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Research paper

Towards contextually sensitive urban densification: Location-based softGIS knowledge revealing perceived residential environmental quality

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HIGHLIGHTS

- A large study among residents in 11 neighbourhoods in Helsinki metropolitan area.
- Positive places are significantly more green than negative ones.
- Beauty, easy walking and presence of nature dominate as positive quality factors.
- Densely built places have clear social value for inhabitants.

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ABSTRACT

Urban consolidation projects aiming to support a more sustainable urban form are among the most controversial issues in urban planning. Although planning professionals have reached a rather consistent consensus on the structural characteristics of sustainable urban form, i.e. urban consolidation or densification policy, these goals are often not shared by inhabitants. The resistance by local residents towards densification is based on the fear of losing the environmental qualities that they appreciate without getting added value. We argue that a planning strategy that is sensitive to the local context and respects the inhabitants' place experiences can help in finding unique solutions and in restraining conflicts. To realize the context sensitive strategy, new kind of location-based information from residents is needed: experiential knowledge that is tightly anchored to specific places. In this study, 3119 respondents from the Helsinki metropolitan area participated in a Web-based survey that helped define the quality factors meaningful to inhabitants. The softGIS method used is an example of public participation GIS that allows the study of inhabitants' location-based experiences. The over 10,000 place experiences gathered were analysed in relation to the home locations of respondents and to the number of urban structural characteristics, including urban density, green structure proportion, and land-use patterns. The findings revealed that although green structure was experientially very valuable, densely built areas were also meaningful for inhabitants, especially in regard to social quality. We conclude that the 'soft', experiential information can be a welcome addition to the other layers of information in evidence-based planning.

1. Introduction

1.1. The contradictions embedded in urban densification projects

The densification of urban structure is currently among the hottest topics in the field of planning and in research on urban structures. This is also the case in the Helsinki metropolitan area, the study area of this research, where population growth is continuing (Laakso, 2012) and which is one of the most sprawling European cities (European Environmental Agency, 2006). Although densification can be justified both as a response to urban growth and as an essential strategy for mitigating climate change, there are concerns about possible negative social outcomes of urban, compact settings. The ecological benefits of densification, such as reduced transport related energy consumption (Le Néchet, 2012), can also bring about a loss of perceived environmental quality, urban character and local lifestyle (McGuirk & Argent, 2011; Vallance, Perkins, & Moore, 2005; Williams, 1999).

Supporting evidence was found in a study in the fringe towns of the Helsinki metropolitan area that revealed that the perceived environmental quality of residents had a negative association with urban density (Kyttä, Broberg, & Kahila, 2011). A recent study in Brisbane, Australia, by McCrea and Walters (2012) nevertheless highlighted a more complex relationship between urban densification and liveability, and the local variation in impacts. In addition

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to the well-known concerns, residents welcomed the potential improvements in infrastructure, local amenities and public transport services. Therefore, densification projects need to understand and embrace local experiences and ways of living, and neighbourhood plans should be contextually sensitive.

To perform urban densification policy that is contextually sensitive, a new kind of location-based evidence from residents concerning local experiences and behaviour patterns would be usable. Talen (2011) has introduced a locally sensitive approach to the suburban retrofit, which recognizes the varying potentials the urban structure provides for sustainable densification. A careful GIS-based analysis of the overlaying, register-based data on accessibility, density, diversity, connectivity and nodality reveals strategically promising nodes for development. This localized analysis helps define local structural strengths and weaknesses and provides a variety of alternatives for further development. According to our view, the location-based *experiential knowledge* of residents described in this paper could also comprise an additional layer of contextually sensitive information for the planner. With this new, "soft" information layer available, planners could perform contextually sensitive planning that could fundamentally increase understanding of the social acceptability of urban densification projects. Location-based approaches in person–environment research are not yet widespread either as theoretical paradigms or as methodological approaches despite the pioneering work in urban planning and design research by Thwaites et al. (2008) and UCL's Space Syntax Lab (Hillier, 2002). Recent methodological development, especially in GIS science, opens up new possibilities to develop useful tools for contextually sensitive urban planning practice in larger scale.

In this study, individually meaningful quality factors and their accessibility were studied in a location-based way by attaching them to specific places. Our Web-based, softGIS survey, a PPGIS (Public Participation GIS) tool, reached over 3100 residents in eleven neighbourhoods in the Helsinki metropolitan area. Our research questions were: How are residents' experientially meaningful places located in the urban fabric? How do the contents of place experiences vary? Do various land use patterns or urban structural characteristics differ in their ability to generate place experiences? What messages do these findings convey to urban planning practitioners, especially to those working on urban infill projects? Our analysis tested the possibilities to produce location-based user knowledge in urban planning, especially in master planning level projects and in urban densification projects.

1.2. Background

Location-based approaches in person–environment research & the production of experiential knowledge for planning

The localization of human experiences has a key role in regard to the applicability of social scientific knowledge to urban planning. The location-based approach can have several potential benefits: (1) researchers can produce usable, cartographic information for the planning sector, where maps and map-based tools are embedded in the culture and practices (Van Herzele & van Woerkum, 2011); (2) the localization of residents' experiences and behavioural patterns attach them to specific design or planning solutions, which allow the production of ex-post evaluation information for urban planners (Kyttä, 2011); (3) the geocoded 'soft', experiential knowledge gathered from residents can be simultaneously analysed with the 'hard' register-based GIS data, which provides new, location-based research possibilities (Kahila & Kyttä, 2009); (4) the usefulness of localized information is not restricted to the planning sector because most information in policymaking contains a spatial component (Sieber, 2006) and (5) map-based data visualizations offer a good way to increase public debate (Van Herzele & van Woerkum, 2011).

Surprisingly, location-based approaches do not have strong paradigms in person–environmental studies, neither within the social science tradition nor in environmental psychological studies. In geography, nevertheless, the interest towards places is inherently built into the core of the discipline. Human geography has contributed strongly in the research concerning place experiences, especially among phenomenologically oriented studies (Baerwald, 2010; Relph, 1976; Tuan, 1977), but this tradition has produced only a few attempts to study empirically the two-way person–environment relationship. Recent approaches in human geography have, however, taken steps towards the empirical study of situated practices and action (e.g. Cutchin, 2008).

The two-way person–environment relationship and the active role of material environment is taken seriously in transactional research, where the person–environment relationship is seen as a dynamic, interactive system and the active role of both parties in the interactive relationship is stressed. In this system, neither of the components, environment or humankind, hold a deterministic role, but rather a probabilistic one. (Altman & Rogoff, 1987). Transactional person–environmental research anchors individual experiences and behaviour strictly within the physical, social and cultural context in the time and place in which they occur.

In social sciences, the deeply rooted fear towards environmental determinism has delayed the emerging of approaches that take the reciprocally active person–environment relationship seriously. The old deterministic idea of the one-way, determining influence of the physical environment on human behaviour has been strongly rejected because it fails to account for the huge cultural, social and individual differences among various persons and contexts. Although abandoned widely by academics, it can be claimed that environmental determinism has never really disappeared from urban planning practice or policy. Environmental possibilism and probabilism have recently developed as two-way person–environment approaches. Possibilism argues that the choice regarding how to behave in a certain environment lies ultimately with the resident. This theory has been criticized for its over-simplified understanding of human beings. Probabilism states that some choices are more likely in certain contexts than others. In this framework, urban planning and design becomes rather a creation of place potentials than of place-making (Dempsey, 2009).

Place-experience research in environmental psychology can be accused of concentrating too much on inner, mental place experiences without paying much attention to the physical characteristics of places. This is rather paradoxical in the field, which was established to study the reciprocal interaction of the psyche and its factual environment instead of artificially individualized psychic life (Pol, 2006). The review by Lewicka (2010) concerning the large empirical and theoretical literature on place attachment, on the emotional bonds between people and places, revealed that in this literature the person component has attracted disproportionately more attention than the place or process components. For example, individual differences in place attachment have been studied extensively, while few studies have focused on place characteristics related to attachment processes. Even in studies interested in the interplay between the subjective experiences and physical environment measures, the latter rely most often (probably for convenience reasons) on subjective estimates rather than on the objective dimensions of place. Therefore, we have a justified reason to wonder what kind of role the material environment actually plays in person–environmental research (Sime, 1999; Wohlwill, 1973).

The truly transactional approach requires concepts that do not create a dualism between man and his environment. The notion of affordances from ecological perceptual psychology is a worthy

candidate for such a concept (Gibson, 1979). What environment affords, for good or ill, for a certain actor in a given context is always unique, because the perception and actualization of affordances take place through activity in the environment and is related to individual bodily capacities (Bærentsen & Trettvik, 2002). Although the concept has referred traditionally to the perceived opportunities and restrictions concerning a person's actions in a given environment, it can be expanded to also include the emotional, social, and socio-cultural opportunities and restrictions that an environment offers (Heft, 2001).

The concept of affordances has been applied widely in industrial design and information technology (Norman, 1988). Making affordances perceptible can be seen as a central task for designers. Planners should exhibit interest in the extent to which the affordances of spaces are really actualized for the users. Although Maier, Fadel, and Battisto (2009) suggest that affordance theory could serve as the missing theoretical basis of architecture, applications of affordance theory are still rare in architecture and especially in urban planning. To operationalize the affordance theory for the empirical research in these fields is not easy, if not impossible. Existing examples include the analysis of affordances in interior design (Kim et al., 2011) and in details like stairs and door knobs. In urban planning, affordance theory has been used in the study of environmental child-friendliness by Kyttä (2008) and in the location-based studies of perceived environmental quality by Kyttä et al. (2011).

To study affordances empirically, we should understand which affordances out of an endless number of perceived physical features can potentially be perceived as meaningful by inhabitants. Here, a long-term work by a group of Italian researchers on perceived environmental quality and neighbourhood attachment is potentially useful (Bonaiuto, Aiello, Perugini, Bonnes, & Ercolani, 1999; Bonaiuto, Fornara, & Bonnes, 2003, 2006; Fornada, Bonaiuto, & Bonnes, 2010). Their attempt to identify the perceived physical features of settings contributing to perceived quality of environment has produced tested PREQ (Perceived Residential Environmental Quality) scales. Common to the various versions of the scales is that the physical environment quality indicators are grouped into four main themes, namely social and functional quality, architectural (appearance) and contextual qualities (atmosphere), and further subscales. According to the empirical results of studies using the scale in several Italian settings, contextual qualities were the strongest predictors of neighbourhood attachment and functional qualities were the weakest (Bonaiuto et al., 1999).

While Bonaiuto et al. (2006) expressed concerns regarding the generalizability of the PREQ scale in settings outside Italy, Walton, Murray, and Thomas (2008) were able to replicate the basic factor structure of the scale in New Zealand. They also used the scale to distinguish various degrees of urban density, which is of interest in the current study. Their study revealed that medium-level density settings scored highest in all four main themes.[1] Low- and high-density settings differed slightly, except for functional features that scored exceptionally low for low-density settings.

