Research on How to diversify microrayon.

A pattern language for user-control facilitating urban design in large postwar estates.

THE CASE OF PĻAVNIEKI, RĪGA.

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This research report was written in reversed order — from resulting design diagrams reconstructing path to the origins of the projects. But here the sequence is kept the chronological order of the project as it was carried out during the graduation year because it have certain integrity and logical sequence: formulation of the problem, data collection and analysis, struggling with formulation of the design issue. Please do not confuse structure of the report with the actual working progress.

This research started indirectly observing user-environment interaction in large-scale housing estates. It continued in Hamburg, where the main impetuse was received from prof. Bernd Knies. I told him that I am not satisfied with the apathy of the designers and their inability to imagine the future of the housing estates. The answer was that as long if there are users and activities there is no reason for pessimism. In Delft, the fascinating lecture by Fritz Palmbout about the book of his office «Drawing the ground, landscape urbanism today : the work of Palmbout Urban Landscapes» (2010), defined the working agenda and tools for the next two years: what is it possible to tell using drawings and texts, and when one needs another?

Credits

I would like to thank Sandra Treija from Riga Technical University, Berndt Knies from HafenCity University, Egbert Stolk and Paul Stouten from Delft University of Technology.

Also probably I would like to thank my theoretical tutors which I have been consulting many times in their books — Christopher Alexander, Kevin Lynch and Taeke M. de Jong.
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1 Understanding problem

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This project was driven by the two-fold fascination. Fascination itself is a requirement to enrol to the ExploreLab graduation studio — which is a research-driven laboratory for the exploration of the fascinations. The first fascination, which motivated me to participate, is microrayons — a type of large post-war housing estate seen as a lived space of vast majority of the people in Riga and other places in Eastern Europe. The second is the perceived lack of research and design, or understanding and conscious action, aimed to conceptualize and envision microrayons in the future. In other words, I was thinking to develop a design method for the regeneration of large post-war estates. In order to do this, I revisited Pattern Languages, because “quotation”.

The topic was clear on the outset, but the problem was lacking to start the search for the design responses. The idea of the neighbourhood was first explored. On the one hand, the neighbourhood unit is a planning concept and spatial design of the residential environment. On the other, it is a tool or even weapon for control by its users (Lynch, K., 1981; Jacobs, 1963). Thus the project became an exploration of the relations between two meanings of the residential environment.

User control is a denominator of this relationship — it is an environmental variable, it is evolving and changing, it has a value for its users, it is subject to path dependencies and sudden change, leaving no holistic picture and exact predictions possible. The project goal is to diversify the residential environment of the microrayons, to allow user control to evolve in the future context.

Microrayons have multiple problems with a mutually reinforcing character. In this thesis, emphasis is on residential environment and spatial problems. In Riga, the focus should be on residential environment for existing and future users in relation to the urban context. Main spatial problems are lack of parking, post-socialist additions, and rigid urban structure. The situation is aggravated with legal problems of divided ownership.

This project is a design study. It uses empirical research to define probable context of the problem. The design study is aimed to find improbable possibilities for the environmental conditions. A pattern language is the outcome of the project — it is the tool for designers, planners, and researchers to understand and diversify the residential environment of the microrayon. And at last is a method, means rather than aim. Design study applies the pattern language.

In a report, first five chapters can be distinguished as research, following three chapters as design study. However, many design study chapters have feed-forward and feed-back links with the research. If the reader has a little time to spend on reading this report, then it is suggested to read the text provided on the first page of each chapter.
In Eastern Europe, and in Latvia in particular, growing attention is paid on quality and problems of exiting urban areas. Large postwar housing estates (further in text — large estates) are an important issue in this undertaking. In Latvia, it is common to call these areas microrayons — a term stemming from Russian language meaning a micro-district, or planned neighbourhood similar to neighbourhood units developed by Clarence Arthur Perry.

In Riga, three problems are the most discussed in public: energy efficiency of the housing stock, dual ownership and local social problems. Much less attention is paid on the living environment of large scale housing estates and possibilities how to improve it. Improvements will inevitably have piecemeal, tactical character, hence it is important to understand how each individual project can contribute to the larger whole — the living environment of large scale housing estates. The living environment in this project is limited to the realm which surrounds daily activities of the users outside their homes. This means certain level of scale, object and its context.

Diversification
For this project the problem is how urban design can diversify these important areas to make them more livable. From empirical research, it is possible to distinguish the list of the repeating problems, which are summarized in “Problems of large scale estates” on page 8. A professional spatial design thus supposes to add quality (including new possibilities) (p. 18) Diversity is a prerequisite for the possibility of choice for future generations (p 36). Diversity is a scale sensible concept. The objective of this project is to use theory and empirical research, in a design study.

Research and Design
Design is a search for possible futures (de Jong 2008, 2012). Unlike empirical research which is concerned with probabilities, and management and law with desirability, its main goal is to create conditions for improbable possibilities.

Research in this context has been used in two ways. First is a conventional, empirically-based re-search, which explores probabilities — almost certain aspects of the microrayons. Second is study which results in design diagrams — exploring less probable possibilities.

Research follows three main lines of inquiry: first, the user and his experience of the large-scale estates in Riga. Second is literature research on theory of user control — important feature of user interaction with the built environment. And third is an inquiry of the main object — the built form and structure of the large-scale estates.

Design in this project is a transformation possibility search which consists of a writing a Pattern Language and seven projects, intended to complete the Pattern Language.

