
Residents' Front/Back Definition of the Spaces Around Suburban Houses near Tokyo:

A Quantitative Study on the Perception and Use of Outdoor Areas

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Abstract

How residents arrange the outdoor spaces around their houses are said to express their personal values. In order to understand the meanings behind such arrangements, this study investigates residents' use of outdoor spaces through quantitative analyses of the relationship between the physical environment and residents' behavior. Descriptions of the physical features of the outdoor spaces together with residents' responses to a questionnaire survey were the data obtained by an investigation of 74 suburban houses near Tokyo. By comparing the ways in which each unit space was actually used with its physical features as well as residents' perception of its characteristics, the conditions necessary in order for certain activities to occur within a space were examined. The results suggested that even if an outdoor space physically satisfies the functional conditions for a certain activity, it may not be used unless it fits the resident's perceptions regarding suitability, including front/back distinctions.

Introduction

Most suburban houses in Japan are built by prefabricated systems and often look quite similar. The outdoor spaces around each house, however, are arranged differently so as to mirror the resident's personal values and feelings (Marcus, 1995). For example, people use their gardens to communicate to others how they feel about themselves and the larger world that surrounds them (Francis, 1990; Hanyu et al., 2002). One important reason why people prefer single family dwellings is that they allow residents to clearly differentiate between front and back as well as to express this difference through appropriate symbols. The distinction between the domains of "front" and "back" seems to play a fundamental role in determining the layouts of such outdoor spaces as carports, yards, and gardens. As Rapoport (1977) points out, "There is much evidence that people very clearly differentiate between front and back areas since very different symbolic values are attached to them." Elsewhere he also notes that the actual physical expressions that symbolize front/back areas are very different across cultures (Rapoport, 1982). The present study was designed to give empirical support to the above argument through quantitative analyses of the relationship between the physical environment and residents' behavior.

Figure 1. Some views from the street.



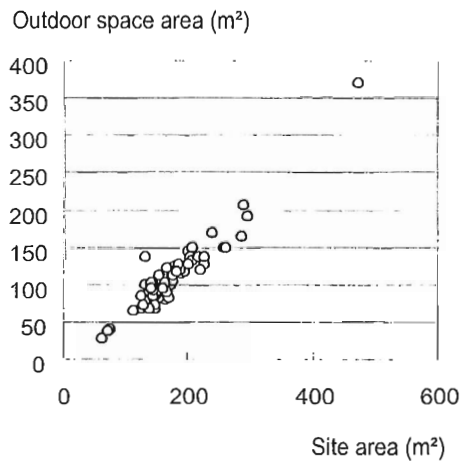
Some previous research in Japan has also focused on the relationship between outdoor spaces and residents' behavior. Iwasaki et al. (1990) investigated how people in snowy areas use their outdoor spaces. They categorized sites into several plan types according to the layout of the front road, garden, and house, and found that the frequency of

Table 1. Respondent statistical data.

Age		Duration of residence	
age	number	years	number
30–49	19	0–2	15
50–59	25	3–10	22
60–69	24	11–20	16
70+	6	21+	22
Total	74	Total	74

certain kinds of behavior varied according to plan type. Umetsu et al. (2000) discuss the changes in outdoor space use recently taking place in the regional cities of Japan. They show how as gardens are increasingly replaced by car parking spaces, the fences formerly used to control visual privacy from the front road are reduced accordingly. While these studies are conducted in regional cities and therefore deal with spaces larger than the plots analyzed in the present survey, they still provide a useful reference for considering the items of the survey.

Figure 2. Area of the sites and outdoor spaces.



Survey method

A survey of 74 houses in the suburbs of Tokyo was conducted to investigate how the residents actually use the space around their homes as well as how this use is affected by their perceptions regarding the spaces, including front/back distinctions. The data obtained by the survey were as follows: (1) physical features of the outdoor spaces; (2) the resident's use of the outdoor spaces; (3) the resident's perception of the outdoor spaces including front/back distinctions. Table 1 and Figure 2 give some statistical data on the residents and sites surveyed. Figure 1 show some typical sites.

We first drew a rough plot plan of each site visited and measured the dimensions and height of its outdoor spaces. The type of ground covering materials used and the types of rooms connected to each space were also recorded on the plot plan (see Figure 3a).

We then asked the resident to point out the places where certain activities typically took place. A list of the following 20 possible activities was prepared in advance, and the item number of each activity written down on the plan according to where it occurred:

- (a) Storage: 1) storing unnecessary things and garbage, 2) storing rarely used things, and 3) storing frequently used things;
- (b) Household activities: 4) walking through, 5) drying laundry, 6) washing things

