Playing with Townhouses – a Design-Based Research Method for Housing Studies

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Abstract

Housing preferences are inherently based on the existing housing examples and the current housing supply. Thus, revealing the lay perceptions of a relatively unfamiliar housing typology invites new methodological approaches. These approaches have been investigated in the context of Finnish Dream Home (FDH) study focusing on townhouse living and related design issues. The FDH is a three-phased mixed method study, the objective of which was to examine and discover the design solutions that would increase the attractiveness of townhouse living among different types of households in Helsinki metropolitan area.

This paper focuses on a design game, which provides tools to examine, reinvent and verbalize the residents' innermost housing preferences. The game allows covering themes such as spatial flexibility and adaptability, which are otherwise difficult to study. Simultaneously, such context-sensitive game, designed to steer the focus on design-based questions, reveals the residents' decision-making processes. The discussion and negotiation of the possible design solutions with the fellow players are the essence of this method.

Supporting the participants' ability to discuss and present their subjective housing choices, the game has been verified as a tool adjustable for different types of research settings to value residents' opinion. Therefore, the townhouse game is an example of practice-based research diminishing the gap between housing studies and housing design.

PEER-REVIEWED ARTICLE

Introduction

How is one to construct a research setting in a situation where the residents are unidentified and the housing typology in question only vaguely familiar? This was the starting point in the Finnish Dream Home (FDH) study that aimed to define the design solutions, which would make townhouse living an interesting housing typology for different kinds of households in the Helsinki metropolitan area. Thus, the objective was to identify the urban households that could be interested in townhouses and to recognize potential barriers and boosters related to the typology. The results were intended to support the work of design field professionals – planners, architects and landscape architects – in developing townhouse concepts. To highlight the residents' perspective, the framework of the FDH combined the aspects of planning and housing design, which are meaningful in relation to urban ways of living. As such, we use townhouse living to indicate the objective of this study.

The Finnish townhouse discussion dates back to the beginning of this century. Combining the traditional preference for small-scale living with an urban location, particularly the planners have promoted townhouses as a potentially affordable housing choice for families in Helsinki metropolitan area. Townhouse has not, however, become popular among the urban families and the existing examples remain few. While a substantial body of reports (e.g. Jalkanen et al. 2012; Mälkki 2010; Manninen & Holopainen 2006) describes the benefits of townhouse living, the lack of residents' perspective is evident.

Thus, in order to examine the residents' perspective, a three-phased mixed method study (see Creswell, 2009) was developed. Contributing to housing research, and more precisely to the methodology in the field of environmental design studies, this paper presents a design game developed for the third phase of the FDH. To embrace the active role of participants, the design game approaches participatory design methodology in which the laypersons are valued as a source of tacit knowledge (Spinuzzi, 2005). The flexibility of the game also enabled investigating the potential end-users' housing decision-making from the chosen viewpoints of planning and housing design. The research findings of the FDH study are presented in more detail elsewhere (Hasu et al. forthcoming; Huttunen et al., 2016)

The concept of townhouse and related typological issues provide a pragmatic framework for the methodological inquiry throughout this paper. Thus, the second section explains in more detail the importance of Finnish townhouse discussion. The third section discusses the pragmatic perspectives of planning and housing design in relation to a constructed mixed method study. The fourth section presents the methodological understanding behind the design game, which is explained in detail in the fifth section. The sixth section discusses and evaluates the use of design game followed by the concluding remarks in the seventh section.

Research Setting: Why Townhouses?

Compared with urban development in other western countries, including in Finland, and within and around the Helsinki metropolitan area, housing is challenged by the urbanization, increasing housing costs and shrinking household size. Combining the traditional preference for small-scale housing with an urban location, particularly the Finnish planners have promoted a townhouse typology as a potentially affordable housing choice for families (Kuittinen, 2014; Jalkanen et al., 2012; Mälkki, 2010; Manninen and Holopainen, 2006).

Attempts to define a Finnish townhouse are many. According to the most simplified definition, a townhouse is a private house with two to four storeys on its own plot and it is connected to neighbouring houses with firewalls. Whereas previous definitions have stressed the importance of owner-occupancy (e.g. Manninen & Holopainen, 2006), a more recent attempt is to redefine the concept

in such a manner that it primarily enables to create pleasant small-scale environments (Huttunen & Kuittinen, 2014). A possibility to include shared domestic spaces with townhouse living is a part of a discussion related to the definition of a townhouse.