Urban regeneration
Urbanism is more often associated with urban regeneration. Major part of urban planning and design activities are taking place in the existing urban fabric (Stouten, 2010). Urban regeneration can be defined as “comprehensive and integrated vision and action aimed at the resolution of urban problems and seeking to bring a lasting improvement in the economic, physical, social and environmental condition of an area that has been subjected to change” (Roberts, 2004).
Problems of large scale estates

Urban problems and issue of urban regeneration are context-dependent, therefore problems and processes of change in large scale estates in Riga are compared with those in other countries in Europe, mainly in the West (countries without Soviet-socialist past) because many estates have endured various phases of decay and renewal. Many problems and issues are similar, and thus the local situation can be compared and possible points of interest distinguished.

Large scale neighbourhoods are often characterized as deprived urban areas. A general list of problems of large-scale estates include: structural problems, internal design problems, urban design or spatial problems, internal social problems, financial problems, management and organizational problems (Turkington, 2004). These six problems can be traced in Riga as well.

1. Structural problems are related with energy efficiency of housing stock and its improvement is one of the most debated issues of urban regeneration in Latvia. Internal design problems like inadequate quality of equipment of the buildings are related to the management of the stock, which is the second most frequently issue mentioned.

2. Urban design or spatial problems include spatial isolation, long distance to the city centre, high building density and problems with traffic (e.g. noise pollution, lack of parking). In Riga, spatial problems are less emphasized. However, there are three major spatial problems which are elaborated in this project. First, the lack of parking is a commonplace in microaryons. In general, the spatial isolation is seldom perceived an issue (except few microrayons built in relation to the port). The problem is that microrayons were built on the grid of arterial roads, which were not implemented in Soviet times completely. The areas along major roads are to large extent unused. Some of these areas accommodate extensively suburban development of large-scale commercial and even logistical facilities and rarely new housing in form of gated communities. And third type of problems are stemming from the masterplans of the microrayons—conceived as complete spatial entities, it is extremely to transform them and accommodate new uses, housing typologies, change layout of the streets.

3. Internal social problems like antisocial behavior and crime have recently been emphasized due to growing dissatisfaction with low perceived safety level and traffic safety in large scale estates in Riga.

4. Financial problems are constantly present and are related to the high and rising costs of utilities and inappropriate taxation.

5. Management and organizational problems are related to the socialist management legacy which is centralized and not congruent with current challenges and demands of the residents.

6. Legislative problems concern the dual ownership of land and buildings — the unique situation caused by state privatization policy which is effectively freezing many urban renewal issues, especially for public spaces in large scale housing estates.

Although the problems are linked which makes the issue of regeneration complex, in this project issue of residential environment regeneration take precedent over the others for many reasons. Residents are able to improve their apartments and even buildings themselves. Energy efficiency improvement is granted with European Union cohesion funds support, and currently the potential support of local government is discussed in financing these activities.

If there are economic and legal means to improve housing, there is no such
for residential environment. Legal and financial problems makes situation even more complicated. Residential environment in this project is used to denote environment which is constituted by physical part — buildings and infrastructure and people using it for various activities. The most striking difference between prospects of dwellings and residential environment in microrayons is a degree of user control.

**Residential environment**

In this project, the main object of research and following study is residential environment. An environment is a setting for human activities, it can be physical, administrative, and social (Zeisel, 1986). From another point of view, environment is a set of conditions for life (Hendriks, 1993). There is a conditional relationship between for example physical environment and human habitation (de Jong, 2008). The human urban environment is a useful term here, Roberts, Ravetz and George (2009) refer with this term to Gikson's »human environment«, which he describes as the space that surrounds human movement, work, habitation, rest and interaction (1971). Residential environment is the most precise term for large-scale housing estates.

However, the appropriated definition of the environment in this project is:

> Totality of spatial variables and their values varying in a given radius around people, that can have an impact on their life and living (de Jong, 2012 p. 51).

Variables and values are clarified and defined in chapters “3 Understanding theory” on page 44 and “6 Diagnosis” on page 86 respectively. Radius or level of scale are elaborated and defined to be relevant for the definition of the environment in chapter "5 Understanding what was built" on page 64.

**User control**

The residential environment in microrayons is not controlled by its users. The main problem often implicitly stated by the residents is that they must cope with it and with the other people using it in unsatisfactory way. This dissatisfaction is expressed as a feelings of unsafety, spatial conflicts of uses and inappropriate behavior. Many residents, especially elderly people and others more closely relating themselves with their residential environment, express concern and are willing to improve the situation.

Hence the objective of this project is to enhance the ability of the users to control their residential environment, in line with Oscar Newman's goal to provide “means for restructuring the residential environments of our cities so they can again become livable and controlled, controlled not by police but by a community of people sharing a common terrain” (1974). User control of the residential environment in this project is used in qualitative sense, as Lynch defines it: "the degree to which the use and access to spaces and activities, and their creation, repair, modification, and management are controlled by those who use, work, or reside in them (Lynch, 1981)" — which implies that there is no need for "absolute" user control, but for a certain degree which is desirable and appropriate in a given space and time.

**User**

Another important aspect of microrayons is that these are residential environments for the major part of the population — almost seventy percent are living in large estates. Many residents live in microrayons for two or even three generations. It is common that children live close to their parents in the estate — it has many advantages.

Users in this projects are seen as experts of their living environment and its problems. What do residents feel about their neighbourhoods? To what extent do they see their environment problematic or otherwise? Is there any need for
change and are they motivated to improve their neighbourhood? In order to answer these questions, several focused interviews were held with residents in two large-scale estates — Imanta and Pļavnieki which are representative for the vast majority of the other areas in Riga.

