

ERROR RISKS AND CONTRADICTORY DECISION DESIRES  
IN URBAN PLANNING

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## Abstract

Urban planning processes are performed by a number of participants who represent different interest groups. Some are professionals, whereas some have no prior knowledge about town planning. Ideally, inhabitants should have their opinions heard concerning planning processes that often involve great monetary and other human values. This study focuses on finding out the commonly shared desires of the inhabitants and the reasons why they get little attention in decision processes legally relevant in town planning.

The discrepancy between plans and the current inhabitants' desires for their neighbourhoods was found to provide an important explanation for severe decision errors. It was found that despite the relatively good knowledge about building and construction of the subject area's inhabitants, they are not sufficiently familiar with town planning issues to make an adequate mental representation of the outcome. Information about the planning process is in principle but not in practice available to citizens owing to their lack of expertise, which makes their legally planned democratic participation nominal.

Keywords: Town planning, inhabitant, preference, error, risk, plot ratio

Thought errors form one important problem in any modern economic activity. However, very little attention has been paid to them in economics or psychology. Despite some work done in the Austrian school of economics the human dimension of these errors has also been given relatively little attention even here<sup>1,2</sup>. Systematic research would nevertheless be very important in this area, because so much that is valuable for the quality of life is lost by faulty thinking. A survey from workers to top management showed that 10-20% of economic plans end up with an outcome that is worse than had been anticipated<sup>3</sup>.

One of the many fields of thinking in which errors are relatively common and often costly, is planning<sup>4-8</sup>. Of course, planning covers a multitude of complex processes and one must focus on one problem at a time. In this paper, we concentrate on thought errors in the context of town planning. The urban planning process is an excellent example of a very complex socially structured thought process. It is performed by a number of experts and representatives appointed by the community in question, those affected, as well as volunteers. Some of the participants are professionals in e.g., planning, building design, or building construction, and some of them are representatives with no in-depth experience in town planning. Finally, the general public also has a legal right to have its say in the planning process. Participants sometimes introduce quite contradictory elements that make town planning an excellent environment for investigating the causes and mechanisms of complex social thinking and its thought risks.

An urban planning process is usually started when there is a need to define uses for new areas or redefine uses of existing areas. In Finland, the planning process defines

what, where, and how areas may be used. The drafting of a new plan is begun on the initiative of the city or community, or a landowner. In Finland, town planning is the monopoly of cities or municipalities. However, in plans involving extensive areas or ones concerning delicate environments or urban spaces, well-established consultants are often used or an architectural competition is arranged.

The overall schema of a town planning process is relatively straightforward and legally controlled<sup>9, 10</sup>. First, a need for a new or revised plan is recognised. After that urban planners are assigned by the city or community to begin drafting a sketch of the plan. Those who will be affected by the plan are informed at its drafting stage and are given a chance to comment on it. Those concerned are summoned by mail, and are usually given two to three weeks to comment on the draft. If the draft needs to be altered considerably, a new round of comments is arranged.

The plan draft is given to the city planning board. This can be returned to be prepared anew, but is most often sent to the city board along with a favourable opinion. Before being accepted, the draft, which is now called the plan proposal, is publicly displayed. The plan proposal is usually displayed for 30 days. It is announced in a major newspaper and on the city bulletin board, and objections can be addressed to the city board. If the objections do not warrant action, the plan proposal is usually approved by the city or community board.

The city or community board presents the proposal to the city council. The city council has the right to return the proposal to be redrafted, make small exceptions to it, or accept it as such. Complaints are addressed to a Regional Administrative Court.

The plan then has a legal status unless complaints are made within 30 days. In some cases it may be possible to make a further complaint to the Supreme Administrative Court.