Due to a similar appearance, townhouses are often confused with row houses. The main difference between the two is that row houses are without exception managed by housing cooperatives, thus limiting the sovereignty of residents. The definition is significant because it interacts with building regulations, thus creating a basis for design solutions. As such, paralleled with detached houses, a Finnish townhouse cannot, for instance, contain separate apartments on top of each other without being redefined as an apartment building, for which design processes follow typology-specific building regulations. A possibility to divide a house into smaller housing units could be an answer to changing life situations and new forms of urban life including an increasing number of one-person households. Furthermore, the aspect of affordability is significant as the floor area of a multi-storey house has a tendency to increase due to the vertical circulation and related design solutions.

A need to study the townhouse typology intermediating between the detached houses and apartment buildings is highlighted by the understanding that despite the growing interest in apartment buildings, people living in the cities still show interest in detached houses (Strandell, 2011). On the other hand, a preference for urban living has been recognized among inner city families (Lilius 2014). However, the families alone have become more diversified, whereas the frequently cited statistics fail to embody the contemporary forms of living together. Such families with unique housing needs include parents living partly alone and partly with their own children or children of their new partners, and children having more than one home. Similarly, the increasing number of one-person households with varied life situations challenges the family-centred reasoning. As there are several reasons to broaden the urban housing supply, diversifying housing preferences are a significant issues to take into account when discussing new forms of housing (Jansen, 2012; Floor & van Kempen, 1997).

Mixed Method Research Strategy

The methodological choices were based on the fact that townhouse typology is not familiar in Finland; hence, we could not simply ask the respondents' opinions of townhouse living. Another significant aspect affecting the methodological choices was the applied nature of the FDH study referring to the transferability of the results. In other words, the research findings were expected to be useful for the planners and architects developing townhouse living. Thus, the research question was: *Under what conditions living in a townhouse (later referred as townhouse living) could appeal different kinds of resident groups in Helsinki metropolitan area*?

The task was to establish a data collection method, the findings of which would merge the perceptions of professionals developing townhouse living and the perceptions of yet unidentified urban townhouse residents. For this purpose, a mixed method research strategy[1] based on three interrelated data collection phases was constructed. Each data collection method was chosen by its ability to provide data from different aspects of the same phenomenon, that is, townhouse living: (1) literature review followed by expert interviews clarifying the perceptions of the professionals (e.g. planners, architects, researchers and building supervisors); (2) a survey covering the residents' interest towards

[1] This is also known as triangulation or combined strategies. The confusion around the definition of the mixed method research has emerged due to its association with different levels in a research process (e.g. Du Toit 2010; Creswell, 2009; Groat & Wang, 2002).

townhouse living; and (3) a design game where the typology was discussed and developed free from the limitations of the prevailing definition.

The purpose of the expert interviews (n=11), carried out in October 2013, was two-fold: first, based on the literature review, to confirm that we have chosen the relevant questions for the upcoming survey; and, second, to increase our understanding concerning the nature of research findings meaningful to the interviewed experts. The interviews covered the following aspects: the definition of a townhouse, location and areal differences, resident profiles, layout and design solutions, outdoor areas, different ways of building townhouses including group building that is somewhat new in Finland, and the reasons hindering the popularity of townhouses. In relation to the definition of a townhouse, the interviewees often pointed out the obstacles constricting the development of the otherwise protean typology. Interviewees demanded more compact solutions in order to reduce the building costs and to provide housing alternatives for a growing number of small households. The interviewees also considered the accessibility regulations partly responsible for the multi-storey houses becoming too large and expensive. One of the main characteristics of the typology, namely the connection with the urban space via the small front yard was considered both intriguing and challenging starting point that resonates with the lively urban environments admired in other European cities, where the typology was developed often due to scarcity of land. The typology-specific issues were clearly pointed out by expert interviews and further transferred to the survey, where, for instance, the size and use of private outdoor areas were studied in more detail.

Along with housing preferences, the respondents were profiled based on two indicators: the built environment structure (urbanity) and the attitudes towards local community (socialness).