Although Bonaiuto and his colleagues (Bonaiuto & Bonnes, 1996; Bonaiuto, Bonnes, & Continisio, 2004) were interested in the multiplace analysis of urban environment, they evaluated perceived environmental quality only in general terms and in relation to general urban zones (neighbourhood, city centre, periphery) without attaching the quality indicators to actual places. Our view is that only when personal experiences are localized in microscale (they are given addresses), we are performing truly transactional research that offers interesting knowledge to planners and designers. To operationalize the location-based study of perceived environmental quality as a balanced combination of positive and negative quality factors we: (a) used the PREQ scale on the main theme level, (b) applied affordance theory on a compound level, and (c) used an earlier study by Kyttä et al. (2011), concerning the essential, personally meaningful qualities of the living environment, to create a sufficiently sensitive measure for the Finnish context. A more detailed description of these measures is provided in Section 2.1.

2. Materials and methods

2.1. Location-based methodology for the study of residents' experiences of urban environment

The location-based understanding of urban dwellers' experiences is not only a theoretical but also a methodological challenge: location-based research is only possible with very special methodological tools. Recent development in GIS (Geographic information systems) science and especially in public participation GIS (PPGIS) creates new possibilities for advances in location-based methodology development.

PPGIS methods enhance the laypersons' access to GIS and/or support communication between different stakeholders. We are especially interested in PPGIS methods that allow online location-based data collection. The most common examples of these PPGIS methods are argumentation maps that are online discussion forums with a mapping possibility. Among the best examples of these is MapChat, a Canadian application that facilitates citizen input and discussions in real life planning projects (Hall, Chipeniuk, Feick, Leahy, & Deparday, 2010). Although argumentation maps are Internet-based and therefore have the potential to attract large number of participants, in reality they are mainly used as a tool for workshops to attract a small groups of active citizens (Rinner & Bird, 2009). These PPGIS methods have a limited capacity to promote larger scale participation if they can only attract the most active residents that would also be reachable with more traditional participation methods. The analysis of the produced manifold data is also time-consuming and limited to the descriptive level (Bugs, Granell, Fonts, Huerta, & Painho, 2010; Rantanen & Kahila, 2009).

Early examples of PPGIS methods have also been used for reporting mundane environmental problems such as broken pavement or uncollected refuse (Kingston, 2007). Our interest is on a more general level: to collect ex-post planning evaluation knowledge from residents (cf. Kyttä, 2011). This level of PPGIS data collection has been performed extensively by Brown and colleagues (Alessa, Kliskey, & Brown, 2008; Brown & Weber, 2011; Raymond & Brown, 2007, 2011) in Australia and Canada. These projects have managed to produce large data sets concerning *landscape values*. The experiential knowledge of users has been applied to forest planning and sustainable tourism development projects. The softGIS methodology developed at Aalto University is an example of the PPGIS method for the collection of experiential knowledge concerning *urban environments* (Kyttä & Kahila, 2011). This awarded methodology is an advanced example of PPGIS that has enabled a collection of large data sets with user-friendly applications. Before this project, various softGIS methods had been tested in several Finnish cities. SoftGIS methods are developed in close co-operation with urban planners, and the collected database makes systematic GIS and statistical analyses possible.

[1] Walton et al. did not report their findings in relation to the four main themes, only commensurate with each 19 PREQ subscales. We calculated the means of the PREQ scales for each theme and found that all four themes ranked highest in medium density level: socio-relational and context features scored lowest in high density settings while functional and architectural/town planning features in low density settings, functional features ranked especially low.

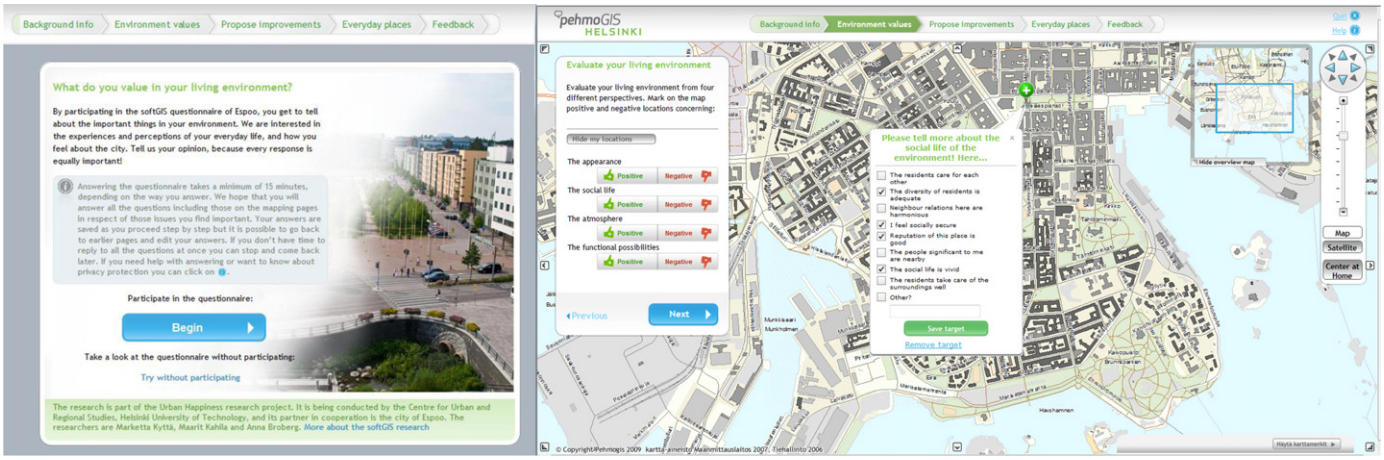

Fig. 1. The softGIS application used in the Urban Happiness project, which can be seen at www.softgis.fi/helsinki (user id: pehmogis\happy, password: urbanhappy).

2.2. SoftGIS quality survey of Urban Happiness project

The softGIS quality method, which was tailored for the current project, grasped information about the localized, perceived quality of residents, places of happiness, local services, perceived well-being of residents, and suggestions for environmental improvements (see Fig. 1). The Web questionnaire proceeded step-by-step, so that each respondent followed the same route through the application. The user could choose between address maps and aerial photographs when using the mapping tools. Point, areal and route information could be marked on the map. When the respondent replied to the background question concerning his/her home neighbourhood, the map on the following page automatically centred on it. This helped the respondent's orientation on the map.

The location-based study of perceived environmental quality was studied by applying the affordance theory by Gibson (1979). This meant that we did not study perceived environmental quality isolated from material environment but as attached to specific place by asking respondents to pinpoint personally meaningful places on the map. Originally, we attempted to use the PREQ (Perceived Residential Environmental Quality) scale by Bonaiuto et al. (2003). The various versions of the scale include 150–362 items, which makes it almost impossible to use it in an Internet-based PPGIS tool. Also, some items are not very suitable in the Finnish context, and positively and negatively worded items are unevenly represented. For these reasons, we used only the four main themes of the PREQ scale to group affordances concerning (1) functional possibilities, (2) social life, (3) appearance, and (4) atmosphere of the environment.

After respondents had chosen one of the four main dimensions, they marked a place on the map where this criteria was actualized and a further list of eight sub-dimensions appeared. The sub-dimensions were different for each theme but always included positive and negative counterparts (see Fig. 1). Also a freely defined sub-criterion could be named (Table 1).

The contents of these sub-dimensions were created based on an earlier study by Kyttä et al. (2011), where Finnish inhabitants had freely named personally important quality criteria or affordances. This study revealed that inhabitants tend not to name single functional, social or emotional affordances (such as suitable benches in a park or good meeting places), but rather to name compound issues (such as beauty, social safety or possibilities for neighbouring). These compound criteria are based on the reflections concerning the assemblage of actualized affordances (Dovey, Woodcock, & Wood, 2009) of the current living environment and also in regard to the lifelong experiences of the affordances of settings where the person has lived or with which they have been acquainted. Therefore, instead of affordances, we refer to *environmental quality factors* as compound criteria concerning the essential, personally meaningful qualities of a living environment.

As background questions, the respondents were asked to pinpoint their home on the map and to answer a set of questions about age and gender; ownership of cars, bicycles and public transportation tickets; household type; residential type; home ownership; living area of the flat; occupational data; and information on income level. The accessibility of quality factors was evaluated as the distance from home to respondents' quality factors. The distances were calculated as the crow flies.

In this paper, we will analyze the above data mainly in a location-based way: the experientially meaningful places are used as cases in this paper. The person-based data will be reported separately as well as a deeper analysis of data concerning each neighbourhood.

2.3. Procedure

The statistical offices of the Helsinki and the neighbouring city Espoo provided the researchers with addresses of the sample population. In seven neighbourhoods in Helsinki and in four neighbourhoods in Espoo, a total of 15,982 persons were contacted via letters. To spread the pressure on the server on which the Web questionnaire ran, the letters for Helsinki were sent during the last two weeks in October 2009, one thousand each day, and the invitations for Espoo residents were sent out during the last week of November 2009. In the invitation letter, the receiver was asked to use the Internet to answer the questionnaire within two weeks of getting the letter. In reality, the questionnaire was kept open to respondents, and when the daily number of respondents was decreasing constantly and approaching zero, the study data was taken out of the database. This was in mid-December 2009. No reminder letters were sent.

The study does not deal with information covered in the Finnish Data Protection Act (such as addresses, names, or Social Security numbers). However, a description of the research registry has been compiled in accordance with the guidelines of protecting scientific research databases by the Office of the Data Protection Ombudsman. Research data are analyzed in groups, not on the individual level. It is impossible to track individuals or their answers from any results that will be published. The participation of all residents is voluntary. This is emphasized in the data collection.

Table 1
The four dimensions of perceived quality of local environment and the sub-dimensions, including positive and negative attributes.