The formal structure of town planning is naturally not its real structure. In fact, the formal structure of any organisation is hardly the real structure<sup>9-15</sup>. Public and personal interests, human relations, communication and power games are essential parts of these planning processes<sup>12-17</sup>. Experts and novices are very often unable to communicate in a satisfactory manner. This is why, despite many earlier attempts to investigate participatory design process, for example by Healey and others<sup>6-8</sup>, Alexander<sup>18-20</sup>, Olivegren<sup>21</sup>, Kukkonen<sup>22</sup>, and Akin<sup>23-24</sup>, or probing studies on the experiential nature of the townscape<sup>25-28</sup>, we nevertheless need to analyse this process to understand why things do not go as intended.

Understanding the hidden risks of this procedure in practice presupposes knowledge about what errors are like and how they emerge. A special area of interest is the role of the end users, i.e. the inhabitants in a region, and their actual opportunities to have an effect on the input in the plan and the decision process. Consequently, we decided to collect and analyse information about how ordinary people understand the changes caused to their living area by re-designed plans.

In this first investigation of our ongoing programme into the mechanisms of errors in town planning, we concentrated on ordinary people's expectations of their environment, and investigated how well they understood what was about to happen to it. Their expectations are most often implicit, and there is no universal, systematic

approach to studying them. We conducted a survey to gain information about what kind of goals ordinary people set for urban environments, what they understand about the planning process and how well the resulting new or revised plans coincide with their desires. In this way, it is possible to take a look at the extent of the risk factors in planning processes associated with the inhabitants' and the town's desires and their discrepancies.

The main question of our study is thus what happens when a town plan is drafted in contradiction to the ideals of the inhabitants. Do inhabitants have sufficient knowledge about housing to understand the contradictions in their immediate surroundings? If so, do they have sufficient knowledge to understand the complicated planning language well enough to form an accurate enough representation of its true practical influence on the townscape? The criterion for accuracy must in this case be that the representation would be operational enough to accommodate genuine democratic participation.

## 1. Background

The immediate reason for selecting the Vartiokylä and Mellunkylä district in Helsinki, Finland (see Figure 1) as our target area was the currently ongoing re-planning process in the area. In this way, the desires of local inhabitants could effectively be compared with those of the planning authorities in the ongoing process.

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Place Figure 1 here

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In 1998 it was estimated that Helsinki would have to accommodate more than a 5 percent influx of people according to the current scenario<sup>29</sup>. The extent to which the city should intervene in the use, market, and planning of land and property is essentially a political act and depends on political will<sup>15, 17</sup>. In this case, the 5 percent increase scenario was chosen to be implemented<sup>30</sup>. The town plans in the Vartiokylä and Mellunkylä suburbs were considered to be ready for modifications and became a part of the implementation process. The prevalent type in these areas is the post-war detached 1½-floor, balloon-frame wooden house built around a central core with stoves (see Figure 2). As the houses are post-war type houses, areas built like this and their planning issues are very common and form the backbone of Finnish detached housing tradition<sup>31</sup>.

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Place Figure 2 here

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The modification process of the area town plan was started in the late 1980s. The plot ratio of each plot was to be raised from 0.20 to 0.25 with some extra space for sheds, greenhouses, etc. The plot ratio is the ratio of the gross amount of all built-up area with each floor counted separately, excluding a possible underground basement, to the area of the plot. For example, a 0.20 plot ratio would allow the construction of a 200 m<sup>2</sup> gross area house on a 1000 m<sup>2</sup> plot. The mentioned additions to the already raised plot ratio in reality amount to a 0.30 actual plot ratio. The revised town plans also include orders to preserve the existing townscape<sup>32</sup>. However, the city- or townscape, *genius loci* and other terms given to describe the impression created by the built environment appear to elude clear definition. For example the difference between the definitions in the plan regulations may be too difficult for a layperson to grasp.