The survey was conducted at the beginning of 2014. The main group of respondents consisted of web panellists (n=1214) living in the Helsinki metropolitan area. The respondents, aged between 25 and 80 years, evenly covered one-person households, two-person households, and families with children. Along with housing preferences, the respondents were profiled based on two indicators, which were defined from the survey results: the built environment structure (urbanity) and the attitudes towards local community (socialness). Four profile groups were classified as follows: *Urb*an describes the preference for a dense, city centre type of a structure with a reduced amount of green window views compensated with a vivid cityscape and bustling street life, and *sub*urban to describe a less dense structure, encompassing less vivid environment and more greenery. The other dimension, socialness, is described by *socials*, the social-minded residents in the one, and ano*nymous*, the private-minded in the other end of the axis. As a result, we were able to define four residential profiles: *urbsocials* and *urbnymous*, as well as *subsocials* and *subnymous*. As the profiles interact with lifestyles, they are an important addition to the more traditional approach of profiling residents. (Hasu et al. forthcoming) Furthermore, the survey also revealed that besides families, townhouse living also attracts both solo dwellers and couples, a notion to further underline a more in-depth understanding about townhouse related housing preferences and potential target groups, which are of key importance when aiming to develop both the townhouse concepts and the consumer understanding within the concepts. In terms of townhouse research, this notion invites the act of segmentation, a performance which allows recognizing potential target groups of reasonable size, sharing similar housing preferences and profiles (cf. Hyysalo, 2009; Kotler et al., 2005).

Based on the combination of expert interviews and the survey, we were able to identify four design-related themes that required more detailed investigation in the last data collection phase: private outdoor areas, typology, shared domestic spaces and spatial flexibility. These themes were defined as the research themes for design game sessions. Although the questionnaire covered the themes to some extend, the limitations of the survey were obvious, as the findings were partly too general and thus disconnected from pragmatic design problems. For example, the respondents who were interested in townhouses preferred the shared domestic spaces, however in a variety of ways. Of the respondents

interested in townhouses, 38% would appreciate spaces that provide a room for hobbies (other respondents, 28%). Simultaneously, 50% of townhouse-minded respondents informed that the shared domestic spaces would interest them only if the spaces were reserved solely for their own use (others, 44%). Furthermore, the open-ended questions revealed negative attitudes towards these spaces whereas the survey did not provide a possibility to cover novel ways of sharing housing related spaces with neighbours. Consequently, as another example of how the data was transferred from one methodological phase to another, the shared domestic spaces, which were already recognized as a significant topic in the survey, were further examined in the design game phase.

In order to enhance the interconnectedness of the data collection methods, the survey respondents were asked if they were interested in attending a workshop to discuss townhouse living in more detail in a small group, which emphasizes the cumulative character of the data collection method. Altogether 221 respondents answered “yes” or “maybe”, and out of these, 104 found the proposed dates suitable. Eventually, due to last-minute cancellations, we got 61 enthusiastic participants to play the game with us in seven game sessions.

Design Game Activates

Each person’s housing preferences and understanding of housing possibilities relies strongly on their housing history as well as on the current housing supply – what housing solutions are experienced as possible (Clapham, 2005). For these reasons, the challenge in this study was to create a method that would assist participants to express their housing preferences in a context defined by the unfamiliar housing typology.

Design games and other forms of co-designs fall into a category of tacit knowledge with a capability to reveal the underlying ideas and dreams of participants

Comparable with a design workshop, a design game was chosen for this study because it has a capacity to cover multifaceted design problems free from the limitations of more structured research methods (cf. Forsyth et al., 2010). Using a game as a method is based on the understanding that embraces housing as a complex phenomenon and as a reflection of the social reality as suggested by Du Toit (2010). To provide a deeper understanding of the game method, Halmeenmäki (2012, 29) presents a synthesis of the human-centred design methods, which are divided into explicit, observable and tacit based on the nature of the knowledge under investigation. Design games and other forms of co-designs fall into a category of tacit knowledge with a capability to reveal the underlying ideas and dreams of participants. As such, design game functions as a technique, which transforms the tacit knowledge into explicit knowledge (see Horelli, 2005). In the much-cited paper, Spinuzzi (2005) discusses the participatory design as a research method. The perceived knowledge is similar to that of Halmeenmäki: ”[T]o understand knowledge-making in participatory design, we have to understand that much knowledge tends to be tacit. Tacit knowledge is implicit rather than explicit, holistic rather than bounded and systematized; it is what people know without being able to articulate.” (Spinuzzi, 2005, 163). A participatory design approach has been widely used in various research contexts, including urban design, planning and geography. To empower the participants, such approach aims to provide positive, more or less immediate outcomes to their everyday environments. Ideally, the design process is iterative and involves an intensive collaboration between all parties. (Du Toit, 2010; Sanoff, 2007; Spinuzzi, 2005.) A participatory design approach has also been applied in housing studies (Vestbro et al., 2005). The design game developed for the use of the FDH contains features of participatory design insofar as the participants are valued as experts and a source of tacit knowledge.