	Positive	Negative
Functional possibilities	I can live according to my lifestyle well	I can live according to my lifestyle poorly
	Walking or cycling is smooth	Walking or cycling is complicated
	The cultural life is vivid	The cultural life is quiet
	The services are good	The services are poor
	Opportunities for hobbies are many	Opportunities for hobbies are few
	Use of a private car is easy	Use of private car is complicated
	Using public transportation is smooth	Using public transportation is complicated
	The traffic is safe	The traffic is dangerous
Social life	The residents take care of the surroundings well	The residents take care of the surroundings poorly
	The people significant to me are nearby	The people significant to me are far away
	Neighbour relations here are harmonious	Neighbour relations here are quarrelsome
	The social life is vibrant	Social life is dull
	The diversity of residents is adequate	The residents are too diverse or similar
	I feel socially secure	I feel socially insecure
	Reputation of this place is good	Reputation of this place is bad
	The residents care for each other	The residents do not care for each other
Appearance of the environment	Density of development is fine	The buildings are too sparsely built
	The price-quality ratio of living is appropriate	The price-quality ratio of living is inappropriate
	Personalizing this place is possible	Personalizing this place is impossible
	The surroundings are attractive	The surroundings are unattractive
	The sparse development is fine	The buildings are too densely built
	The surroundings are tidy	The surroundings are untidy
	The history is present	The history is absent
	The surroundings are finished	The surroundings are unfinished
Atmosphere	Silent	Noisy
	Lively	Dull
	Relaxing	Stressful
	Unpredictable	Too predictable
	Inviting	Unwelcoming
	Child-friendly	Unfriendly towards children
	Nature is present	Nature is absent
	Calmness	Hectic

2.4. Subjects and communities

3119 respondents (2027 persons from Helsinki and 1092 from Espoo) replied to the questionnaire. Of the 10,000 invitations sent to persons in Helsinki, 82 were returned. Of the 5982 letters sent to Espoo recipients, 34 were returned. Thus the response rate was 20.4% for Helsinki and 18.4% for Espoo. A lottery with 5×100 euros cheque rewards was arranged among the respondents. The representativeness of the sample in regard to background variables was satisfactory, although there was some bias. The age of the respondents did not differ significantly from the age distribution of the base population, although the oldest age group was slightly over-represented and the youngest age group was under-represented. Women respondents (60% among respondents) were over-represented, and single households were slightly over-represented in some areas (Töölö, Pohjois-Haaga, Lassila, Kallio, Leppävaara).

The studied regions of Helsinki and Espoo were picked in accordance with the city planning offices of the cities. The studied regions included urban densification (Urban Renaissance) project areas in eastern Helsinki (Kontula and Mellunmäki) and western Helsinki (Pohjois-Haaga, Lassila and Kannelmäki) and four areas representing the densification program (Lähiöohjelma) of Espoo (Suvela, Soukka, Leppävaara and Matinkylä). Out of scientific interest, two city centre areas were also picked for the study – Töölö and Kallio from Helsinki (see Fig. 2a–c). Because the densification projects of both cities were still in a very early phase, the city representatives did not want to inform respondents very much about them and highlighted instead the need for reliable information of the current experiences of residents. The respondents were told that the study is part of the Urban Happiness research project by Aalto University (formerly the Helsinki University of Technology), which examines the conditions under which urban communities can be sustainable, both environmentally and socially, and where the cities of Helsinki and Espoo are partners along with other public and private sector funders.

All studied areas, both city centre and suburban neighbourhoods, were dominated by a block of flats. The average density of suburban settings was 5654 people per square km (33 housing units/ha), 4967 people/km^2 in Espoo suburban neighbourhoods (27 hu/ha) and 6396 in Helsinki suburban neighbourhoods (38 hu/ha), and the density of city centre neighbourhoods was 18,051 people/km^2, (134 hu/ha) on average. We calculated these measures by buffering the homes of respondents with a 500-m buffer zone and calculating the individual density measure. It is worth noticing that the measured areas were almost exclusively residential areas, and therefore the density levels appear higher compared to the average density in Helsinki (2785 people per square km in 2012, Uusimaa facts, 2012), where all the areas are taken into account.

Out of the 3119 respondents of the softGIS study, 2499 gave some locations. The total number of personally meaningful quality factors located was 10,234. The most common number of markings was four. Of those respondents who marked quality factors, 30% marked four of them. The second most common number of locations was eight. Only 9% of the respondents marked nine or more quality factors.

2.5. Urban structural measures

GIS-based measures were used to study the structural characteristics of the environment around experientially meaningful places. Each quality factor location was therefore surrounded by a 50-m buffer. Within the buffer, the following widely used urban structural measures were calculated: Building density was measured as the number of housing units within the buffer and the percentage of

Fig. 2. (a–c) Examples of neighbourhoods in the Urban Happiness project: the Kontula suburb in eastern Helsinki (a), the Leppävaara suburb in Espoo (b), and the Töölö neighbourhood close to the Helsinki city centre (c). Photos: Santtu Pyykkönen (a, b), Maija Jokela (c).

green elements within the buffer (fields, forests, parks and water combined). The information concerning land use was calculated from a SLICES dataset, and density related variables were drawn from the building centroid data. SLICES (Separated Land Use & Cover Information System) is a raster dataset produced by the Finnish National Land Survey. The dataset was produced by combining different geographical datasets on land use from different organizations, such as the Ministry of Agriculture and Forestry, Ministry of Environment, National Land Survey, Finnish Forest Research Institute, Finland's environmental administration and Population Register Centre. The dataset offers a hierarchical classification of land use, land cover, soil types and special use and restricted areas. The SLICES dataset covers all of Finland with a resolution of 10 m. Here a classification into five main land use patterns was used: (1) green, (2) housing, (3) public and business (includes public, commercial and office buildings), (4) traffic, and (5) industrial areas. The building centroid dataset for each building in Helsinki and Espoo (containing the information on housing units, floor areas and population demographics for the building) was obtained from the city of Helsinki.

3. Results

3.1. Positive and negative place experiences in the urban fabric

The respondents marked 10,234 experiential place locations on the map; 62.8% (6426) of them were positive and 37.2% (3808) were negative. As Fig. 3 shows, the positive and negative place markings concentrate on the neighbourhoods that were included in the study.

The dots on the map in Fig. 3 often hide each other, so showing dots on a map is not a very good technique for evaluating the actual number of place locations. The next map in Fig. 4 sums the number of place locations on a grid with 250 m × 250 m cells. Grid cells with the most abundant markings include more than 100 place locations. These areas can be found in the core areas of suburbs and especially in the city centre.

Fig. 5 visualizes the share of positive and negative place markings. Because most of the markings were positive, there are also more grid cells with mostly positive markings. Areas with more negative than positive markings are the central areas of the suburbs, especially the surroundings of railway stations and local shopping centres. The arterial streets intersecting the Helsinki city centre peninsula were also perceived negatively.

These first mappings of residents place experiences give some hints about which parts of the neighbourhood could be improved in a densification project. More detailed analysis of the location-based data is nevertheless needed to provide a sufficient knowledge base for locally sensitive densification.

3.2. The contents of place experiences

When marking the positive quality factors, residents most often marked functional quality and least often social quality. Among

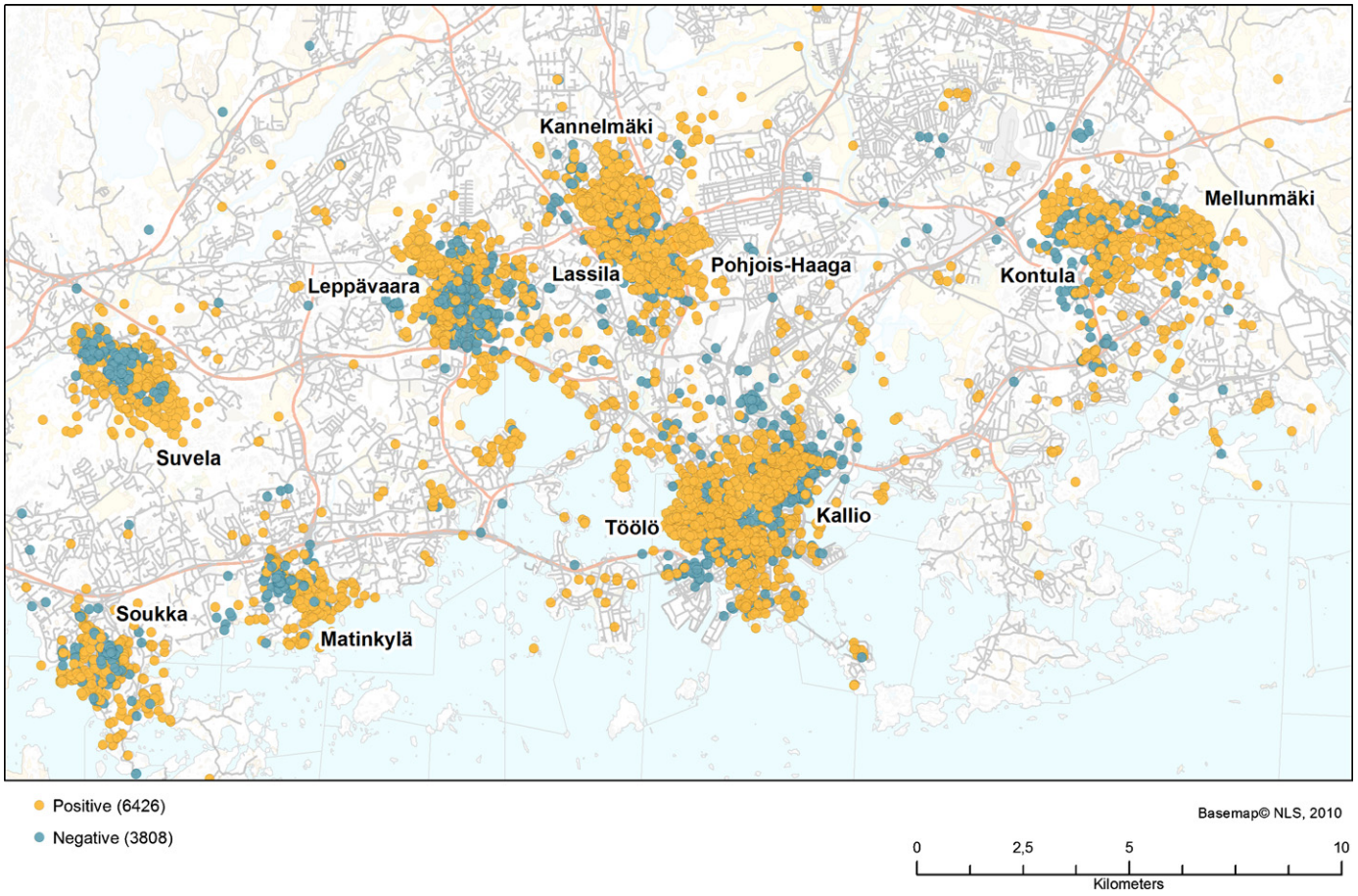

Fig. 3. Positive and negative place markings by the residents of the 11 neighbourhoods.

the negative markings, appearance-related quality factors dominated while functional quality was least often commented on. The most frequently mapped single positive quality factors were the attractiveness (beauty) of the surroundings, the smoothness of walking and cycling, and the presence of nature. In the negative factors, somewhat opposite qualities dominated: the unattractiveness of the surroundings, the hectic atmosphere and social insecurity (see Fig. 6a and b). Only one background-related difference in the number of quality place localizations was found: Women located on average more social quality places than men ($t = 2.3$, df = 1445, $p < .02$). Respondents representing various age groups, household types, gender, tenures, income levels, childhood environment and house or neighbourhood types did not differ in the share of the four quality dimensions.

