takes a very prominent position (e.g. Francis and Hester 1990; Bhatti 1999).

Both the shared and unique combinations of affordances and meanings of private and public green space are important to all, regardless of whether people prefer a private domestic garden or not (cf. Bernardini and Irvine 2007). This finding is very much in line with the results of a study by Boumeester et al. (2009) about urban living, in which it was also found that people want both private and public green space in their dwelling and dwelling environment.

**Table 4** Common affordances of the garden and public green space and their meanings (relative frequencies)

Meanings	Common affordances									
	Being outside		Playground		Freedom		Nature		Public green space	Public green space
	Garden	Public green space	Garden	Public green space	Garden	Public green space	Garden	Public green space		
Being outside	–	–	34.6	37	15.8	5.4	–	–	–	–
Freedom	14.9	12.6	7.4	5.9	–	–	32.7	16.6	3.1	3.0
Peace and Quiet	6.4	5.2	1.9	10.8	12.9	20.1	14.1	14	27.2	31.1
Enjoying life	32.5	21.5	23.5	7.1	33.1	16.2	–	–	–	–
Nature	9.9	28.8	1.5	–	7.4	18.9	–	–	–	–
Hobby	4.0	–	–	–	3.5	–	3.8	–	–	–
Activities	16.5	–	23	–	11.9	–	6.8	–	–	–
Privacy	1.5	–	2.1	–	9.9	–	2.2	–	–	–
Recreation	10.4	–	1.7	–	3.1	–	3.7	–	–	–
Health	4.1	–	4.4	–	2.4	–	6.5	–	–	–
Space	–	8.2	–	8.5	–	8.3	–	–	–	7.9
Social contact	–	4.3	–	13.3	–	2.6	–	–	–	0.3
Livability	–	14.3	–	17.3	–	26.4	–	–	–	23
Playground	–	5.2	–	–	–	2.2	–	–	–	4.1
Total	n = 673	n = 165	n = 87	n = 122	n = 215	n = 33	n = 129	n = 581	n = 129	n = 581

Source: WoON 2006, Module Consumer Behavior, Ministry of the Interior and Kingdom Relations



## 5 Conclusion

The increasing tension between the idea of compact, sustainable urban areas, on the one hand, and the increasing demand for space in and around the dwelling, on the other, places planners and developers in a difficult situation. In the Netherlands, this increased demand for space is expressed in an overwhelming preference for a single-family dwelling with a garden. Several concepts for providing private outdoor space, but in a high-density manner, have been put into practice in urban development. One of them is the substitution of public green spaces for private domestic gardens, which apparently are assumed to be substitutable for each other. Bernardini and Irvine (2007) have already cast some doubt on this assumption in a largely qualitative study. In this paper we have taken a more quantitative approach to investigate the motives underlying the preference for private domestic gardens and public green spaces in order to be able to evaluate whether these types of green spaces can in fact be substituted for each other. These motives provide insight into *why* the private domestic garden and a green dwelling environment are such important aspects of people's housing preferences. Our results show that a large majority of people prefer a private domestic garden over a balcony, and at the same time also want public green space, mainly in the form of several smaller green spaces, in their dwelling environment. The private domestic garden is special for its combination of affordances and meanings such as being outside, privacy, freedom and gardening. Public green space is special for its positive contribution to the livability of the dwelling environment and to the experience of nature. Although some of the affordances and meanings are shared by the private garden and public green space, for instance being outside, it is the combination of affordances and meanings that makes them more or less unique to one of the two settings.

So, we may conclude that the private domestic garden cannot simply be substituted by public green space in the Netherlands. Despite some similarities in affordances and meanings, our results clearly show that the private domestic garden and public green space have unique combinations of affordances and meanings. A key aspect of public green space is its contribution to the livability of the dwelling environment and the experience of nature. A key feature of the private domestic garden is that it is considered as an outside extension of the casual leisure that is afforded by the dwelling.