The essence of a game method lies in co-design. The core idea of co-design is to support the collaboration of people with diverse backgrounds with the help of informal game setting (Halmeenmäki, 2012). The strength of a group lies in communication as “the group format allows people to build on each others’ comments” (Forsyth et al., 2010, 37). Co-design typically entails compromises

and trade-offs, and the discussion among the participants was considered an essential dimension of this method. Reasoning the various townhouse design solutions during the on-going design phase revealed participants' values, attitudes and mental representations appreciated by housing preference research (Coolen, 2008), thus adding on the richness of the data. The game enabled the participants to test and develop various design solutions, which often resulted in innovative and inspiring outcomes. For instance, although flexibility was not a matter of interest according to the survey, the game inspired residents to design townhouses shared by several households. Additionally, residents noted a need for different types of business premises. As such, the solutions by residents challenged the prevailing townhouse definition underlining the marriage between the house and domesticity. However, it is essential to stress that the design solutions as such where not the reason for utilizing the game method (cf. Bayazit, 2004).

Clapham (2005) emphasizes the need to grasp a better understanding of household decision-making processes and dynamics, especially regarding the gap between housing and lifestyle choices. In order to meet this gap, the game dimension was enhanced with fictional end-user profiles, "personalities", which were derived from the analysis of the preceding FDH survey. The fictional profiles crystallized the features of main target groups, presenting a combination of demographic information, such as age, residence, occupation and ways of living (Halmeenmäki, 2012; Hyysalo, 2010). Simultaneously, it is important to bear in mind that although the residents' subjective experiences and preferences are the profoundest ones within housing research; in reality, the inhabitants often need to adjust their wishes with the desires of others, which is, for instance, a typical decision-making process between spouses (Levy & Lee, 2004).

Design Game – Process and Analysis

Two townhouse block types were developed for the design game. Both block types were characterized by semi-public urban spaces, thus providing a platform to study the use of shared domestic spaces and areas in addition to the private housing arrangements. The first block was based on a courtyard framed by rows of townhouses. A mixed-used street as a place of activity for the residents of all ages created the foundation for the second block type. The block types were used as a basis for game boards (Figure 1). The use of two different scales, 1:200 and 1:50, allowed participants to develop design of the house and outdoor areas in parallel with the block level solutions to mimick real-life design processes. To serve the aspects of both planning and housing design, the scalability also made it possible to study the home-related concepts of privacy and spatial hierarchy, which "are relevant to all parts and at all sizes of the built environment" (Habraken & Gross, 1988, 151).

The design tasks were mainly conducted in scale 1:50 in a situation where the participants were allocated an empty plot from a row of townhouses. The neighbouring houses were provided as wooden scale models in order to enhance the three-dimensionality as a significant part of housing design. The neighbouring houses also increased the authenticity of the starting point in the design process and clarified the specific design-related characteristics of the typology: The floor plan is long and narrow, and the entrances and windows can be placed only at the ends of each building, thus challenging the organization of indoor spaces. Additionally, the design of private outdoor spaces, including roof gardens, balconies and terraces, must consider the immediate vicinity of neighbours. (Figure 2).