Regarding residents as experts of their living environment, the process of urban regeneration can become sustainable as a result of integration of other issues than physical into the project assignment.

**Theory**

Control in relation to the built environment often is associated with the idea of the neighbourhood. However, there is a big difference between that neighbourhood as conceived in the masterplan — centrally designed and controlled spatial and social entity, and the one which emerged in a specific place and unify a group of people motivated to control their living environment to certain extent.

According to Jane Jacobs, there are three types of neighbourhoods: street neighbourhood, large district, city as a whole with the main function of self-government (Jacobs, 1963). Lynch describes importance of the neighbourhood as a weapon of control — to defend environment, own territory, from destruction and is a part of mental equipment of the individual (Lynch, K., 1981).

Large scale neighbourhoods or microrayons are primary residential settings. The physical settings of microrayons are typical examples of modernist urban design where the role of collective space were overemphasized (Habraken, 1998) Large scale estates rely on formal management and therefore are vulnerable (Dorst, 2005, 2010). To rely solely on formal management, be it police or other external authority is not a long-term solution if one considers their sustainable livability. Safety problems in relation to built environment are partially conditioned by design (Newman, 1978).

On the other hand, microrayons are not new, there are many who live there for more than three decades. Therefore, established relationships between social and physical environment must be understood. There are other factors, describing quality of the built environment than functional, aesthetic and economic ones and these should be taken into account, which is normally not done in the renewal projects (Werner, 1984). Residents form emotional links to their environment, which should be taken into the account.

**What was built**

Built form of the large-scale estates is seldom studied in relation to the problems and urban regeneration issues. It is argued, that not taking into the account the form and the structure of large scale estates deprives vision from the crucial data about the reality of the problem.

Large scale estates are part of post-socialist city as industrial areas, infrastructure and new post socialist development areas. Microrayons like other large scale districts were built according to modernist principles. Districts consist of two to five microrayons — smaller units with 10,000 inhabitants each. As other areas built in the second half of the 20th century, large scale estates are mono-functional residential areas often spatially separated form other parts of the city. Freestanding residential buildings arranged in various compositions have quite similar spatial structure and hierarchy. There is a very limited variety in building types and programmatically all large scale housing estates are very similar as they were planned according to unified principles.

Although their similarity, the local situation should be studied thoroughly and general descriptions are not satisfactory in order to understand performance of the living environment for many reasons.
First, large scale estates are transformed by new additions — residential, retail and other buildings. Second, some new qualities have emerged in the process of use and in different circumstances (spatial and social) the performance may vary. Third, dual ownership of land and buildings should be solved in relation to the built form to ensure sustainable urban regeneration.

Assignment
Large-scale neighbourhoods in Riga are residential environment of large amount of residents in Riga. Many residents associate themselves with their estates and would like to improve them. Their major concerns are social safety, ambiguous territoriality and inability to regulate behavior in public space. Problems have legal, organizational, social and physical dimensions: design of the estates, formal management, and current use patterns are parts of the problem. Performance of control and degree to which users can assert it in the large-scale neighbourhoods — quality of use, modification possibilities and involvement in design — should be re-considered.

In short, project or design goal is to design transformations, with a programmatic requirement of re-distributing control of living environment to make it safe, responsibly controlled, and congruent with needs of changing users.

The main question for urbanism is to envision how these areas can and should develop in the future. It should take into the account the existing problems, and trends which may be aggravating in the future.

Pattern languages
Pattern language for diversification of microrayons is the outcome of this research and study. Pattern language of »timeless way of building« is the work of Christopher Alexander and colleagues of the Centre for Environmental structure. Original intent was to enable ordinary people to create their living environment and to inform designers with proper understanding of structure of the living environment. It has straightforward tools to understand and create livable places, buildings and towns.

Explicitness and sensibility to the context were the main motivation to turn to the pattern languages in this project.

In this project, the original explicit structure described by Alexander is used and reflected upon; the pattern language developed is not a generic one and is derived from the research of two large-scale neighbourhoods, lived experience in large-scale neighbourhoods, and formulated explicitly using example of Pļavnieki neighbourhood. Design tests are carried out for this neighbourhood as well.
Structure of the report

Chapters and research questions
This report consists of eight chapters.

First chapter is an introduction and brief description of the project. It proceeds with the brief description of microrayons in Riga and problems experienced there.

Second chapter, urban renewal and regeneration of large estates, defines urban regeneration, approaches to large estates, outlines issues of physical renewal, and illustrates urban regeneration of large estates using two examples — Marzahn in Berlin and LaDuchere in Lyon.

Third chapter introduces research. Understanding theory seeks answers to questions “how user control is related to the built environment” and what variations in user control built environment condition?

Fourth chapter, Understanding of the user, looks for the ways and makes some insight to the user assessment of their residential environment. Research question here is “how users evaluate control of their residential environment?”

Fifth chapter, Understanding what was built, follows the research question “which design elements of large estates are crucial to user control?” This chapter defines the level where the control variation are visible, and the context, which is relevant for the issue.

Sixth chapter is the diagnosis. It uncovers how “control performances”, or critical variables, are distributed in Pļavnieki-2.

Seventh chapter is a Pattern Language. It links the context which is defined in “understanding what was built”, with inquiry and theory. The research question here may be “how user control is conditioned by design?”

The eighth, last chapter is Design Diagrams. It links Pattern Language with three storylines in different directions, and the question here is “what design interventions are possible to enhance performance of user control in Pļavnieki?”