The housing in the Vartiokylä and Mellunkylä area consists mainly of detached houses that are commonly referred to as "dice-like" because of their appearance. This image has been used in the re-planning as the basis for dividing the location of the building area on the plot into two. However, dividing the building area into two in effect encourages the formation of small plots called "axe-handle plots" with the other house or houses in the back of the lot or housing co-ops having more or less equal areas for each building. This, in practice, creates two or more small plots from the original one, though minus the space for the necessary driveways. An example of turning 1250 m<sup>2</sup> plots into smaller ones or housing corporations is presented in Figures 3a and 3b. This, taking into consideration the requirements for garden activities and car parking leaves only a little space for play and leisure. It has also been previously established that Finns specifically do not want to have small plots<sup>33</sup>.



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Place Figure 3a and 3b here

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The written orders and explanations included in the town plan restrict the number of apartments to one for each 400 m<sup>2</sup> of plot area. The number of apartments for each additional 400 m<sup>2</sup> of plot area increases by one. However, the order is formulated in a manner that would allow the building of two apartments on a 401 m<sup>2</sup> plot, three apartments on a 801 m<sup>2</sup> plot, and so forth. In addition, only two apartments may be located in the same building. Another clause states that only one apartment may be built on a plot that is smaller than 600 m<sup>2</sup>, and only two on a plot smaller than 1000 m<sup>2</sup>. A layperson may not realise that these restrictions in fact allow the building of, for example, as many as three detached houses on a plot of 1001 m<sup>2</sup>, which leads to an actual plot proportion of 333.7 m<sup>2</sup> for each house - minus the area of the house itself, the driveways, parking, etc., as shown in Figure 4.

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Place Figure 4 here

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Several remarks were made concerning the proposed plans pointing out the facts mentioned above. These were met by the city with either nonchalance or with inadequate replies; e.g., answering the question was avoided by repeating the plan orders as if the person making the remark had not understood the issue, or by answers based on the principle that a poor proposition is justified by already existing poor solutions on the grounds of inhabitant equality<sup>34</sup>. Nor did the city planning board find it necessary to discuss an objection signed by 79 inhabitants<sup>34</sup>.

The new plans will result in a denser, even crowded, area with less privacy, peace and quiet, or greenness, as well as denser traffic. A person may invest in a house only to find out that it has only a few of the attributes he or she desired for an ideal detached house.

## 2. Method

Planning is always a value- and goal-oriented process, even though these may change as the planning proceeds. Consequently, the research method used in this study was designed so that it would give information about the preferences of people. Without knowledge concerning the preferences of inhabitants, one can hardly have any idea about planning errors. Secondly, we were interested in people's knowledge about their rights and opportunities to voice their preferences and goals.

We did a survey that consisted of a Likert scale questionnaire of area properties and services; another part consisted of area attributes that had been considered negative.

The Likert scale questionnaire is a method in which subjects are presented with propositions. The subject indicates his or her compliance to the proposition on a scale

running from for example 1 (disagree completely) to 5 (agree fully). The source for these propositions were issues that had been brought up in the board meetings of the local real estate union, either by board members or members' written or verbal suggestions. The propositions are presented in Appendixes A and B. The questionnaire also contained a test of the knowledge level of people concerning planning and construction issues and questions of background data.

Factor analyses were used as an exploratory method. They were used for identifying underlying variables, or factors, that explain the pattern of correlations within a set of observed variables, in this case propositions. Factor analysis is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables<sup>35</sup>.

### 3. Subjects

The University of Helsinki Cognitive Science Division, in cooperation with the local real estate union, conducted the survey in the area in order to find out the preferences and annoyances of the current inhabitants. There were 2098 households living in detached or semi-detached houses in the real estate union area. They, plus managers of the 168 row houses in the area received a four-page survey form. The total reply rate was 23 %. The mean age of the total number of respondents was 51 years.

The frequency distribution of the answers given by respondents living in different housing forms is presented in Table 1.

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Place Table 1 here

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#### 4. Results

A factor analysis was performed on the data. The method that was used was principal axis factoring combined with Varimax rotation with Kaiser normalisation. The loading of each individual item in a rotated factor solution is represented by the figure in the factor loading matrix. The loading is a measure of how much each variable contributes to each factor. The final factor solutions were chosen on the basis of scree plots and the clear interpretability of the conceptual content based on earlier theoretical work on the subject despite the relatively low percentages of explained variance of the solutions. The factors were named after their content<sup>35</sup>.