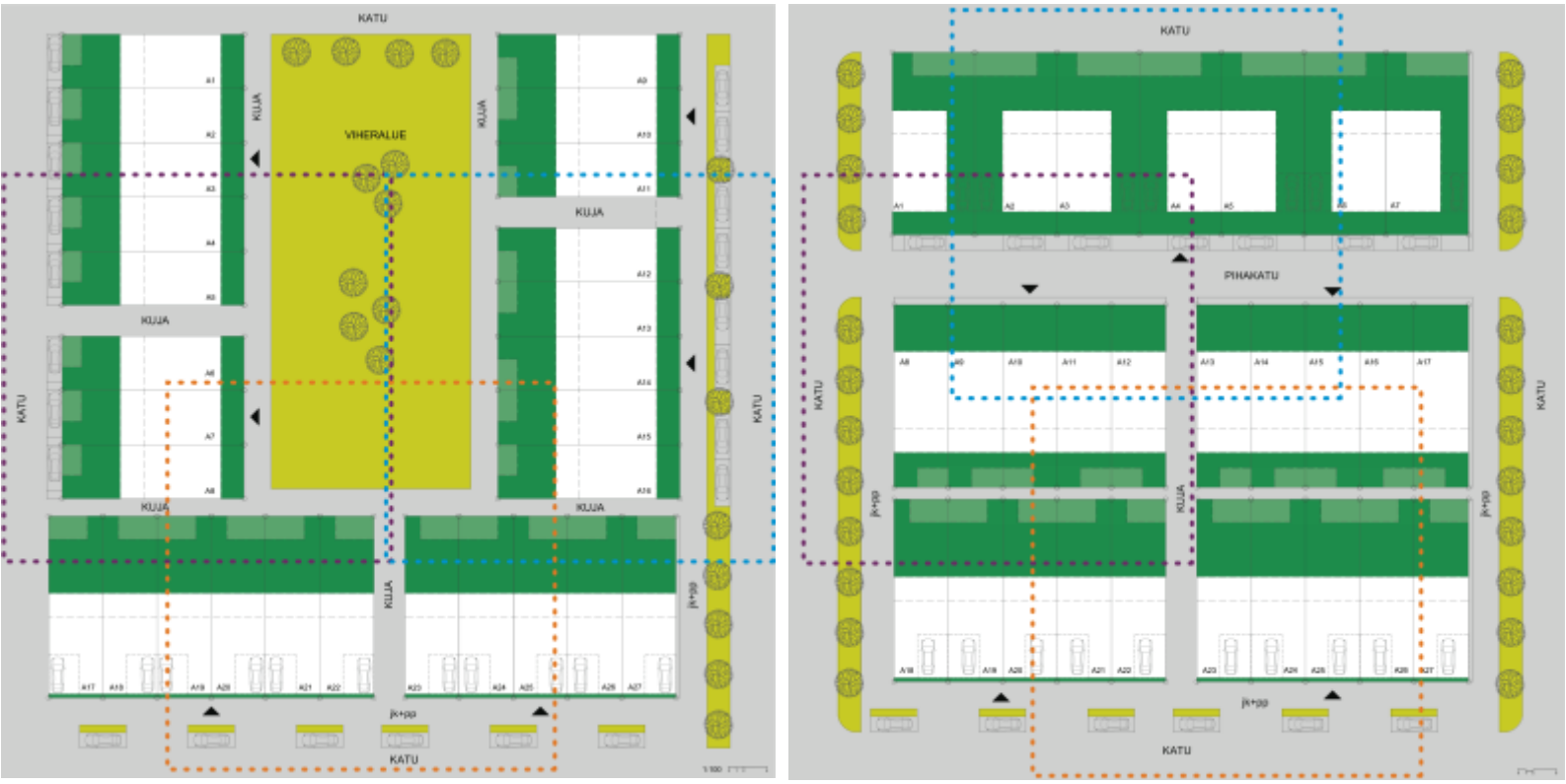

Figure 1. Game boards: "A courtyard" and "A mixed-used street". Picture: Tina Ullrich

Plots were equal in size (7x23,5m) with an exception of a semi-detached house (duplex) plot (10x23,5m) as suggested by the literature and expert interviews. The measurements of the first floor plan had two variations (7x10m, 7x13m) similar to the measurements presented in a previous study about Finnish townhouses (Takano & Verma, 2014). The game boards presented three variations on how the townhouses were located on the plot, which specified the sizes of private outdoor areas at the ground level. In the context of dense urban structure, the meaning of a front yard was particularly interesting. While the front yard creates a buffer zone between the private and the public, the survey respondents placed little interest in that area. Reflecting a contradiction between the perceptions of the intervievewed experts and the survey respondents (laypersons), the design game method provided a starting point to study more detailed the use of private outdoor areas and related perceived value experienced by the participants.