Image 8 shows the presented structure of the report. This is not to be confused with the actual process of research and study, presented on the image 7.

Relation between research and design
The report has been written in approximate sequence how the project was done. However, many chapters have feed forward and feed back connections. Thus, for example, understanding what was built contains some design drawings, which were accomplished before P2.

The outcome of this project is a pattern language for diversification of large estates in Riga. It combines research and design. It was written first on a base of the research.

Design is used to complete and validate the pattern language. The design outcome is supposed to be added to the pattern language after P4.
DEFINITION OF THE ENVIRONMENT

DESIGN PROGRAM

DRAWING

NEIGHBOURHOOD—USER CONTROL

PATTERN LANGUAGE

FIELDWORK GUIDE

Potsdam

Staalmanpleinbuurt

Delft

Post-war Amsterdam

La Duchere

Marzahn

Hamburg 1

Hamburg 2

Losand

The case: Pļavnieki

Urban regeneration of large estates

Milestones—Theory Levels

"MISFITS"

Understanding theory

Understanding of the user

Understanding what was built

Pattern language

Design

The case: Pļavnieki

Diagnosis

How user control is related to the built environment?

How user control is conditioned by design?

What design interventions are possible to enhance performance of user control in Pļavnieki?

How user control is related to the built environment?

How user control is conditioned by design?

What design interventions are possible to enhance performance of user control in Pļavnieki?

Understanding problem

Steps in the overall design strategy implemented in order to facilitate user control in large postwar housing estates?

Precedents

Image 5. Work progress and chapters

Image 6. Relationship between research and design

Understanding theory
Research
Understanding what was Built
Design diagrams
Projects
Understanding of the user
Frame-semantic networks;
Control variables;
Pattern language
Understanding problem
Understand what was built
Pattern language
Understanding problem
Steps in the overall design strategy implemented in order to facilitate user control in large postwar housing estates?
Understanding problem
Understand what was built
Pattern language

Image 7. Diagram showing the actual process of research and design
Large postwar neighbourhoods in Riga

Socialist neighbourhoods

Large scale neighbourhoods is the main object of this project. These neighbourhoods were built in five decades, when the city was growing exponentially due to industrialization under Soviet rule. Currently these accommodate sixty percent of the residents and constitute more than forty percent of the building stock. First districts were built in 1950s and early 1960s. During early post-war years, small district were built close to the railway ring which also accumulated major industries. In 1970s real boom in housing production started. Construction industry was finally established and large districts for tens thousands of inhabitants were built. The stagnating economy of 1980s in Soviet Union slowed down the speed of production, thus many neighbourhoods were finished only in 1980s, when country was already independent from Soviet Union. Today there are totally 13 large-scale districts in Riga, accommodating around 450,000 (2010) residents. Each district vary in terms of population, from 10,000 up to 60,000.

For the day of completion, these districts were well-functioning living environments, despite all shortcomings of socialist production of housing. Districts designed and built to support the needs of primary group of nuclear family, with two working parents. Therefore each district provided all necessary services to support daily life. On the level of district, shopping facilities and medical centre were provided. In most of the cases, large, natural green space was incorporated in a masterplan for a district. Each district consisted of two or more microrayons, population size and area of which were defined as a catchment area of a primary school. Pre-school facilities had smaller catchment areas, and each neighbourhood included three to four kindergartens. Main means of mobility of the population was public transportation: bus, tram and trolley-bus. There were plans to build a subway in Riga, but those were abandoned in late 1980s, but many urban plans of large-scale neighbourhoods taken into account prospective metro stops. Thus today large-scale housing districts are well accessible by public transport.
transportation, however, these were not prepared for rising individual car ownership which increased dramatically after regaining independence in 1991.

Basic unit of the district is a neighbourhood with population of 10,000 and size up to fifty hectares. Neighbourhood was defined by major roads, neighbourhood streets were limited to the service and access roads. Thus inner space of neighbourhood was intended as primarily pedestrian realm, where car access was of secondary role and traditional street as a form of public space was abandoned in favour of spacious green areas. In initial plans, the immediate living environment was supposed to support daily life of primary groups — families with children. Facilities such as playgrounds for children, active recreation and socialization were planned in courtyards. Not everything intended was implemented, but institutions like schools and kindergartens played pivotal role in organisation of community life. Thus each school was equipped with stadium and pitches for football and basketball, and modest facilities for sport and physical culture are still present in virtually every neighbourhood.

Dominant housing type in large-scale neighbourhood is flats in staircase access building. The most common is nine-story prefabricated slab. Second type is five-storey slab, corridor-access buildings for elderly or single-parent families and sixteen storey towers are less frequent typologies. First prefabricated buildings were built in the late 1950s, real boom was during late 1970s and 1980s. Although technology developed substantially over time, technical condition of housing stock is close to critical nowadays, especially those nine-story slabs built in late 1970s. The method of construction and building technology, together with general approach to housings production, was limiting ability of architects and planners of the time; the basic task in many instances was to reference urban planning schemes produced in Moscow to local context. Only in 1980s building types and urban morphologies specific to local context were allowed to design and realize.
Post-socialist neighbourhoods
After regaining independence in 1991, changing political and economic conditions affected large estates. Privatisation policy of the nineties gave property rights to the residents of neighbourhoods which resulted in high ownership rates: currently virtually every household residing in large-scale housing estates owns a flat it occupies.