Services and features produced a three-factor solution: the factors were named communal services, security and independent living, and garden city. Problematic issues also produced a three-factor solution: townscape annoyances, health threats, and noise pollution. The factors are presented in Appendixes A and B. In all, the factors present an image of a traditional idyllic setting with well-defined insignificant annoyances. We found that there is a stark contrast between the plan's eventual result and the inhabitants' ideal, as shown in Table 2.

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Place Table 2 here

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The first part of the survey discussed here consisted of the different properties and services of the area (36 such issues had at some time come up during 1997-1999 at the local real estate board and general meetings). People were first asked to evaluate the different features and services of residential areas on a five-point Likert scale. Figure 5 summarises the ten issues considered most important by the respondents.

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Place Figure 5 here

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Figure 6 summarises the ten issues considered least important by the respondents.

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Despite their poor placement, even the features listed in Figure 6 above were considered - even at their worst - insignificant. In sum, a majority of 31 of the 36 properties or services were considered very or relatively important.

The second part consisted of the different annoyances of the area. These were also issues that had at some time come up during 1997-1999 at the real estate union board and general meetings. People were asked to evaluate 35 different issues that had been mentioned as general annoyances in residential areas on a five-point Likert scale.

Figure 7 summarises the ten issues considered most annoying.

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Figure 8 presents the ten least annoying issues in order of seriousness.

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Place Figure 8 here

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According to our questionnaire the central properties of an ideal residential area are in order of their average placement:

- safety
- peace and quiet
- greenness
- good neighbour relations
- being close to nature
- preponderance of small houses
- independent living
- cost-efficient heating
- areas for leisure activities
- quality of street maintenance
- tidiness of gardens
- well-lit streets

In the results there was a great contrast between the area services and positive features, which are valued as important, and the annoyances, which are considered negligible.

The survey contained a questionnaire to test the knowledge of the people concerning building and construction matters as well as town-planning issues. The scores of correct answers were counted for the six propositions concerning the former issue and the four propositions concerning the latter, as well as a combined score of all questions. In the following (t) means true and (f) means false.

The building- and construction-related propositions were:

- ventilation fans should be turned off during below-zero weather (f)
- the windows of a domestic room should be at least 1/5 of the floor space (f)
- rain and foundation drainage pipes are usually led to separate sewers (t)
- a new three-floor apartment building must have an elevator (t)
- a brick frame building does not need additional outer wall insulation (f)
- the roof must be able to carry 280 kg of snow per m<sup>2</sup> (f)

The town-planning related propositions were:

- the plot ratio is defined in the town plan (t)
- the building permit is granted by the Ministry of Building (f)
- the colour of small residential buildings can be freely altered (f)
- the minimum distance between residential buildings is ten metres (f)

One-way ANOVA and Scheffe tests as well as t-tests were performed. A One-way ANOVA is a method of testing whether groups are similar by comparing the sample variance estimated from the group means to that estimated within the groups.

Variance is a measure of dispersion around the mean value. The Scheffe test is a test that yields a statistical value indicating the reliability of the finding. The variant of the t-test used here tests the possible statistical difference between two groups by comparing the means of the groups' answers.

In all, the differences between real estate union members and non-members in knowledge were small. A statistically almost significant ( $p = .032$ ) difference was, however, found between members and non-members in the score of all knowledge



propositions in a Scheffe test. Also, an almost significant ( $p = .032$ ) difference was found between members and non-members as well as between members and the respondents who had not reported their membership status ( $p = .048$ ) in questions concerning building and construction in a Scheffe test.