Figure 2. Neighbouring housing in scale 1:50. Picture: Anne Tervo

Figure 3. Developing the ground level solutions 1:50. Picture: Reko Laurilehto

Additionally, the game material included a number of design materials, such as furniture symbols and different types of vegetation, toy cars and other illustrative material to nourish the participants' imagination. The objective was to provide inspiring material that was easy to use (Mattelmäki & Vaajakallio, 2011). As we did not want the ready-made objects to unnecessarily restrict the design process, the participants were encouraged not only remodel the material but also draw and write down the important aspects in order to support the individual ways of expression (Figure 3).

Compared with interactive web-based design games, the tangibility of this design game, namely building, drawing, writing and cutting with scissors, proved to be a fundamental part of the process: it aimed at activating the participants by providing different ways to express both for individual and household related housing needs and wants, and to address trade-offs and compensative design solutions. The game sessions started with a presentation covering the main findings of the survey, the game rules, and the theme for the session: "the design of the day". The participants in each session were divided into two or three groups, in which the members primarily represented a similar household type. Thus, the fictional end-user profile chosen by the group members often reflected the one they represented in reality. In order to assist the groups to profile their townhouse resident(s), a selection of ready-made reference profiles was provided since the first sessions demonstrated that defining the profiles from the scratch was time-consuming. Each reference profile included a photograph and other information such as, name, age, profession, hobbies and other lifestyle related aspects that participants could develop further. The group sizes varied between two and seven participants. Groups of more than three people were further split in two subgroups, which then ended up becoming neighbours in the game board. Each session lasted 2.5 hours.

The game sessions proceeded in phases by starting with a warm-up task and ending with a discussion (see Halmeenmäki, 2012). The warm-up task focused on naming the positive and negative aspects of each person's current housing situation. The answers covered a variety of aspects, such as the proper size of a kitchen and the lack of places for snow piling. The warm-up task had two objectives: to get acquainted with the fellow players and to create a relaxed and easy-going atmosphere and to share information about each participant's housing history, attitudes and preferences. The warm-up task was followed by an actual design task, which was divided into timed phases with a narrative approach to everyday living. The game settings were expanded, for instance, by asking groups to imagine what their townhouse resident(s) wanted to do at home after a long day at work and how the spaces should be designed in order to meet these needs.

Altogether seven game sessions were organized around the research themes derived from the previous data collection phases: outdoor areas, typology, shared spaces and spatial flexibility. The themes and main focus points were outlined in advance for the first five game sessions, while the last two sessions were left undefined in order to provide time and space for the unfolding topics. This way we were able to reflect on the collected data was also during the last data collection phase. Flexibility and the privacy of the entrance area, reflecting the closeness of the mixed-used street, were chosen as themes for the last two game sessions. Despite the differing thematic focuses, the game sessions ended up repeating specific themes from one session to another. Emphasized by the immediate vicinity of the neighbours, particularly the privacy of domestic environment proved to be an important aspect in all sessions and was also raised spontaneously even when not specifically asked.

The game board used in each session was selected based on the design task of the day. In terms of shared spaces, i.e., green and domestic spaces, both variations were examined: The use of shared green space was studied using the

courtyard model, which also provided a place for a communal house to further elaborate the issues of shared domestic spaces. In relation to this, the mixed-used street model with speed limits provided a means to study mundane encounters and possibilities of a street area to become a collective space. In addition, the nature of the front yard along with the ground level plan solutions and parking were included in the investigation.

The significance of discussion as a source of information cannot be overstated since many great ideas and analytical statements could not be included in the actual design outcome

By the end of each session, the groups were asked to imagine a situation in which they would sell the townhouse and provide five selling arguments, which offered a basis for the final discussion. Additionally, the participants were asked to independently fill in a form about the benefits and drawbacks of townhouse living. As a result, the analysed material was a combination of six data sets: (1) warm-up tasks describing a person's current housing, (2) outcomes of co-design presented in the scale model 1:50, (3) five selling points crystallizing the design solutions, (4) independently filled-in forms about pros and cons of townhouse living, (5) videoed end-discussions and (6) notes taken by the facilitators and student assistants.