Although the criteria that residents used in the evaluation of the perceived quality of their living environment are interesting as such, our location-based approach indicates that the analysis of place experiences should not be restricted to this kind of conceptual level. Fig. 7 presents the positive and negative place experience localizations of one of our study areas, namely Leppävaara, a suburb in Espoo. In addition to a dot map, an interpolation has also been drawn (here with the Natural Neighbourhood analysis technique) of the discrete points into a continuous surface. In the case of Leppävaara, the place experiences of residents were rather polarized. The area to the north of the central railway was experienced very negatively, while the southwest part of the neighbourhood, with a new shopping centre, was evaluated positively. In the most negatively perceived area, there is an old shopping centre built in mid-80s, which nowadays hosts some pubs, flea markets and gym clubs.

These maps can give a planner of Leppävaara a starting point in thinking how densification could possibly balance the polarized place experiences in this suburb. Similar experiential maps can be drawn from all 11 neighbourhoods. They reveal the local strengths and weaknesses perceived by residents. This information could be an essential layer of source information for a planner pursuing a locally sensitive approach.

3.3. *Place experiences in relation to urban structural characteristics*

On the master planning level, besides a simple visualization of experiential knowledge, a somewhat more analytic grip on experiential information is also needed. Therefore, as a next step in our location-based analysis, we will systematically study the urban structural characteristics of places marked by residents. The following analysis is based on buffering the experientially meaningful places with a 50 m radius zone and calculating two urban structural measures within these buffers, namely (1) the proportion of green structure, and (2) the urban density, measured by housing units per hectare.

Logistic regression analysis revealed that a large proportion of green structure within the 50 m buffer zone around the located places increased the probability that the place would be perceived positively (OR = 1.02; 95% CI 1.02–1.03). This was the case after controlling for gender, age group, family type, tenure and income level. The odds of positive place experience was lower in more dense settings compared to less densely built places (OR = 0.997; 95% CI 0.997–0.998). In this analysis, the same background variables were controlled. Both associations were highly significant, $p < .000$.

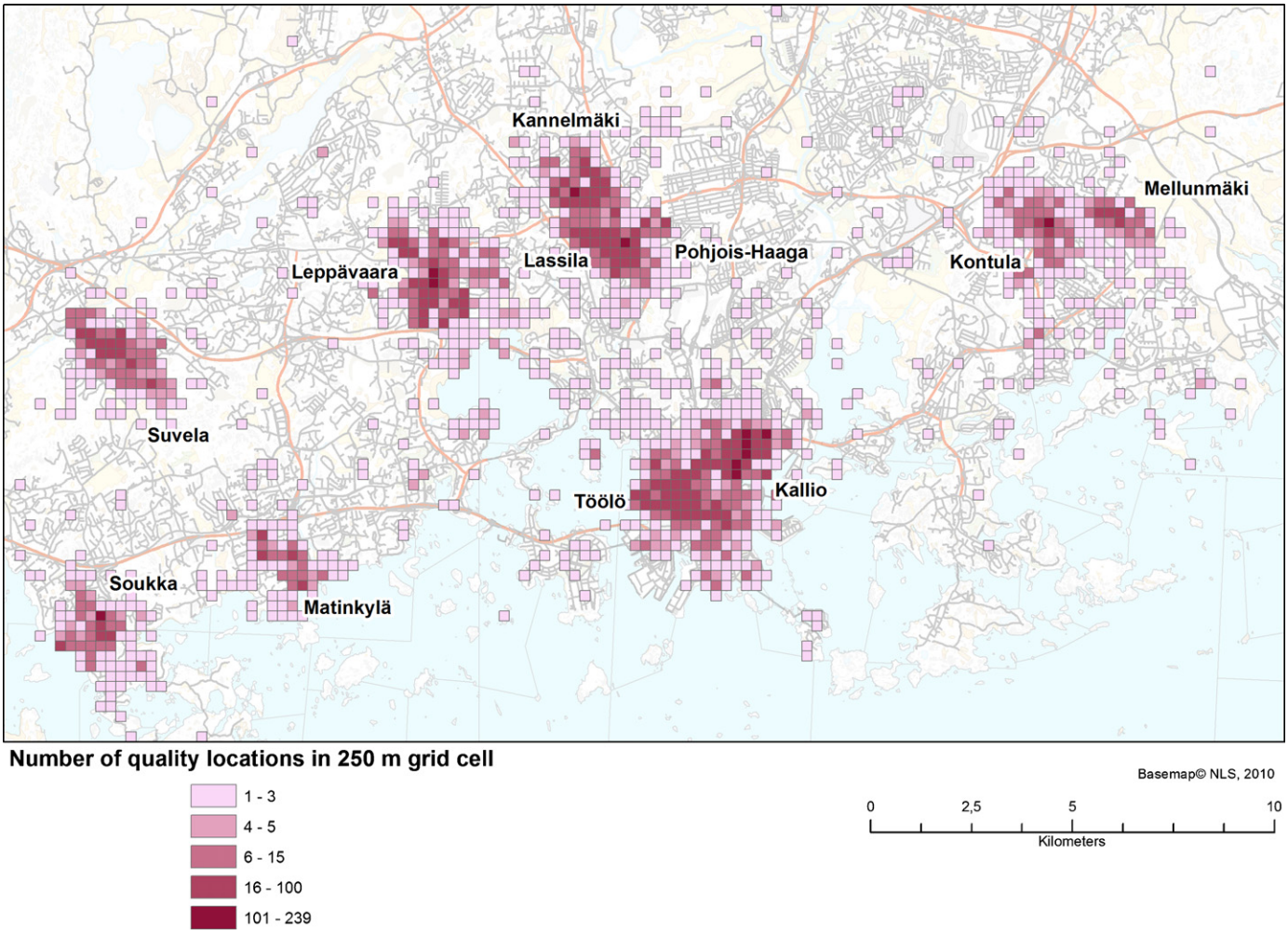

Fig. 4. The variation of the number of place locations as a grid cell map.

The mean density for negative places was 72 housing units/ha, while for positive places it was 48 hu/ha. The location of positive places in less dense settings compared to the negative ones was true in regard to the functional quality factors (means 62 hu/ha and 35 hu/ha, respectively) as well as quality factors related to the appearance (means 69 hu/ha and 47 hu/ha) and atmosphere (means 73 hu/ha and 41 hu/ha). All these differences were highly significant. In social quality factors, instead, there was no significant difference between the density of positively and negatively perceived places: Both negative and positive socially meaningful places were located in rather dense settings (means of 79 hu/ha and 77 hu/ha).

On average, the green structure proportion for positive places was 37% and for negative places it was 13%. The more green positive place experiences applied to all four quality factor categories, both functionally and socially meaningful places, and to the appearance and atmosphere-related experiences. All these differences were highly significant. The green structure proportion for socially meaningful positive places was, nevertheless, on average much less (19%) than for other quality place categories (30–44%).

A closer look at the various sub-categories of place experiences in the most green and dense positive and negative places revealed very logical results. In the most densely built positive places, positive social perceptions dominated: neighbour relations are harmonious, residents care for each other, respondents feel socially secure, and the perceived diversity of residents is adequate. The opposite is true for the most dense negative places: quarrelsome neighbour relations and not taking good care of each other. An inappropriate price-quality ratio and unfriendliness towards children were also common experiences in the most densely built places. The most green positive places were characterized by experiences such as nature is present and the place is relaxing, silent and calm. Among the negative comments for places with the most green elements were a perception of complicated use of public transportation, too sparse building, few opportunities for hobbies, and poor services.

3.4. Place experiences in different land use patterns

As the guiding of land use patterns is in the core of master planning, it is also potentially useful to analyze experiential knowledge in regard to these categories. Therefore, we will next look at the experiential mappings of respondents in relation to various land use patterns.

Table 2 presents the share of various positive and negative quality factors in five different land use patterns: (1) green, (2) housing, (3) public and business, (4) traffic, and (5) industrial areas.

Positive places were located most often in green areas (42.1% of the cases). In green areas, the majority of experiences were related to atmosphere, the minority to social quality. Positive locations in traffic and housing areas were also rather common. In housing areas, positive social quality was commented most often. Functional quality factors dominated in public and business areas as well as in traffic areas. All these differences in the share of positive

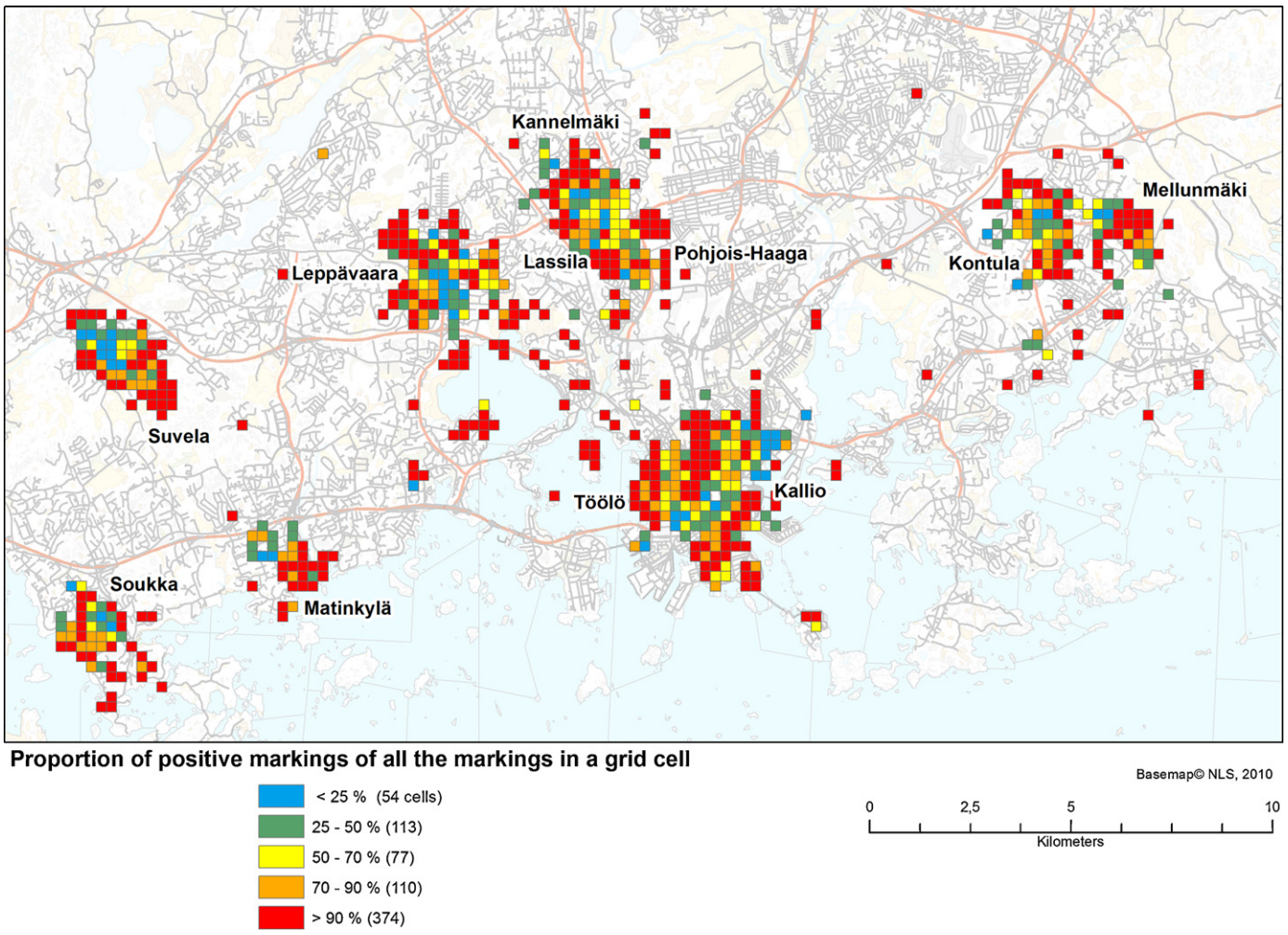

Fig. 5. The share of positive and negative place markings.