In further Scheffe tests significant differences were found between people living in detached houses and row houses ( $p = .016$ ) on issues concerning planning. A difference was also found in the combined score of all knowledge propositions between people in detached houses and row houses ( $p = .018$ ). A t-test showed a highly significant difference in all the three scores ( $p < .000$ ) between people who had, and those who did not have, experience in construction-related work. The group of people living in apartment buildings was omitted from the last analysis because of the small sample size.

These results, together with the means, imply that there is a tendency indicating that the more knowledgeable one is about one's dwelling the more one is involved with it. This result stems from and is backed up most likely by the fact that in Finland detached houses are often built and maintained by owners. The lesser degree of knowledgeability of the people living in row houses can, likewise, be explained by the relative ease of living in them with only a minimum of dwelling-related obligatory tasks.

## 5. Discussion

People were presented with 36 positive properties or services in an urban area. From their rankings it is quite clear that the ideal of independent living, peace and quiet, and

a green environment were the most important ones. A high plot ratio was ranked 35th with a mean between insignificant and relatively unnecessary, which can be considered a poor placement. From another point of view, the most annoying issues were different forms of littering, different issues concerning traffic as a hazard and high density of buildings. Dense building received, thus, poor ratings both as an observable issue and as an opportunity in the form of high plot ratio. The factor analyses performed produced parallel results to other analyses.

It is known that the actual town planning taking place and the prevalent policy will be to raise the plot ratio from 0.20 to 0.25 in the manner that was illustrated above in connection with Figures 3a, 3b and 4. Most revisions contain the clause for limiting the number of apartments in relation to the plot area. Five blocks have been revised by re-determining the allowed building area on plots as described in connection with Figures 3a and 3b.

In this case, the central issues of the revised town plan are the plot ratio, the number of houses on a plot, and the conserving approach to building. Of these, the first two appear as abstract figures, whereas the third appears as clearly stated. In practice, the situation is exactly contrary. The former two can be precisely defined, whereas the third cannot. This is the point of error: inhabitants cannot understand the consequences of the plan because the issues involved have not been made clear to them in terms they can understand despite a legal obligation for inhabitant participation in town planning. This problem can be alleviated, but the apparatus involving personal consultation can be considered too heavy for residential planning<sup>36</sup>.

As the revised or new town plans in the area are realised, the townscape will differ more and more from the ideal of the inhabitants by piecemeal deterioration. Judging by the consequences of the plan when it is fully realised, the plan can be considered erroneous from the point of view of the inhabitants of the area and can lead to a permitted true plot ratio of over 0.30, which is usually considered suitable for connected housing forms such as semi-detached and row houses<sup>37</sup>. Some of the current actual building projects also take advantage of a commonly used way of circumventing plot ratio regulations by building a basement floor, which does not count as floor or gross area. This case may correspond to an actual plot ratio of 0.50.

The fact that the buildings are detached houses does not by itself prevent house crowding<sup>38</sup>. Besides this, there are obvious side effects of habitation, such as private car ownership and the need for traffic and parking spaces, as well as private and public services and demands for scaling up the roads, possibly with sidewalks. No matter which densification method is used, the ideal characteristics of safety, greenness, peace and quiet, and independent living will suffer.

In all, the respondents were found to be quite knowledgeable. However, no detailed knowledge of the urban planning process, e.g., the grounds and times for appeals, was asked for as it is obvious that there is no point for a layperson to try to keep up with such detailed and contemporary information. These problems cannot be offset by people's relatively good knowledge of actual building and design tasks.

The city and planners have been able to fulfil their aims. The city will also still have the right to decide the boundaries of its use of power over real estate owners on this

issue. The practical development of plans is still guided more by the force of politics than by the force of argument<sup>39-41</sup>. For example, a possibility such as giving an opportunity to build more can easily be turned into a burden by issuing what is essentially punitive legislation. In fact, such legislation was passed in 1988, when a law sanctioning owners of unbuilt upon plots was issued, though it was revoked in 1992<sup>42, 43</sup>.