The significance of discussion as a source of information cannot be overstated since many great ideas and analytical statements could not be included in the actual design outcome. Therefore, the detailed notes and impressions written down during and after each workshop by facilitators and student assistants were invaluable. Facilitators and student assistants working in pairs processed the notes from each session in MS-Word documents according to a thematic structure. The theme-based structure enabled comparison between different groups, since it became evident already during this phase that residents in different life stages and household types may share similar housing aspirations. In order to use the results already in the upcoming game sessions, the facilitators discussed and analysed the results throughout the process, which helped to identify new themes, such as the maintenance of housing.

After the final session, the researcher-facilitators re-evaluated the material by examining the household types and workshop themes once more. At this point at the latest, the traditional household classification based on a number of people belonging to a household was confirmed to be an inadequate approach to profiling the possible townhouse residents. Instead, the attitudes and values towards different design settings enabled a more accurate approach to identify potential target groups for townhouse living in such a manner that the lifestyle profiles identified from the survey were possible to include in the findings.

One of the main research themes, flexibility, although having several interpretations depending on the target group in question, emerged as a cross-cutting theme and was thus chosen as a starting point for the following concept designs. By representing flexibility in a different manner, the concept designs also demonstrate that such typology can provide an answer to a variety of housing preferences and lifestyles, if the limitations related to its definition can be overcome. Since the concept of flexibility can have many meanings, the decision of presenting the findings in a form of concept designs was based on the understanding that the lists of design objectives would not serve the purpose. Particularly, the aim of combining the lifestyle-based profiles and the design solutions required a representation that explains the solution at one glance. (Huttunen et al., 2016).

Discussion

The concept of flexibility characterized the research strategy of the Finnish Dream Home (FDH), as often the case with studies focusing on pragmatic research problems (Du Toit, 2010). The combination of three interrelated data collection methods allowed crosschecking the preliminary analyses throughout the data collection phase. A significant part of the three-phased research strategy was the analyses conducted during and after each data collection phase. Since

the expert interviews and survey channelled the last data collection phase, the design themes and lifestyle groups derived from the survey defined the design game focus. Hence, supporting the mixed method research strategy, the design game developed for the purposes of the FDH allowed structuring the already collected research data (Mattelmäki & Vaajakallio, 2011). The data analysis of the FDH followed the flexible, design-driven pattern, as the concept designs were used to test the transferability of findings. Thus, the concept designs were exploited as a medium and not as a research method as such, enabling us to present the findings covering design solutions and lifestyle profiles in tandem (cf. Forsyth, 2007).

The design game provided a tangible tool for examining, reinventing and verbalizing the residents' housing aspirations, needs, and even fears, in the context of townhouse living.

The design game provided a tangible tool for examining, reinventing and verbalizing the residents' housing aspirations, needs, and even fears, in the context of townhouse living. Since the game was steered to focus on design-based questions, it both tested the previous findings and revealed the participants' decision-making processes and attitudes motivating housing decisions, both in terms of the individual and the entire household. To understand both actors is a constant challenge for housing research (Clapham, 2005). For this reason, the discussion and negotiation of the possible design solutions, and underlying motivations and attitudes with the fellow players was the essence of the game. The location and price tag of the design solutions, which are important aspects of housing preference studies, were not included in the game setting for several reasons although location as such has been acknowledged as important choice criteria (cf. Floor & Van Kempen, 1997). Since our main interest was related to a typology, the game boards were presented without a place-specific context; however, the workshop participants were able to express their location-related preferences during and after each game session. Second, to calculate a price for each design solution would have required us to define the possible design solutions in advance. To reach the objective of the FDH study to understand the design solutions that make townhouse living appealing to different target groups, this study did not restrict the design options with pre-made solutions. Therefore, the game phase was conducted without specific price tags for housing solutions, yet bearing in mind that in the following research phases the overall goal is to recognize the core concepts of affordable townhouse solutions.