Today on the housing market, flats in neighbourhoods are the only option for affordable dwelling. Current economic conditions and purchasing power keeps these flats as the only option for the vast majority of the population. This means that residents to large extent will stay in the neighbourhoods, keeping this real estate market sector active. This makes the situation in large-scale neighbourhoods distinct from that in Western Europe, where post-war housing often is second choice home and marginal. In Latvia, large-scale neighbourhoods still accommodate households with various range of income, various nationalities (Latvians and various minorities, which constitute more than half of the population in Riga).

During rapid economic growth started in early 2000s many new residential construction developments took place. Need for new housing was not supported by growing population, but to increase floor space per person and speculation. After financial crisis, however, construction sector of the economy was the one which suffered the most. Many development projects were abandoned.

Land ownership problem
Privatisation reform has resulted in dual ownership: multi-family buildings and land are two separate property units. Large scale neighbourhoods were built disregarding ownership of land established during first period of independent Latvia (1918-1940). After 1991, land had been returned to the owners or their relatives.
who claimed initial ownership rights. For residents of neighbourhoods built during Soviet periods, it resulted in obligation to pay both land taxes and rent.

It means, that the land residents are obliged to pay is larger that functionally necessary area around residential building. Rent and land tax vary depending on the area of land associated with building and the number of flats. By many stakeholders involved in management of neighbourhoods, such as City Council and Housing Managers, and even by those indirectly involved like Ministry of Justice, this regarded as a pure legal problem and negative consequence of privatisation policy. Payment is especially inadequate in situation where relatively small residential buildings are associated with large land divisions stemming from agricultural land use in 1930ies in comparison to much lower costs where nine-story slab with 300 families is located on small land units where previously were allotments or gardens.

To summarise, large-scale neighbourhoods in Riga is important component in urban fabric and will be critical component of quality of life of vast majority of population. Specific issues which large-scale neighbourhoods are facing today are summarised in the next chapter.
For more thorough analysis of current problems of large-scale neighbourhoods, two districts were chosen as research areas. They are similar in terms of area and population size, but have different urban and social context. These two areas are representative for the majority of the postwar large housing estates in Riga: they were built in time period between 1975 and 1990 as a large share of housing estates in Latvia.

**Imanta**

Imanta is a district in a Western edge of the city (Image 33). It was developed in 1965–1975. Totally in district live 49,698 residents (2010). District consists of five microrayons arranged concentrically around forest park in the middle. Forests surrounding city from western edge of the district. On eastern edge large factory was built in parallel with district, it produced consumer electronics and now is no longer operating. There is railway line to the south and forests and industrial areas to the north. District lies on the Eastern bank of river Daugava. This part of the city before Soviet urbanization were characterized by manors and gardens, small allotments and forests. In the masterplan for Imanta, many of previous land-use features had been retained, thus borders of the district are to large extent defined by natural and cultural features of landscape. Many of allotments and historical roads are still present within urban fabric of large-scale neighbourhood.

Study area is Imanta-5 — the latest neighbourhood implemented according to the plan (image 21). Area of the neighbourhood is 49 hectares within main roads, population 10644 residents (2010). Neighbourhood consists of three blocks, with kindergarten in centre of each (image 24). One of the kindergartens was transformed to the nine-story residential building in 2007. Each block consists of five and nine-story buildings arranged to form courtyards of various size. One of the courtyards was equipped with volleyball, basketball pitches in each block, others served only access functions and contained amenities related to residential buildings: laundry stands, some benches and pedestrian paths. Some courtyards contain allotments with detached houses retained from previous land use. Nine storey residential buildings on the eastern edge has commercial spaces oriented towards the boulevard separating neighbourhood and forest in the middle of the district. Three blocks are separated with large green area which also contains school and its stadium (image 21). This neighbourhood is characteristic for second phase of large scale district construction — with relatively green character and courtyard arrangement of buildings.

**Pļavnieki**

Pļavnieki is the latest instance of large-scale district. It is located on the Eastern edge of the city (image 33). The design is dating back to 1976, but last prefab slab was completed in 1991, and after that some residential and commercial buildings were added with and without reference to the initial plan. Till today, district has vast areas of vacant land along major roads. Totally in district live 48,176 residents (2010). District consists of five neighbourhoods separated by orthogonal grid of major roads. Northern and Southern edges are formed by major arteries, busy four lane roads, which are important connections on regional level. Large industrial area lies to the South, and another large scale district and
former landfill area which now is undergoing transformation to the North. There is an area of detached houses to the West and forest with cemetery to the East. Territory of the district was included to the administrative area of the city in early 1970ies, prior to district here were agricultural land and farm on the South-Eastern corner. Green areas within the district were created anew in low places where construction was not efficient.

Study area is in Pļavnieki-2 — largest and the most complete neighbourhood in Pļavnieki district see image 11. Area of the neighbourhood is 57 hectares within main roads excluding small wedge of forest between arterial road on the Eastern corner, population 11119 residents (2010). In Pļavnieki district, main architectonic idea was to replicate traditional street, arranging buildings linearly from western to eastern edge. There are three such “streets” in the study neighbourhood (image 11 and 27). To limit sight lines, axis were turned sixty degrees thanks to achievements in construction technology which allowed joints of buildings in various angles. These streets accommodated some commercial functions, and are oriented towards public transportation stops to the West and school and forest to the East. Each street contained access road for one side of apartment blocks, and elevated pedestrian path lined with trees. Pre-school facilities were located in-between these strips, in open space of tremendous scale, together with playgrounds and ball-game courts. School with stadium located on the Eastern side of the neighbourhood. In Pļavnieki, nine-story buildings were predominately used: staircase-access in the “strips” and corridor access housing for elderly in between. There are few groups of sixteen storey towers on the edges of the neighbourhood. This neighbourhood is characteristic for last phase of large scale district construction — with characteristic large blocks or strips and vast open spaces in between.