Planning practices are based on doing good and the complementary assumption of being right. These principles are routinely translated as an increase in quantity, and not in quality<sup>15, 30</sup>. On the part of the town planners, the thought error lies, to begin with, in not giving adequate information that can be understood by laypeople. This amounts to consciously risking the costly and resource-consuming process of plan revision in cases where the city planning board can be convinced of the negative implications of the new plan that have not been explained to the inhabitants. An operational way to avoid these risks is to openly inform the inhabitants and others concerned by using e.g. modern visualisation techniques.

On behalf of the inhabitants, the thought error lies in not being active enough in collecting information to form a comprehensive representation of the outcome and consequences of the new plan. A layperson should not rely too much on his or her own abilities, but instead should, for example, use an expert to evaluate something like a plan that will, after all, affect the inhabitants' lives considerably in the future.

Our hypothesis that the majority of inhabitants are not familiar with town planning issues was shown to be true. Furthermore, it was found that people are unfamiliar with

planning level issues and are, hence, unable to participate in a planning process in a meaningful manner unless sufficient professional help is provided to make explicit what a new draft actually proposes. Inhabitants can, thus, often be led astray even by promises of seemingly positive but in reality mutually exclusive attributes such as a higher plot ratio *and* the conservation of the townscape. Inhabitants lack the expertise to deal with municipal bureaucracy and official personnel, as well as the co-operation that would be needed to create political pressure to affect city decision making.

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## Appendixes

### Appendix A

#### *Factors for Services and Features*

	Factor		
	1: Communal Services	2: Security and Independent Living	3: Garden City
Youth club	.698	.115	.040
Neighbourhood clubs	.696	.150	.164
Common gathering places	.684	.201	.093
Kindergarten	.640	-.029	-.005
Primary school	.592	.010	.031
Swimming pool nearby	.446	.010	.098
Grocery nearby	.407	.223	.080
Garden equipment rental	.367	.308	.156
Cross-country ski track	.342	.093	.324
Library nearby	.272	.134	.211
Cost-efficient heating	.109	.558	.121
Quality of street maintenance	.113	.510	.150
Well-lit streets	.177	.505	.165
Good TV reception	.095	.503	.023
Peace and quiet	-.045	.488	.388

Safety	.176	.472	.239
Independent living	-.044	.472	.355
Real estate union	.316	.461	.114
Tidiness of gardens	.076	.455	.245
Local police	.305	.455	.147
Building advice	.366	.428	.167
Privately owned housing	-.153	.406	.281
Post office	.382	.395	.044
Good neighbour relations	.268	.325	.271
Homestead spirit	.318	.321	.144
Supermarket	.108	.164	-.082
Being close to nature	.087	.179	.611
Greenness	.052	.100	.573
Large gardens	.077	.130	.533
Sheltered gardens	.018	.327	.532
Areas for leisure activities	.285	.025	.498
Parks	.346	.069	.474
Preserving building manner	.167	.154	.458
Preponderance of small houses	-.029	.238	.444
Pet walking areas	.188	.165	.290
High plot ratio	.198	.168	-.220

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Appendix B

*Factors for Annoyances*

	Factor		
	1: Townscape	2: Health	3: Noise
	Annoyances	Threats	Pollution
Littering of common areas	.714	.181	.001
Littering in recreational areas and roads	.608	.199	.070
Plots with cars wrecks, etc.	.483	.018	.124
Dog litter	.457	.081	-.001
Quality of street maintenance	.457	.151	.045
Stray cats	.442	.067	.171
Poor management of city's green areas	.436	.255	-.006
Vegetation disturbing traffic visibility	.436	.058	.161
High density of buildings	.420	.224	.233
Machine and tools on plots	.392	.102	.282
Poor public transport	.379	-.023	.222
Parking on the side of the driveway	.275	.180	.234
No grocery nearby	.258	.097	.106
Placement of recycling bins	.244	.106	.209