The implementation of residents' housing preferences is restricted by a variety of factors, including the available housing choices, namely the housing supply, in addition to beliefs and expectations (Clapham, 2005). Thus, it was crucial to allow participants to overcome these biased beliefs and assumed limitations. In this research setting, the question of group dynamics was also essential. The role of facilitators was to ensure that all group members had a chance to participate in a co-design task regarding their personal abilities and ways of expression. The active role of a facilitator cannot be underestimated as the game allows participants to pose more detailed questions in a similar manner as in semi-structured interviews. The researchers must be experts in the field in order to ask relevant questions in situ. In the field of environmental design studies, this means that the researchers also have expertise in design processes.

In a similar manner as with interviews, the facilitators should not put words into respondents' mouths. For this reason, the most significant question in the design game was "why" thus aiming at understanding the reasons for the design solutions. Consequently, the aim was to understand what each participant pursued with a chosen solution: By placing the staircase next to the entrance, a participant may wish to have an open room plan; to have an easy access to upper floors in order to make it easy to use them as a home office; to enable renting out a part of the house; or to create a buffer between the street life and home environment. Understanding this type of reasoning was an important part of the research process, as the needs and wants, in other words the aspired housing experiences, can be reached in many different ways when the planners, architects and landscape architects conduct the design processes.

Using reference profiles proved to be a good choice, as the profiles enabled the participants to work with design solutions less common in typical home environments, such as spaces for rent and various ways of using shared domestic spaces. Although subjective housing experiences and dreams were mostly reflected openly with those of imaginary residents, the reference profiles provided a shield for participants who felt less comfortable discussing their personal views. The profiles were also one solution to the challenge placed by research settings to encounter the yet unknown residents, which was one of the starting points of the FDH study. Because the profiles provided a shared starting point for the design task, they also inspired the participants to imagine the daily lives of residents in relation to design solutions throughout the process. Therefore, the design game activated the participants on many levels, which a highly important aspect of a participatory game approach (Mattelmäki & Vaajakallio, 2011).

Conclusion

The methodological choices were guided by the high-level transferability of research findings for the use of planners and architects developing townhouse living.

In this paper, we have presented a design-based research method, a design game, and the preceding data collection phases of a three-phased mixed method research strategy. The methodological choices were guided by the high-level transferability of research findings for the use of planners and architects developing townhouse living. For instance, it was not enough to confirm the already known fact that the residents value private outdoor areas, such as terraces and balconies. Instead, in the context of the given typology, we, for example, pursued to discover why a small front yard is perceived as either desirable or not, and what could be ideal design solutions for it in a given environment. We argue that the requirement of the transferability of research findings is an answer to many of the challenges related to constructing a solid research strategy for environmental design studies. Another challenge relates to the novel typology used in this study. Since there are only a few existing townhouses in the Helsinki metropolitan area and many of them resembling two-storey row houses, constructing a series of case studies was not possible. Moreover, since the aim was to reveal the potential of the newly emerging typology, we considered it important to find a method in which the existing examples would not influence too much the opinions of non-experts.

The design game developed for the Finnish Dream Home (FDH) study provided a tangible tool to examining, reinventing and verbalizing the residents' housing aspirations, needs, and even fears, in the context of townhouse living. Since the game was steered to focus on design-based questions, it also revealed the participants' decision-making processes and attitudes motivating housing decisions, both in terms of individuals and their households. To understand both actors is a constant challenge for housing research (cf. Clapham 2005); thus, the discussion and negotiating the possible design solutions and underlying motivations and attitudes with the fellow players was included as one of the game components.

The field of housing design in is characterized by the context-sensitivity and culture-specificity. Therefore, the game setting and materials had to be developed specifically for the use of FDH study. However, the game can be adjusted to examine other housing typologies and forms of urban living. This paper recommends the use of different scales because scales assist in the development of a chosen housing form in relation to a broader living environment. Since the Helsinki City aims to construct new housing areas fostering townhouses, or comparable small-scale typologies, the design game can be exploited in real-life urban development projects. The group-builders, particularly, could benefit from the use of design games, which has been verified as a method providing a means to discuss housing preferences in a context that is concrete enough. In addition to an individual design solution, the scale model 1:50 can assists the discussion related to issues such as the closeness of neighbours,

which is as a pertinent topic in relation to both building and living. To conclude, the townhouse game presented in this paper is a promising example of practice-based research method diminishing the gap between research and design.

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