The results of this study give more insight into why there is a gap between consumers' preferences for green, spacious living and the compact-city concept so often promoted by government policies. An important lesson to be drawn from this study might be for policymakers to accept that urban living is not for everyone. This is also reflected in the fact that in a traditionally highly urbanized country like the Netherlands, a sizeable part of the population resides outside the cities. So, the focus in housing research and housing policy should not only be on how to implement the compact-city concept. Sustainable 'suburban living' also deserves attention and merits inclusion on the agendas of researchers and policymakers. The VROM council drew a similar conclusion in a recent study on sustainable urban development: there is not one generic model for successful sustainable urban development. The city is part of a wider spatial system, defined by various functions such as dwelling, work and leisure. Focusing only on the city would neglect or even disrupt the link between the city and its surrounding environment (VROM council 2010).

The preference for a certain type of residential environment is the outcome of a decision-making process at the household level. Traditionally, families with children move out of cities. Families want to raise their children in a more quiet and green environment (Karsten 2007). Still, an increasing number of dual-earners—in particular those with a balanced work-care relation—prefer to live in a city (De Graaff and Karsten 2007). Its

compact form allows them to combine work and family duties better than they could in a green, suburban residential environment. So, even though the results of our study show that the compact city is not for everyone, one might expect that in the future, with the possibility that labor participation will increase among women and the ‘daddy day’ will become commonplace, this could become a larger group. Therefore, to make urban development sustainable, policy needs to demonstrate a wider scope by linking the city and its surroundings. One important aspect for policymakers to keep in mind in this regard is the need to consider urban and suburban residential environmental quality not as separate but as interconnected qualities.

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## References

- Bernardini, C., & Irvine, K. N. (2007). The ‘nature’ of urban sustainability: private or public green spaces. In A. Kungolas, C. A. Brebbia, & E. Beriatos (Eds.), *Sustainable development and planning III (volume 2)* (pp. 661–674). pp: WIT Press.
- Bhatti, M. (1999). The meaning of gardens in an age of risk. In T. Chapman & J. Hockey (Eds.), *Ideal homes: Social change and domestic life* (pp. 181–194). Routledge: London.
- Bhatti, M., & Church, A. (2000). ‘I never promised you a rose garden’: Gender, leisure and home-making. *Leisure Studies*, 19(3), 183–197.
- Bhatti, M., & Church, A. (2004). Home the culture of nature and meanings of gardens in late modernity. *Housing Studies*, 19, 37–51.
- Boumeester, H. J. F. M., Dol, K., & Meesters, J. (2009). *Stedelijk wonen: een brug tussen wens en werkelijkheid. Een onderzoek naar woonwensen en woonproducten bij binnenstedelijk bouwen (Urban living: bridging preferences and reality. Housing preference and housing products for urban development)*. Voorburg: NVB.
- Boumeester, H. J. F. M., Lamain, C. J. M., Mariën, A. A. A., Rietdijk, N., & Nuss, F. A. H. (2006). *Huizenkopers in profiel; Onderzoek naar wensen van potentiële huizenkopers (Housing preferences of potential home owners)*. Voorburg: NVB.
- Burgess, J., Harrison, C. M., & Limb, M. (1988). People parks and the urban green: A study of popular meanings and values for open spaces in the city. *Urban Studies*, 25, 455–473.
- Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology*, 15, 181–195.
- Coolen, H. (2006). The meaning of dwellings: An ecological perspective. *Housing, Theory and Society*, 23, 185–201.
- Coolen, H. (2008). *The meaning of dwelling features: Conceptual and methodological issues*. Amsterdam: IOS Press.
- Coolen, H. (2011). The meaning structure method. In S. Jansen, H. Coolen, & R. Goetgeluk (Eds.), *The measurement and analysis of housing preference and choice*. Dordrecht: Springer.
- Coolen, H., & Hoekstra, J. (2001). Values as determinants of preferences for housing features. *Journal of Housing and the Built Environment*, 16, 285–306.
- Coolen, H., & Meesters, J. (this issue). House, home, and dwelling.
- Dam, F., van Heins, S., & Elbersen, B. S. (2002). Lay discourses of the rural and stated and revealed preferences for rural living. Some evidence of the existence of a rural idyll in the Netherlands. *Journal of Rural Studies*, 18, 461–476.
- De Graaff, L., & Karsten, L. (2007). Woonmilieuvorkeuren van de creatieve klasse (Residential environment preferences of the creative class). *Agora*, 2007–2, 41–44.
- Dowling, R. (2008). Accommodating open plan: children clutter, and containment in suburban houses in Sydney, Australia. *Environment and Planning A*, 40, 536–549.
- Francis, M. (1990). The everyday and the personal: Six garden stories. In M. Francis & R. T. Hester (Eds.), *The meaning of gardens* (pp. 206–216). Cambridge: MIT Press.
- Francis, M., & Hester, R. T. (Eds.). (1990). *The meaning of gardens*. Cambridge: MIT Press.
- Geurs, K. T., & Van Wee, B. (2006). Ex-post evaluation of thirty years of compact urban development in the Netherlands. *Urban Studies*, 43, 139–160.