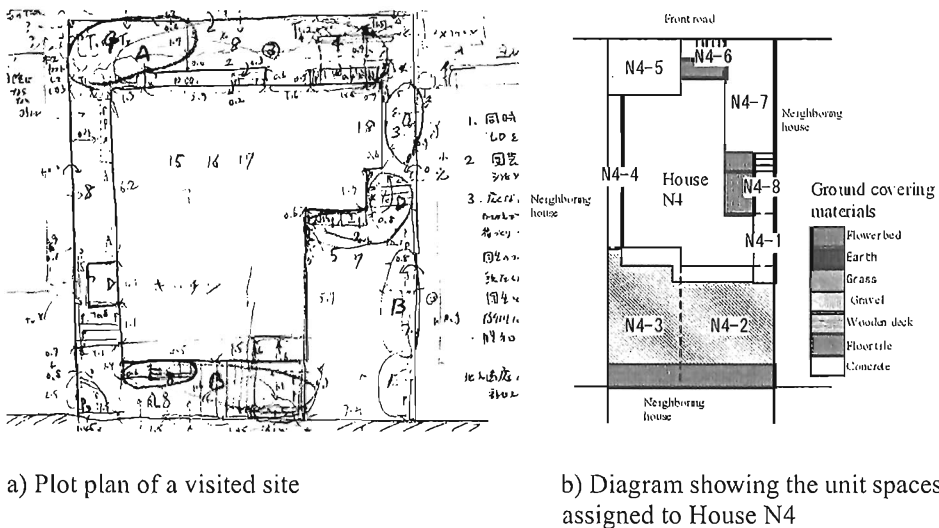
- with water, 7) sprinkling water, 8) taking care of a car or bicycle, and 9) growing plants;
- (c) Leisure activities: 10) doing Sunday carpentry, 11) grooming pets, 12) exercising, and 13) letting children play;
- (d) Outdoor activities: 14) enjoying the cool evening breeze, 15) sunbathing, and 16) dining with friends or family;
- (e) Activities related to viewing the outdoors from the inside: 17) enjoying the garden, 18) observing changes in the weather or the seasons, and 19) watching the daytime or the nighttime sky;
- (f) Social activities: 20) chatting with neighbors.

We also probed for the resident's perception of the outdoor spaces by asking for (A) places they regarded as front, (B) places they regarded as back, (C) places preferably kept hidden, (D) places willingly shown to neighbors, (E) places for private family activities, and (F) places they liked.

Analysis

In order to analyze the data obtained, the outdoor spaces around each house were divided into unit spaces according to such physical features as shape, height, and type of ground covering materials (see Figure 3b). We extracted 541 unit spaces out of 74 houses; thus there was an average of 7.3 unit spaces per house. Other physical characteristics including size, location within the site, proximity to the street, accessibility to the interior of the house, and visibility from neighboring sites were also noted down for each unit space.

Figure 3. Method of analysis.



Results and discussion

First, the relationships between the physical features of an outdoor space and the use of that space for certain activities were analyzed. When the shorter dimension of the unit spaces used for each of the twenty possible activities was examined, it was found that a width of more than 2 m was required for such activities as "enjoying the cool evening breeze," "taking care of a car or bicycle," and "dining with friends or family." It was also found that some activities only took place within spaces possessing a minimum required area.

When the relationship between residents' activities in a unit space and the type of ground covering materials used was examined, the results showed that materials such as wood deck and grass were considered to fit leisure and social activities including "dining with friends or family" and "sunbathing," while unit spaces with concrete or floor-tile finish were used for "storage" and "household activities."

As for the relationship between residents' activities in a unit space and the type of rooms connected to that space, it was found that unit spaces connected to a living room were considered to fit leisure and social activities, while unit spaces connected to a kitchen were used for "storage."

Finally, an examination of the relationship between residents' activities in a unit space and its openness in each direction revealed that some activities took place only when a certain direction was open or closed. For example, "sunbathing" took place when the south or southeast was open and the north side closed.

As for residents' perception of the outdoor spaces, most spaces were clearly distinguished as front (38%) or back (32%) although about 30% were not recognized as either. Proximity to the main thoroughfare and accessibility to the entrance and living room were some characteristics of the unit spaces that tended to be seen as front. On the other hand, the unit spaces seen as back tended to face a blank wall or a door to the kitchen. Residents generally seemed to care better for the front region, since it is the part that communicates a public image.

Further examination of unit spaces characterized by more than one perception reveals a clear relationship between perceptions of outdoor spaces and activities carried out in it, as shown in Table 2. Each column in the top matrix represents a set of unit spaces characterized by a different group of overlapping perceptions. Black boxes are used to indicate which perceptions belong to which group. The bottom matrix shows the occurrence rate of the 20 queried activities for each group of unit spaces. Bold letters with gray background indicate where the rate of occurrence of a certain activity is significantly higher compared to the total average (probability of Chi-square is less than .05). A unit space which was recognized as front but elicited no responses concerning other items was a place for "sprinkling water," "taking care of a car or bicycle," and "chatting with neighbors," most likely for the simple reason that it was located near the front street. However, unit spaces which were recognized as front while also regarded as "places willingly shown to neighbors," "places for private family activities," and "places liked by the respondent" were used for various leisure, outdoor, viewing, and social activities. Household activities and storage usually took place in the back. The back region was not necessarily a deserted place, however, but could be a favorite place for spending leisure time or conducting other private family activities.

It is interesting to note that "drying laundry" and "washing things with water," which are believed to be typical back-space activities in Japan, were found to frequently occur

in front areas according to this survey. While this may simply be due to limited space availability in the back areas, it may also reflect the strong Japanese preference for drying clothing and futons (Japanese mattresses) in a sunny place, which tends to be regarded as a front space. Thus in some cases residents' perceptions regarding a space do not seem to play a significant role in determining whether it is used for a certain activity. This may be because residents do not have access to spaces possessing both the appropriate perceptive qualities and required physical conditions, or perhaps because "drying laundry" is not that strongly associated with "back" in people's minds.

Conclusion

The main results obtained by this quantitative study can be summarized as follows:

- 1) Some activities will only take place within spaces possessing a minimum required dimension (width) and area;
- 2) Certain physical features of an outdoor space, such as type of ground covering materials, connection to a certain type of room of the house, and openness in certain directions will facilitate the use of that space for some activities;
- 3) However, even if an outdoor space satisfies the size requirements and provides good physical conditions for a certain activity to occur, it may not be used unless it fits residents' perceptions regarding spaces they consider appropriate for that activity, including front/back distinctions.

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