place experiences in various land use patterns were highly significant ($x^2 = 514.0$, df = 15, $p = .000$). Negative places were most likely located in traffic areas (41.9% of the cases). Locations in public and housing areas were also common. Only 17.5% of the negatively perceived places located in green areas. In traffic areas, the majority of negative experiences were related to atmosphere and in public areas to appearance. Appearance-related negative comments were also dominant in all the other land use categories (in green, housing and industrial areas), while functional quality was mentioned the least in all land use categories except green areas. All of these differences in frequencies were also highly significant ($x^2 = 57.7$, df = 15, $p = .000$).

Table 2
The location of positive and negative quality factors in various land use categories.

	Functional		Social		Appearance		Atmosphere		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Green areas	779	116	296	143	781	242	847	166	2703	667
% within place theme	43.4%	20.6%	22.9%	14.0%	47.0%	20.8%	50.4%	15.6%	42.1%	17.5%
% within land use category	28.8%	17.4%	11.0%	21.4%	28.9%	36.3%	31.3%	24.9%	100.0%	100.0%
Housing areas	203	102	472	213	367	245	324	180	1366	740
% within place theme	11.3%	18.1%	36.5%	20.8%	22.1%	21.1%	19.3%	17.0%	21.3%	19.4%
% within land use category	14.9%	13.8%	34.6%	28.8%	26.9%	33.1%	23.7%	24.3%	100.0%	100.0%
Public and business areas	359	114	207	216	142	224	156	214	864	768
% within place theme	20.0%	20.2%	16.0%	21.1%	8.5%	19.3%	9.3%	20.2%	13.4%	20.2%
% within land use category	41.6%	14.8%	24.0%	28.1%	16.4%	29.2%	18.1%	27.9%	100.0%	100.0%
Traffic areas	421	228	305	447	352	432	330	490	1408	1597
% within place theme	23.5%	40.5%	23.6%	43.7%	21.2%	37.2%	19.7%	46.2%	21.9%	41.9%
% within land use category	29.9%	14.3%	21.7%	28.0%	25.0%	27.1%	23.4%	30.7%	100.0%	100.0%
Industrial areas	29	2	9	3	16	19	15	11	69	35
% within place theme	1.6%	0.4%	0.7%	0.3%	1.0%	1.6%	0.9%	1.0%	1.1%	0.9%
% within land use category	42.0%	5.7%	13.0%	8.6%	23.2%	54.3%	21.7%	31.4%	100.0%	100.0%
Total	1791	562	1289	1022	1658	1162	1672	1061	6410	3807
% within place theme	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% within land use category	27.9%	14.8%	20.1%	26.8%	25.8%	30.5%	26.1%	27.9%	100.0%	100.0%

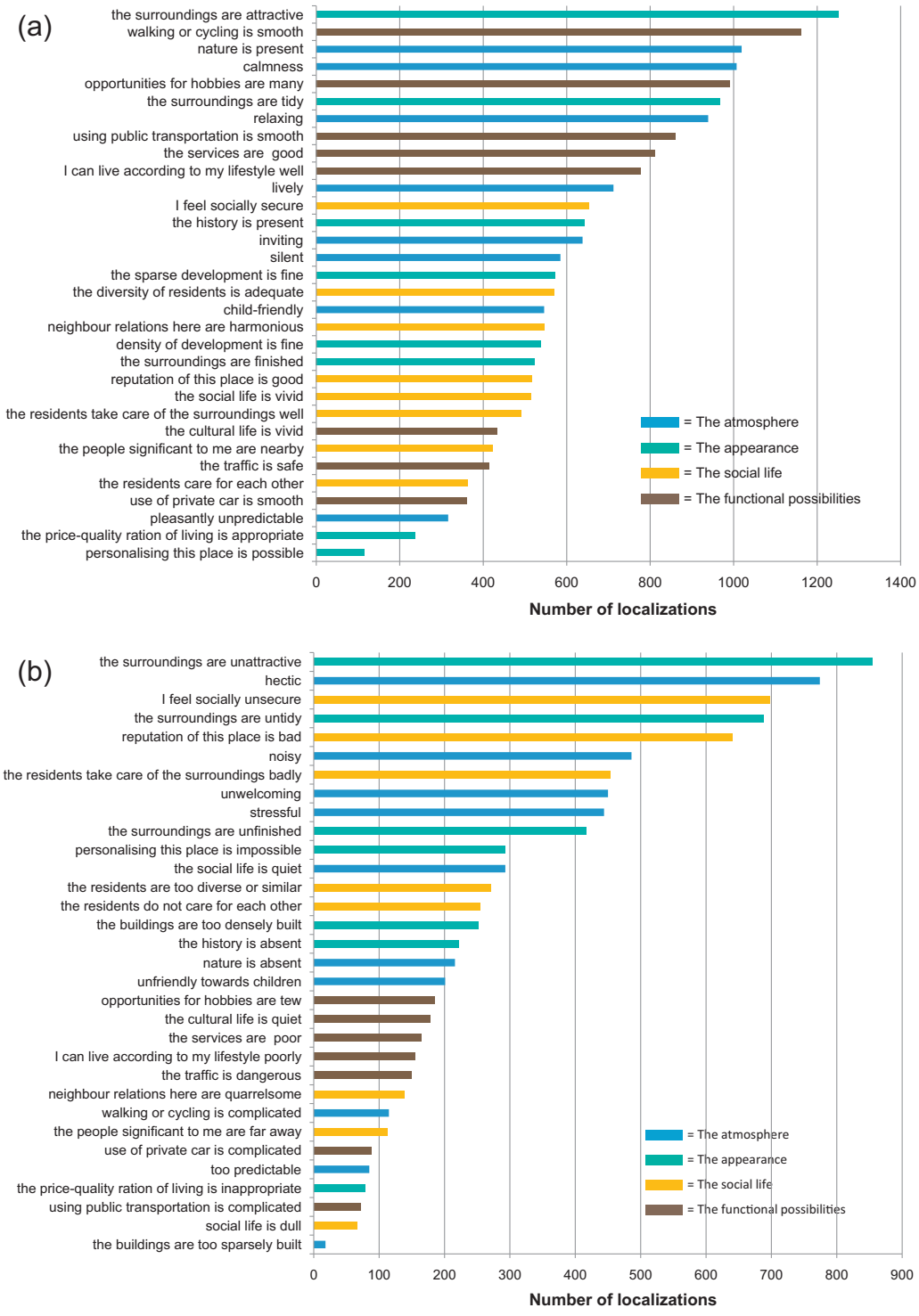

Fig. 6. (a and b) The frequencies of sub-categories of positive and negative quality factors and their division into the four main dimensions.

When comparing city centre residents and suburban dwellers, the former commented more on traffic areas and the latter commented more on green and housing areas. These differences applied to both positive and negative quality factors ($x^2 = 432.1$, df = 5, $p = .000$).

Next, we will look more closely at locations of place experiences in all land use categories except industrial areas, which attracted only 1% of the markings. We will mostly study the mappings in the city centre areas because these areas attracted the most place markings given by both the residents of the two city centre neighbourhoods and by the residents from the suburbs.

On the whole, over one-third (33.2%; 3370 of 10,141 places) of all experiential place markings were located in green areas. The vast majority of them (80.2%; 2703 places) were perceived positively. In the city centre, the positive green area experiences were located mainly in parks along the seashore. Many small parks within the neighbourhoods were also marked positively. Most often green areas were praised for their beauty and closeness to nature, and stress restoration and many activity possibilities were

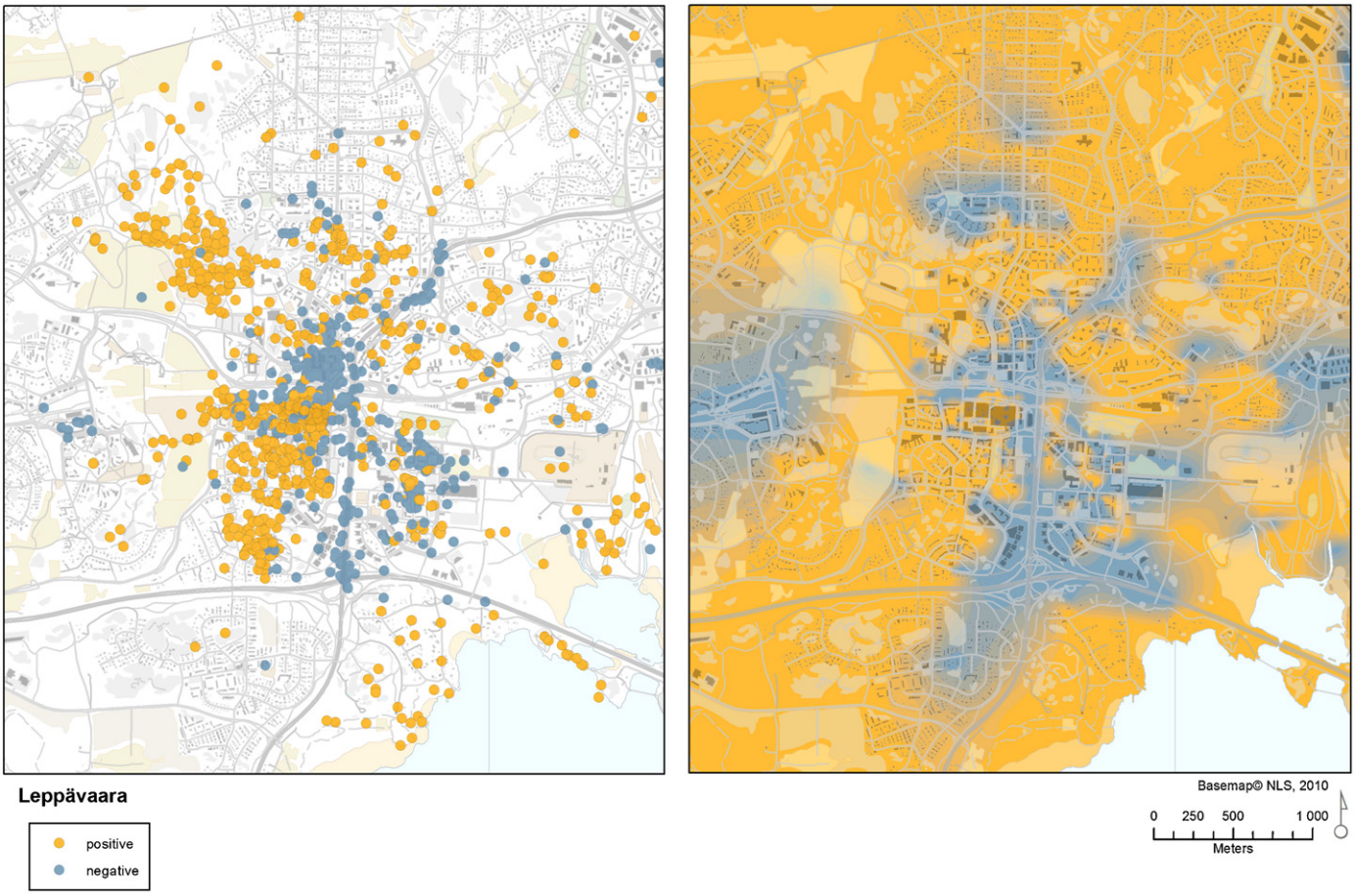

Fig. 7. The visualization of residents' positive (yellow) and negative (blue) place experiences in Leppävaara. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of the article.)