- Grampp, C. (1990). Social meanings of residential gardens. In M. Francis & R. T. Hester (Eds.), *The meaning of gardens* (pp. 178–184). Cambridge: MIT Press.
- Gross, H., & Lane, N. (2007). Landscapes of the lifespan: Exploring accounts of own gardens and gardening. *Journal of Environmental Psychology*, 27, 225–241.
- Gunther, B. (2000). *Psychology of the home*. London: Whurr.
- Heins, S. (2002). Rurale woonmilieus in stad en land, plattelandsbeelden, vraag en aanbod van rurale woonmilieus, (Rural living environments in the city and in the countryside) Eburon, Delft.
- Jager, J., & Kers, P. (2010). Marktdenken versus de compacte stad (Market thinking versus the compact city). *Vitale Stad*, 8–13, 24–26.
- Jansen, S., Coolen, H., & Goetgeluk, R. (2011). *The measurement and analysis of housing preference and choice*. Dordrecht: Springer.
- Karsten, L. (2007). Housing as a way of life: Towards an understanding of middle-class families' preferences for an urban residential location. *Housing Studies*, 22(1), 83–98.
- Meesters, J. (2009). *The meaning of activities in the dwelling and residential environment*. Amsterdam: IOS Press.
- Meesters, J., & Coolen, H. (2008). *The garden as a meaningful setting, paper presented at the European Network for Housing Research Conference, July 6–8*. Ireland: Dublin.
- Moore, J. (2000). Placing home in context. *Journal of Environmental Psychology*, 20, 207–217.
- Pincetl, S., & Gearin, E. (2005). The reinvention of public green space. *Urban Geography*, 26(5), 365–384.
- Rapoport, A. (1981). Identity and environment: A cross-cultural perspective. In J. S. Duncan (Ed.), *Housing and identity; cross-cultural perspectives*. London: Croom-Helms.
- Rapoport, A. (1988). Levels of meaning in the built environment. In F. Poyatos (Ed.), *Cross-cultural perspectives in nonverbal communication* (pp. 317–336). Toronto: C.J. Hogrefe.
- Rapoport, A. (1990). *The meaning of the built environment* (2nd ed.). Tucson: University of Arizona Press.
- Rapoport, A. (1995). A critical look at the concept 'Home'. In D. N. A. Benjamin & D. Stea (Eds.), *The home: Words interpretations meanings, and environments* (pp. 25–52). Avebury: Aldershot.
- Rapoport, A. (2000). Theory culture and housing. *Housing, Theory and Society*, 17, 145–165.
- Rossi, P. H. (1955). *Why families move*. Glencoe: Free Press.
- Sime, J. (1993). What makes a house a home: The garden? In M. Bulos & N. Reymur (Eds.), *Housing: Design research education* (pp. 239–254). Avebury: Aldershot.
- VROM council. (2010). *Duurzame verstedelijking (Sustainable urbanization)*. The Hague: OBT.
- Wasserman, S., & Faust, K. (1994). *Social network analysis, methods and applications*. Cambridge: Cambridge University Press.