Social context

Demographically two districts have different structure. In Imanta (image 23) age groups are diverse with inclination towards elderly groups. Initially workers of electronics factory settled in and Russian army officers. The later group moved out in the beginning of 1990ies. Except large elderly group (25%) the population is highly mobile — as residents expressed in the interviews, people move in and out quite frequently, especially in last five years. The population trend of last decade (1997–2010) was negative, decrease of population was -6.75 percent. Population in terms of nationality is mixed.

In the next paragraphs, specific issues known for these large-scale districts are described in detail.
Problems faced in two cases

Today both large-scale neighbourhoods face several issues: technical condition of the buildings, decay of the residential environment, dual ownership, spatial problems such as lack of parking. In this thesis, issues related to residential environment are emphasized over the others, while remaining two are kept as a part of the context. In this chapter, preliminary problem field known from the media, personal experience and observations are summarised.

Collective space, originally intended to support community nowadays “has no caring owner”. Neglected image is accelerated by poorly maintained green areas, roads and paths, graffiti and vandalised amenities. Open spaces of neighbourhoods are dominated by cars. Neighbourhoods were built when car ownership was rare, which changed dramatically during last two decades. For the first time, every free spot was used for parking, which however changed lately when fines were raised and collected for parking cars on green areas — lawns and on pedestrian paths. Seen from another perspective, the layouts of inner neighbourhood spaces could be redesigned to fit more parking, but there were ambiguity in ownership and communication with and among users.

The most obvious problem is actual and perceived level of safety in neighbourhoods. Physical conditions of neighbourhoods set stage for crime. Residents expressed in surveys that they feel especially unsafe in their neighbourhoods — realm between main road and entrance to their apartment (Baltic Institute of Social Sciences, 2009). Car burglary is the most common type of property damage. Amenities such as playgrounds, benches, lamps in collective space suffer from vandalism. It is hard to find a bench or light pole even at the stadiums, which are regularly used by large amount of residents in the neighbourhoods. Recently in Pļavnieki due to complaints by the residents municipality started patrolling streets on a regular basis also during the day, in Imanta patrols are limited to the
Residential buildings are detached from the ground: ground floor apartments are raised half level above the ground, thus relationship with space right beyond the apartment is not established. This limits responsibility of the residents to their apartment. Due to planning ideas of the time and technical constraints of mass-housing production, today the ability of individual or group to intervene into the physical condition and improve social security of the neighbourhood is extremely limited.

Collective space is undergoing transformation; new housing and commercial programmes are being built. In both neighbourhoods it happens on the edge of the neighbourhood, where new commercial functions are added. Elsewhere, it takes place inside the neighbourhood, following the building footprints set in the initial plan: in Imanta kindergarten is transformed to luxury residential building and in Pļavnieki seven new residential buildings were built by private developers and municipality. And occasionally it is conflicting with existing residential uses — if new development is taking place in collective space, which residents perceive as such. In Imanta, for example, residents banned several projects initiated by private developers which were planned inside blocks. This building initiative provoked unseen public protests against developments inside large-scale neighbourhoods, which resulted in building ban issued by the City Council in 2007. In Pļavnieki however some new residential buildings were erected, which show how inappropriate these new developments can be if context of the original plan is not taken into the account (image 38).
Microrayons in Riga

Bolderāja
built 1965-1975
population 39,000
116 res/ha
Vecmīlgrāvis
built 1968-1980
population 39,000
176 res/ha

Sarkandaugava
built 1960-1975
population 22,000
174 res/ha
Imanta built 1965-1975
population 60,000
157 res/ha

Zolitūde built 1985-1990
population 25,000
109 res/ha

Iļģuciems built 1965-1970
population 37,000
157 res/ha

Āgenskalns built 1958-1962
population 2,500
157 res/ha

Imanta is a case in “4 Understanding of the user” on page 58 “5 Understanding what was built” on page 64

Original layout

I live here

this is the first microrayon built
Imanta is a case in “4 Understanding of the user” on page 58. “5 Understanding what was built” on page 64. It is also the case for the design study.

Pļavnieki built 1965-1975 population 65,000 201 res/ha

Sarkandaugava built 1960-1975 population 22,000 174 res/ha

Purvciems built 1965-1975 population 65,000 201 res/ha

Pļavnieki built 1965-1990 population 60,000 200 res/ha this is the most densely populated area in Riga.
Kangarags
built 1961-1971
population 60,000
213 res/ha
Urban renewal and regeneration of large scale estates

Urban renewal of large post-war estates in Latvia is about to start. Physical renewal is the first act in this process. Spatial problems are those that are emphasized most often regarding microrayons. Less frequently however structural and functional aspects are given the proper attention. There are three types of diversity, which are relevant for this project — morphological, structural and functional (de Jong, 2012).

The spatial problems seen in this way are causal factors, which has an impact on the quality of the residential environment. Physical regeneration is urgency; the task for this project is to reach the broader aims to facilitate user control using acceptable causal problem definitions. These broader aims however cannot be reached without addressing structural and functional aspects. For future diversity of microrayons, issues of access, connectivity and possibility for various functions become crucial.