Neighbours' shading trees	.231	.031	.052
Long way to school	.140	.102	.099
Too much car traffic	.034	.806	.058
Drive-through traffic	.116	.685	.054
Car traffic noise	-.033	.682	.088
Public drunkenness	.180	.576	.243
Poor traffic discipline	.374	.562	.055
Speeding	.339	.562	.029
Sense of insecurity	.353	.439	.222
Road works	.218	.421	.257
Crime	.329	.406	.204
Noise of children	-.014	.033	.657
Noise on holidays	.234	.307	.578
Noise from cleaning carpets	.182	.033	.567
Lawn mower noise	.180	.055	.494
Neighbours	.129	.100	.488
Water-traffic noise	.086	.006	.435
Kindergarten noise	.059	.081	.430
Leisure motorcycling	.338	.281	.369
Aeroplane noise	.290	.237	.345
Metro noise	.069	.203	.281

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Table 1

*Percentage Distributions of Housing Forms and Responses in the Local Real Estate*

*Union Area*

Housing form	Number of households in the area	Frequency of households (%)	Number of responses	Frequency of responses (%)	Number of houses in the area
Detached house	1157	41.1	336	64.7	1144
Semi-detached house	941	33.5	111	21.4	480
Row house	715	25.4	57	11.0	168 <sup>a</sup>
Apartment house <sup>b</sup>	3553 <sup>b</sup>	-- <sup>b</sup>	15 <sup>b</sup>	2.9 <sup>b</sup>	177 <sup>b</sup>

Note. <sup>a</sup> Due to the interpretation of the local union rules prevailing at the time only one questionnaire was distributed to the manager of each row house.

<sup>b</sup> No questionnaires were distributed to apartment houses. Some answers were, however, received.

Table 2

*Factor Solutions and Corresponding Inhabitants' Central Ideals, New Town Plan Regulations and Consequences.*

Factor	Inhabitants' ideal	Plan regulation	Resulting situation
Area Properties and Services			
1: Communal Services	Good gathering places and school services	No changes	No improvement
2: Security and Independent Living	Safe, controllable independent living	Increase in the number of apartments and plot ratio	Influx and crowding of houses, more traffic, loss of personal control, neighbour distraction
3: Garden City	Small house majority, low-density, garden-like townscape	Increase in the number of apartments and plot ratio	Influx and crowding of houses, more traffic, loss of personal control, neighbour distraction, less vegetation
Negative Attributes			
1: Townscape Annoyances	Better management of common areas and no crowding of housing	Increase in the number of apartments and plot ratio	Crowding of housing, risk of social problems
2: Health Threats	Better traffic-discipline	Increase of private car parking spaces	More traffic risks, risk of having to up-scale streets by purchasing plot areas
3: Noise Pollution	Peace and Quiet	More noise sources	More noise

Figure captions:

*Figure 1.* Location of Helsinki, Helsinki centre, main traffic routes and the Vartiokylä and Mellunkylä area (circled).

*Figure 2.* First floor plan and facade of a type house of the post-war era.

*Figures 3a and 3b.* The process of converting 1250 m<sup>2</sup> plots into housing corporations with two single-family houses.

*Figure 4.* A 1001 m<sup>2</sup> plot with three apartments and the required activities.

*Figure 5.* Means of the ten issues considered most important in the area. The scale that was used was 5 = very important, 4 = relatively important, 3 = insignificant, 2 = relatively unnecessary, 1 = not necessary.

*Figure 6.* Means of the ten issues considered least important in the area. The scale that was used was 5 = very important, 4 = relatively important, 3 = insignificant, 2 = relatively unnecessary, 1 = not necessary.

*Figure 7.* Means of the ten issues considered most annoying. The scale that was used was 5 = very much, 4 = relatively much, 3 = cannot say, 2 = relatively little, 1 = very little / not at all.

*Figure 8.* Means of the ten issues considered least annoying. The scale that was used was 5 = very much, 4 = relatively much, 3 = cannot say, 2 = relatively little, 1 = very little / not at all.