also mentioned. The few negative markings in green areas were mostly related to either bad park maintenance or the nuisance of drunk people who use the park actively (see Fig. 8).

Traffic areas attracted almost as many place locations as green areas (29.6%; 3005 places). Over half of them were negative (53%; 1597). Most often the negative experiences concerned a too hectic atmosphere, unattractiveness, social insecurity and bad reputation of the traffic areas. Fig. 9 presents the localization of positive and negative traffic area markings in the city centre area. The negative places were clustered in the busy passage routes. The larger hot spots of positive markings were often concentrated in the fringe areas of local marketplaces or parks. This was partly because the Slices database that we used exaggerated the width of street areas. Therefore some locations that actually should be classified as public or green areas fall into this category. The other reason for incorrect land use classification can be that respondents have not accurately located the places they meant.

Housing area markings represented 20.8% (2106) of all experiential place locations. Clearly over half of them were positive (64.9%, 1366). Most often the positive experiences concerned social quality: harmonious neighbour relations and social security were often commented on as well as residents' good care of the environment, adequate social diversity and good reputation. The appearance and atmosphere of the physical environment were also commented on, for example the beauty, tidiness and peacefulness of the housing areas. Fig. 10 presents the clustering of positive and negative housing area markings in the city centre area. These markings are clearly clustered in the two central neighbourhoods included in the study, Kallio and Töölö. Positive markings cover quite well the core areas of both neighbourhoods. The few negative clusters include the shelter of the homeless in Töölö, the Merihaka block, and Helsinginkatu street in Kallio. Merihaka is a concrete housing block that was partly built on reclaimed land during the 1970s and 1980s. Helsinginkatu street is a local nightlife hub with a rather wild reputation.

Finally, public and business areas attracted 1632 place locations (16.1%). Slightly over half of them were positive (52.9%, 864). Most often the positive experiences concerned good services and smooth mobility with public transportation or by walking and cycling. Good activity possibilities and a vivid cultural and social life were also often mentioned. Fig. 11 presents the clustering of positive and negative public area markings in the city centre area. The positive places were clustered among some prominent public buildings such as churches and historically valuable places. Examples of negative experience clusters included metro stations and public areas attracting problems drinkers.

3.5. The distance to quality places from home

The average distance to quality factors from a respondent's home was 1.3 km. Positive quality places were located on average further from home (1.49 km) than the negative places (997 m). This difference in the distances between positive and negative places was highly significant ($t = -4.2$, df = 9912, $p < .000$). The distances to the quality places were on average shorter (mean 948 m) in the two city centre neighbourhoods compared to the nine suburbs (mean 1480 m), ($t = -4.4$, df = 9774, $p < .000$). When the distances to the positive and negative quality places were studied separately, it appeared that the distances were shorter in urban

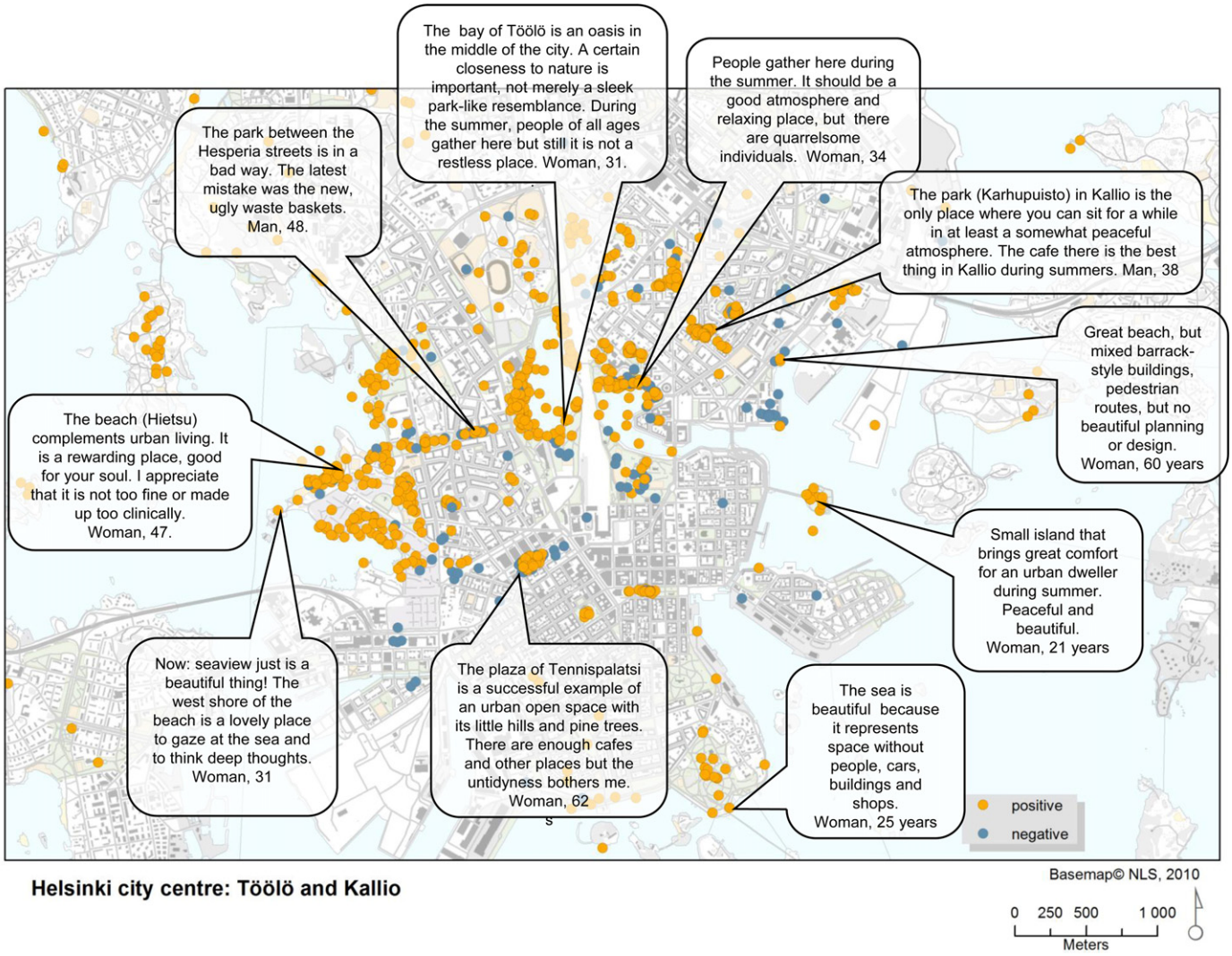

Fig. 8. Positive and negative markings on the green areas in Töölö (to the west) and Kallio (to the east) neighbourhoods close to the city centre.

settings only in regard to the positive places (means: city = 960 m, suburbs = 1766 m), not negative ones. This difference was highly significant ($t = -4.4$, df = 6129, $p < .000$).

The average distances to different types of meaningful places did not differ significantly, but it was shortest to social quality places (1.25 km) and longest to places significant for their atmospheric quality (1.40 km). The distance from home to both positive and negative places was most likely between 100 and 500 m, with 33% of the positive and 39% of the negative places located within this range. Many places were located between 500 and 1000 m from home: 23% of the positive places and 31% of the negative places.

The distances to quality factors that were located in various land use categories are presented in Table 3 for city and suburban dwellers separately. Again, city dwellers had on average a significantly shorter distance to positive places that were located in green, public and traffic areas. Negative quality factors that were located in housing areas were further away and in traffic areas closer to home in the city centre context compared to the suburban one.

4. Discussion

This study presented a new approach for a production of location-based, experiential knowledge from residents for participatory urban planning. Earlier examples of the location-based analysis of social issues in urban planning projects have used register-based GIS data concerning, for example, spatial variation in education level, health, security, etc. (Alshuwaikhat & Aina, 2006). We argued that a new layer of 'soft', experiential knowledge is especially useful in urban densification projects, which are among the most current and controversial issues in urban planning.

The softGIS methodology presented here is an example of the Internet-based Public Participation GIS (PPGIS) procedure, which allows the online collection of large datasets for participatory planning. This methodological approach is especially useful in Finland where postal districts are larger than in Britain and Netherlands (for example) and do not allow locality-specific analysis. Even if it would be possible to locate the homes of respondents accurately enough using postal codes, the location of the rest of the meaningful places would be a problem. The recognition of various leisure time places attracting residents is important for urban planners because leisure travel makes up an increasing part of daily travel output (Ettema & Schwanen, in press).