Problems can be defined as not desirable future conditions or possibilities we do not want (de Jong, 2012 p. 258). In Riga, and other Latvian cities, problems occur on the layers of economy, management and culture. The task is to determine the possible futures on different levels of scale. The economy on the level of the state or city-region might be growing, but what about the level of the neighbourhood? Management will endure decentralization towards districts and neighbourhoods, which inevitably will be innovative and competing. The innovative culture of some neighbourhoods and cities will clash with the more traditional state culture.

From the perspective of urban regeneration policy studies, a focus on user control is characteristic for inward approach to regeneration (Hall, 1997). From urban design perspective, developing a vision on neighbourhood level is a task for the urban design. However, in some instances, the context of the problem is larger than the neighbourhood itself, the importance of the larger scale structure (networks) have become important. This is characteristic for the outward looking approach. This outward looking approach is characteristic for the strategies applied in Lyon, France on two estates. Dutch examples display a wide range of approaches operating on district, neighbourhood and building ensemble levels. In Germany, regeneration focused first, on sustaining existing social networks, and on the management of the processes of shrinkage linked to the state-led strategies.

In Latvian context, the aims or intentions have to be formulated for the urban regeneration. It is impossible to start on the strategic level in a case of academic project like this study: it is possible to explore the means for the possible strategy nevertheless.
Definition of urban regeneration

Towns and cities change over time, and this process of change is both inevitable and can be viewed as beneficial. It is inevitable because the operation of the political, economic and social systems constantly generate new demands and present fresh opportunities for economic progress and civic improvement. It is beneficial because, although many may deny it, the very existence of these substantial forces of change creates opportunities to adjust and improve the conditions of urban areas.

Roberts (2000) has identified six major themes in urban renewal from historical overview of the urban policy in the UK: the main topic is relationship between physical condition and social response — like health issue and physical conditions of cities. Second is enhancing economic prosperity and urban development. Contained urban growth and making best use of the existing urban areas has become a major topic. Theme developed in the second half of the 20th century is the change of responsibility of improvement and management of the city. And the latest theme is sustainable urban development.

For the Latvian context, which is more related to socialist and post-socialist development, the themes would look differently. Many themes are similar, as the post-war reconstruction, suburban growth in the period of industrialization. Change of responsibility is only starting to occur. The compact city policy is not the case in Latvia — recent development policy was motivated with facilitating growth at all accounts, which lead to processes of urban explosion and suburbanization.

Five themes of the past and new theme of sustainable development, provide the basis of the definition of urban regeneration: “comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change” (Roberts 2000).

Urban regeneration moves beyond the aims, aspirations and achievements of urban renewal, which is seen by Couch as ‘a process of essentially physical change’ (Couch, 1990, p. 2), urban development (or redevelopment) with its general mission and less well-defined purpose, and urban revitalization (or rehabilitation) which, whilst suggesting the need for action, fails to specify a precise method of approach. In addition, urban regeneration implies that any approach to tackling the problems encountered in towns and cities should be constructed with a longer-term, more strategic, purpose in mind.

Urban regeneration should accept the uniqueness of the each place the policy is applied — the location in the city-region, and seek the ways to economically reintegrate disadvantaged areas.

Urban regeneration is an interventionist activity. It needs an institutional structures which set the common objectives for the regeneration. Integration is the major feature of the urban regeneration. Urban regeneration theory is concerned
with institutional and organizational aspects of the urban change.

Inward and Outward approaches to Regeneration of Peripheral housing estates

In the UK, the issue of peripheral housing estates attract attention of the policy makers often rivalling inner city areas. Peter Hall has contrasted inward and outward approaches to peripheral housing estates (1997). Peripheral housing estate is a variant of hard-to-let housing estate. Peripherality is linked to a range of characteristics: spatial isolation, long travel-to work distances, insularity amongst residents, social stigma amongst non-residents, and marginalization from employment opportunities. Peripheral estates has typical problems, which can be summarized in several typical categories. Physical problems are direct consequence of planning and construction policies of the 1950s and 1960s. In case of Riga, soviet planning and construction approaches can be regarded as causes to the limited extent. Social problems may include concentrations of marginalized people, health problems, a high level of benefit dependency, crime such as drug abuse and vandalism, young population, insular world-view of the population, high level of population turnover, social stigmatization by the outsiders. In Latvia, taking into the account only limited number of social problems are applicable: crime is a big concern, social stigmatization by the outsiders is also a common place. Economic problems associated with peripheral housing estates include the lack of local economic base and high levels of unemployment. In Riga, large scale estates are mono-functional residential environments and local economic base — local employment opportunities are very limited. The problems encountered in peripheral housing estates display self- and mutually reinforcing tendencies. Many problems are blamed on management deficiencies and breakdown. Sustainable regeneration policies cannot afford to ignore the relationship between the peripheral estate and the wider city-region.

The main aim of physical regeneration was to make the estates attractive to people who had other choices. Second aim is to improve residential environment: de-densification, height-lowering, improved heating and insulation, creation of on-street parking, enclosed gardens and defensible space and landscaping. The emphasis on local (user)control has meant that these policies are directed towards meeting the needs of existing residents. Inward approach towards peripheral estates assume that the estates should be developed as »acceptable« residential suburb for the locals. Outward-looking approach would attempt to address the physical isolation of the estate. On micro level, it is the improvement of accessibility of the estate. On the level of the city, it would mean involvement of the estate in a transport planning. Providing regional in contrast of local amenities is a property of the outward approach. The major preference to outward approach would be inclusion of peripheral estates in a wider economic strategies.