Our data included over 10,000 experientially meaningful place locations made by residents. We studied how the residents' quality factors were located in the urban fabric, how the contents of place experiences varied, and how various land use patterns or urban structural characteristics differed in their ability to generate positive and negative place experiences. The perceived quality of environment was operationalized as 32 positive and 32 negative

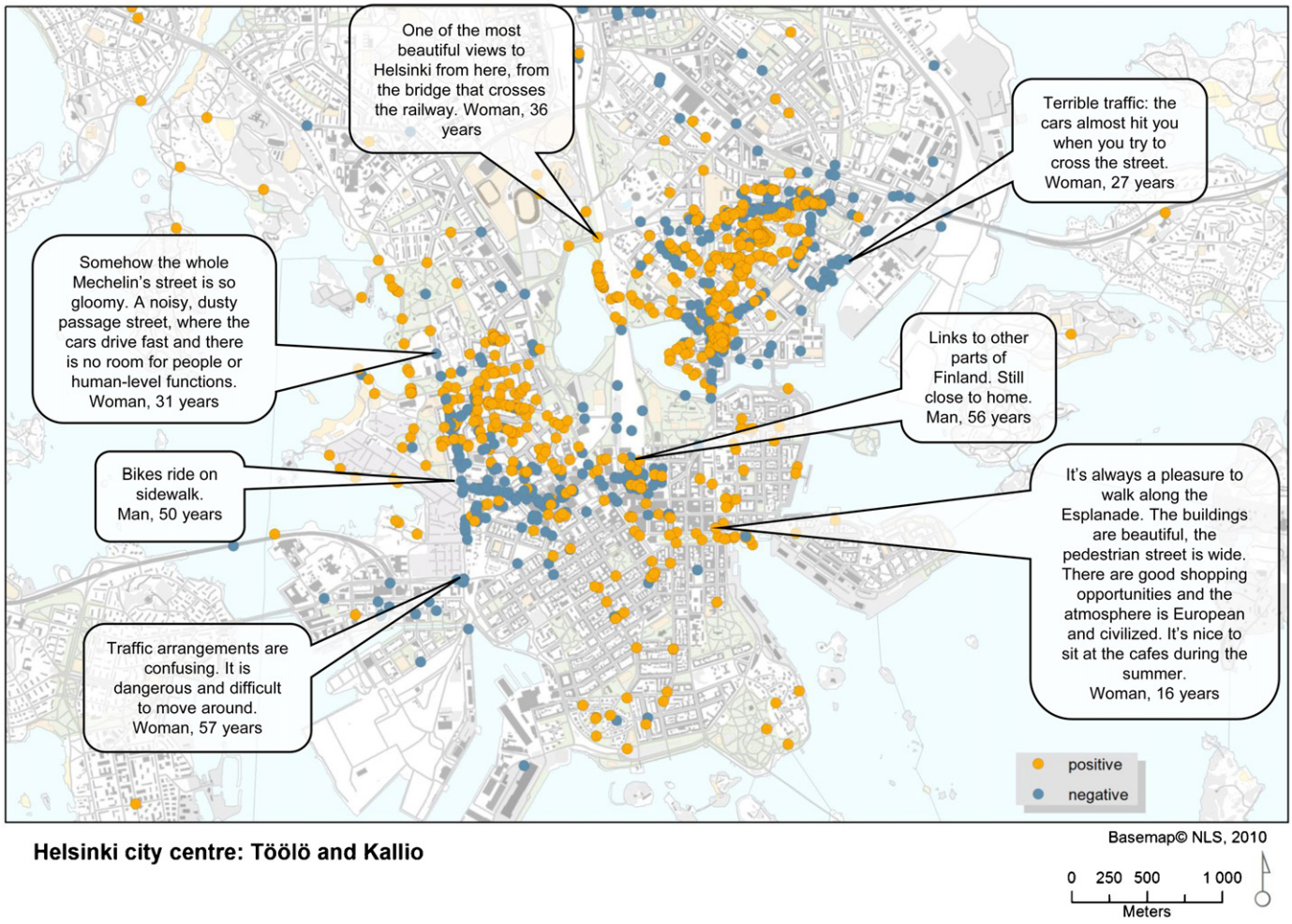

Fig. 9. Place markings in the traffic areas in Töölö and Kallio neighbourhoods.

quality factors, which were studied location-based and which comprised four main themes: social and functional quality, appearance and atmosphere.

When commenting positive quality, residents commented most often functional quality, whereas appearance related quality dominated in negative comments. Although our study design differed from the original Italian perceived environmental quality study by Bonaiuto et al. (1999, 2003), it seems that Helsinki metropolitan dwellers emphasize functional quality more than Italian residents, who appreciate contextual quality (atmosphere). Our data cannot reveal whether this is a reaction towards the strong functionalistic tradition in Finnish architecture and urban planning or a finding related to the mere methodology used. The location-based analysis, however, revealed that the functional quality was highly appreciated in public areas while the atmospheric quality was highly appreciated in green areas. The traffic areas were the most negatively evaluated land use category.

Among the single positive quality factors that residents located most often were beauty, smoothness of walking and cycling, and the presence of nature. The first two quality factors were somewhat surprising prime criteria in comparison to the earlier Finnish studies, where peacefulness, safety and child-friendliness have been reported to dominate as the most important quality factors for residents (Kyttä et al., 2011). The importance of aesthetic experiences was also highlighted in the study by Bonaiuto et al. (1999) in Rome, where aesthetic pleasantness was among the three most important predictors of neighbourhood attachment. Similarly, a recent large study in the USA concerning the predictors of community satisfaction (Florida et al., 2011) found that perceived beauty was among the most important factors associated with community satisfaction.

The second most common quality factor in our study was the smoothness of walking and bicycling. In Florida's study, outdoor activity possibilities including good trails, clustered together with

Table 3
The distance (km) to positive and negative quality factors for city and suburban dwellers that located into various land use categories.

	Positive			Negative		
	City	Suburb	*t* test	City	Suburb	*t* test
Green areas	0.85	1.84	$t = -6.3$, df = 1885, $p = .000$	1.13	1.3	ns
Housing areas	1.26	0.97	ns.	1.51	0.8	$t = 2.3$, df = 194, $p = .02$
Public and business areas	0.72	1.23	$t = -5.0$, df = 815, $p = .000$	0.79	0.77	ns
Traffic areas	0.58	1.48	$t = -7.1$, df = 676, $p = .000$	0.73	1.05	$t = -3.5$, df = 1523, $p = .000$

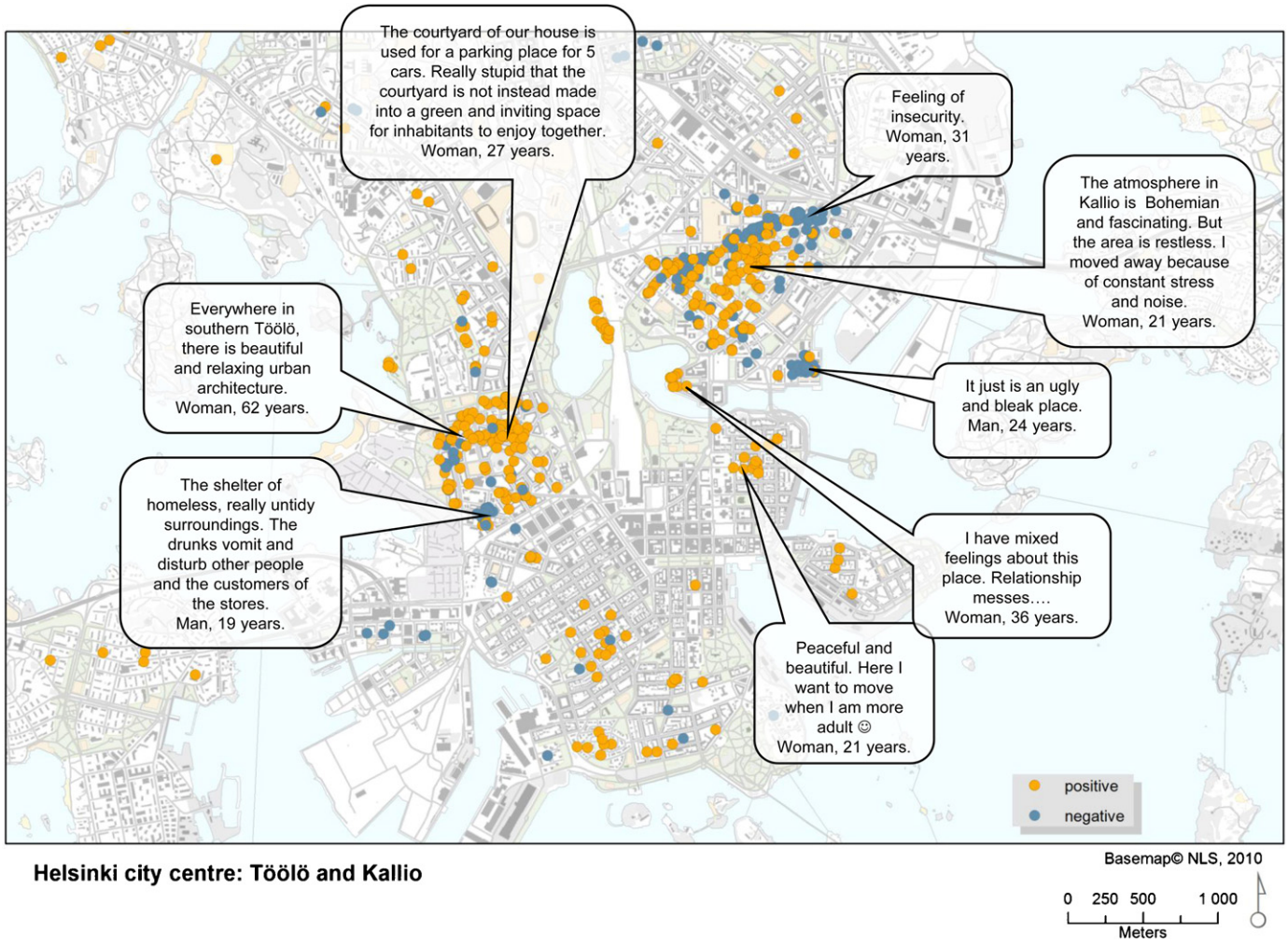

Fig. 10. Place markings in the housing areas in Töölö and Kallio neighbourhoods.

beauty. VanDyck, Cardon, Deforche, and De Bourdeaudhuij (2011) argued that perceived walkability should be analyzed in connection with aesthetic and safety perceptions. These findings suggest that simultaneous improvements in aesthetic quality and the light traffic network could be among the possible successful compensation factors in urban densification projects. The importance of good accessibility by walking and bicycling for Helsinki metropolitan dwellers can also be seen as a positive seedbed for a urban densification policy targeted at improving the accessibility of local amenities (cf. McCrea & Walters, 2012).

Our study also revealed that the average distance to positive places was longer than to negative places, which is in sharp contrast to the earlier findings by Kyttä et al. (2011). Could densification then also aim to bring positive quality factors closer, within walking distance? One challenge for urban densification projects could be to balance the presence of diverse quality places and their smooth accessibility.

At first glance, it seems evident that our findings support the view that all green areas have to be protected to perform socially acceptable densification policy. In our study, the positive quality factors were located mainly in green areas, and a large proportion of green structure around the quality factor predicted a positive experience. Positive experiences of residents in green settings are well documented in earlier studies: the presence of a green structure predicts a strong sense of community (Kim & Kaplan, 2004) and neighbourhood attachment (Arnberger & Eder, 2012) and promotes stress restoration (Nordh et al., 2009). The experiential value of green areas is, nevertheless, somewhat more complex. In the most green neighbourhoods in our study, in the suburbs, the positive quality factors were located on average significantly further away from home than the negative places. Also the distance to quality places that were located in green areas was more than twice as long for suburban than for city centre residents. This might be unexpected considering that the suburbs of our study represent the Finnish suburban concept – a block of flats surrounded by forests. The finding may suggest that for residents, the quality of green settings is more important than the quantity. Arnberger and Eder (2012) also came to the same conclusion when comparing the perceptions of green settings between urban and suburban dwellers. Therefore, green areas that are not perceived as highly meaningful or attractive for recreation may be potential sites for infill projects.

Our findings about the experiential importance of green settings are also conditional on some other results of the research. In addition to the findings reported in this paper, we found positive, overall experiential outcomes and a high level of accessibility in densely built urban settings. These findings, which will be reported separately, warrant that rather than trying to protect all green areas, we should find ways to combine accessible green spaces with high experiential value and an urban structure that is sufficiently dense.

Although densely built places were generally evaluated more negatively than the sparsely built ones, they seem to have a clear social value for residents. The important, positive social quality factors in dense settings included active neighbouring,

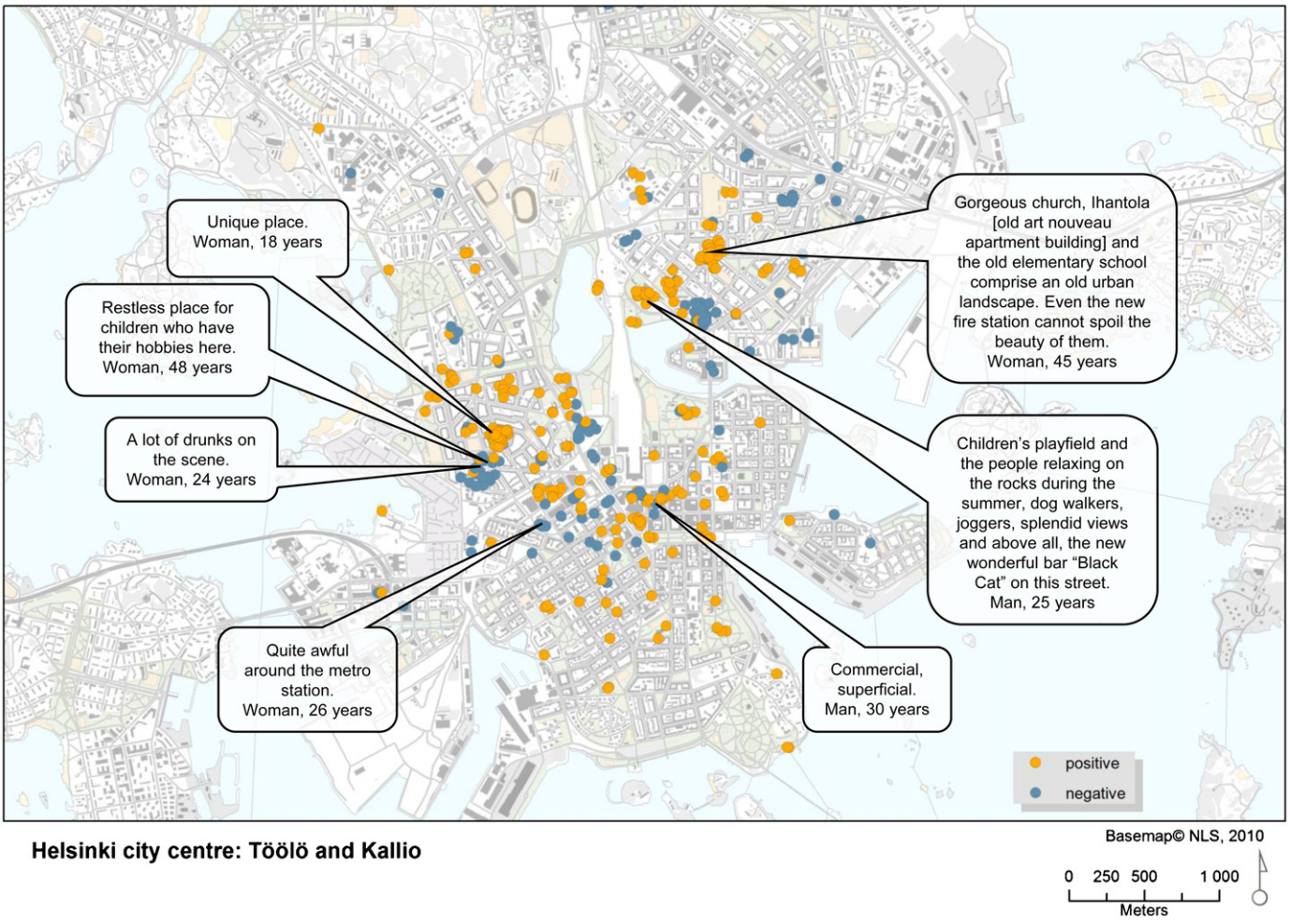

Fig. 11. Place markings in the public and business areas in Töölö and Kallio neighbourhoods.

shared responsibility, social safety and tolerance. These findings are somewhat surprising because urban density has been often shown to be negatively associated with social outcomes like social interaction and social networks (Dempsey, Brown, & Bramley, 2012). Our findings were also in contrast to the study by Walton et al. (2008), who found that social features scored lowest in high density settings. Our high-density settings in the Helsinki metropolitan area represented a clearly more dense urban structure than the study areas in Auckland, New Zealand, by Walton et al. Therefore, we could argue that a sufficiently dense urban structure is demanded in order for social quality to emerge. Urban densification projects could invest in context-sensitive improvements of places supporting social interaction. A more careful analysis of the physical characteristics of the socially meaningful settings is, however, needed concerning the visual links, physical form and urban typology (Raman, 2010). Similarly, future studies should attempt to identify the essential structural characteristics of other experientially important structures, such as green areas and positively perceived walking routes.

Our target to perform location-based, transactional people-environmental research to produce relevant user knowledge for urban planning was ambitious, and, as above shown, the study revealed many findings usable in urban infill projects. Theoretically, we found the operationalization of J. J. Gibson's ecological perceptual psychology to be difficult and the straightforward application of the PREQ scale by Bonaiuto et al. to be tricky. Future studies can concentrate more on the location-based study of behavioural patterns and daily routines of residents instead of more broad and vague environmental experiences. Understanding the habitual behaviour of residents is probably even more relevant for urban planners than environmental experiences as such.

5. Conclusions

The location-based experiential information presented in this paper can be a welcome addition to the other layers of information in evidence-based planning, where the active use of a wide range of various types of knowledge, different ways to collect, analyze and deliver data are essential elements of planning (Faludi & Waterhout, 2006). But how usable will planners find this methodology and the knowledge it produces?

According to our close co-operation with urban planners, Internet-based methodology is a very welcome addition to the existing repertoire of participation methods. Methods utilizing new technology, such as PPGIS methods, are able to attract a larger number of residents and groups that have been under-represented in traditional participation processes. Planners also find contextually sensitive information from residents generally useful in urban planning and especially useful in densification projects. Planners seldom get positive experiential information when using traditional participation methods like public gatherings, which are the most used participation techniques in Finland. Thus, planners welcomed the positive commenting that dominated in our

softGIS study. Not only critical views but also positive commenting includes important information about places worth protecting and strengthening.

An important concern when using Internet-based methodologies is the representativeness of gathered information. When using a scientific approach, as in this study, it is possible to carefully estimate these problems and the possible distortions in the findings. Although our respondent rate was not high (about 20%), it is satisfactory when compared with studies utilizing a similar methodology (Brown & Weber, 2011) and in comparison with standard respondent rates in surveys arranged by city planning offices. Improvements in the usability of PPGIS applications and feedback to residents about the actual use of produced 'soft' knowledge in urban planning practice can be among the ways that can help to increase in the future the motivation of residents to participate in PPGIS studies.

The more general question concerning the usefulness of behavioural, scientific data in urban planning practice is also worth discussing. Could scientifically high quality information strengthen the role of data concerning residents' experiences in the planning process? Would this knowledge then be taken as seriously as other, more measurable background information? At best, the collected data can be shown to be reliable and valid enough. Data gathered from residents is always somehow imperfect, but we argue that a scientific approach at least allows a critical evaluation of the data quality.

An important, moral concern is how the participants of this kind of study should be informed about the possible urban infilling that can take place in their neighbourhood. There is a moral dilemma. On one hand, the information from residents can be distorted if they are very aware about coming densification (nimbyism). On the other hand, it can be considered immoral not to fully inform residents. In our case, the survey queried the density issue in neutral terms. The survey was also carried out at such an early phase of the planning process that the city planning offices had no existing plans available yet. Perhaps the less danger of 'nimbyism' a survey results involve, the stronger the reliability and validity of the findings. Eventually, residents could also benefit if their genuine experiences would have higher information value in the planning process.

According to architects (Hartiala, 2012; Ikonen, 2010) who tested the usefulness of our data in some of the neighbourhoods, the softGIS data provided the planner with context-sensitive information that is not normally available. Especially in densification projects, it is important to distinguish places that are really valuable for residents from places that need refurbishment, are not experientially very important, or that are not used much. The former places should be improved only sensitively, while the latter may offer good potential locations for infill projects.

Some planners who utilized softGIS data were questioning the operationalizations of perceived environmental quality in our survey. Could all the respondents tell about their experiences in a way that genuinely reveal their true experiences? We think that the operationalization of any experiential knowledge is extremely challenging. When utilizing the existing examples in the research literature of behavioural and social sciences, the possibility to find a valid and reliable way to measure each phenomenon increases. It is, nevertheless, especially difficult to find good operationalizations for the kind of location-based research that this project represents because the existing examples in research literature are few. One planner provided us with a good suggestion for future development in operationalization: the softGIS application could automatically identify the land use in a place marked by a respondent and list different further questions depending on the land use. A different set of more detailed questions would then be provided for green and public areas, for example. This improvement could further increase the usefulness of softGIS data for planners.

Inspired by softGIS methodology, the city of Helsinki built its own PPGIS methodology after the project reported in this article.[2] Currently, among the projects to develop eServices and eDemocracy in public administration (SADe) in Finland launched by the Ministry of Finance, an open softGIS service will be developed for the use of all actors interested in this kind of participation technique. The softGIS team has been invited to partly contribute to this work.

To conclude, our experiences in the Helsinki metropolitan area revealed that new, contextually sensitive, experiential information from residents can potentially be useful and valuable especially in urban densification projects, which are often socially conflicting. We agree with Davison and Rowden (2012) that in the search for the unique characters of each setting, everyday social and experiential meanings are invaluable. Identification of the local strengths and weaknesses paves the way for context-sensitive urban renewal projects. Saying this does not mean that many research findings of this kind of location-based research can possess valuable, generalizable information for urban planning challenges beyond a single context.

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