Physical renewal

In Latvia, the physical renewal of residential buildings and living environment is an urgent issue. Physical improvement primarily means creation of new physical structures: buildings, roads, and public spaces. Its purpose can be resolution of physical problems themselves, or it can pursue higher aims: improve liveability of the neighbourhood, improve the living environment in a social or economic sense. As it is observed in various physical renewal projects, physical measures are intended to reach broader aims (Wassenberg et al 2007).

Physical strategies to improve the environment are necessary as the years go by. Improvements as a visible sign to all that improvement is underway. Improve-
ments of public spaces, creation of parks and public spaces, creation of cultural and leisure faculties, creation of parking faculties, improvement of water structure, connecting the neighbourhood to the city are the issues of physical renewal. In the most cases, the measures and strategies are combined. In the case of environmental measures, this combination was intended to enrich the outdoor quality of life by improving the situation for playing, staying, passing through, living or just being in the environment.

**Actors in physical renewal**

In general, several major actors involved in physical renewal can be distinguished: national government, local government, owners of land and buildings, private or commercial actors, and residents or end-users of the policies. Horizontal and vertical integration of various actors from national and local government is a big problem. The media is also an important actor, which acts indirectly and influences the image of the areas. Residents are increasingly more important actor in the process of regeneration: they are treated as full participants in the process, and not like the static objects of the policy.

**Area-based approach**

Area-based approach is a common approach to the issues of multiple deprivation. It also establishes a concrete spatial platform for cooperation among many actors involved. However the risks of area-based approach is displacement effect — instead of solving the problem it occurs elsewhere.

**Urban design tasks**

From urban design perspective, an integrated vision is necessary on a district or a neighbourhood level which is supported by spatial, social and economic strategy (Hulsbergen and Westrik, 1998). There is a need for new legends in these plans — new job locations, use of vacant space and neglected green areas (see pattern **WASTELANDS**).

Sustainability in urban design for large-scale neighbourhoods would mean adding new layer to the existing built fabric to increase the efficiency of use of space and reduce unnecessary mobility. It also applies to green areas: these should be integrated with other uses such as living. This suggests that one of the tasks for design is to look for new uses for vacant and underused open spaces in large-scale estates in relation to its position in networks of infrastructure.

To understand the range of approaches to regeneration of large-scale estates, two examples are provided which represent various responses to the problems of change. The physical strategies and interventions are visible in both examples, however the approaches range from extremely outward looking (LaDuchere in Lyon) to the mixture of inward and outward looking approaches (Marzahn-Hellensdorf in Berlin).
La Duchere

One of the most visible example of the outward-looking approach is regeneration of LaDuchere in Lyon, France. The estate was built in 1960 in response to the quite housing shortage. It was built as mono-functional housing estate with eighty percent of social housing. Housing estate experienced severe physical and social problems. Large part of the apartments were vacant in 1990s. High level of unemployment was characteristic for the area. The design of the estate was regarded of inadequate spatial quality regarding the layout of public and semi-public areas. Faced with multiple problems, ambitious regeneration project had been initiated in 2001.

Project Lyon LaDuchère is organized around 9 priority issues: improve the quality of daily life, encourage a diversity of tenure, diversify urban functions, adapt the provision of services to the user needs, promote educational success, develop economic activity and access to employment, revitalize the neighbourhood by culture and art, improve safety, build strong partnership among the stakeholders.

Urban design

Built on the hilltop, the original master-plan facilitated spatial isolation of the area from the city centre and valley to the West. Urban design developed by Alain Marguerit envisioned new connection within the region and structure of the public space. The proposal consisted of three parts. First is the East-West boulevard intended to connect Western Lyon and Saone valley. Second is the centrality conditioned by new connection: The L'esplanade du Plateau concentrates public is the main centrality of the area. Third is the natural reserve which envelopes the area is a third element in the proposal and it provides pedestrian link with the city centre.

To create new East-West connection one of the blocks dating back to the original masterplan had been demolished in order to improve connectivity with the adjacent areas — with the centre to the West and other municipalities to the East. Along the new axis of the boulevard new centrality is established, also integrating the original centrality along North-South axis. Some buildings from the initial masterplan were retained as a architectural monuments of their time.

Original centrality of LaDuchere built according to modernist principles — as a group of free standing buildings unrelated to the surroundings — is restructured and integrated to the regional circulation network. In new masterplan, it was identified as potential centrality for the neighbourhood and the larger region. At the intersection of two axes — new boulevard and existing streets — new facilities and businesses are integrated on the ground floors of new urban blocks or directly accessible from the streets.

The masterplan establishes new block structure. It ensures flexibility and possible mixture of uses.

Strategy

One of the major objectives of the projected was to diversify tenure types in the area. The strategy is a part of region-wide approach to redistribute social housing concentrations and diversify tenure in the region. In LaDuchere, 1600 apartments will be demolished, and new 1600 apartments built. This intervention increased the share of owner-occupied tenure from 20 to 40 percent. Four target groups are preferred for housing provision: homeowners, first-time buyers (initial
purchase), young buyers (under 35 years) and Duchérois (tenants or owners). The remaining social housing stock is profoundly refurbished. 13 housing cooperatives received renovation grants from energy efficiency funds. Another objective of the project is economic regeneration. Free economic zone is developed on the Western side of the hill. It is also a new employment provider for the area — many employees are residents of La Duchere. The project is managed by the partnership consisting of the regional government, Greater Lyon and the city council of Lyon, as well as housing construction companies and banks. Local residents are consulted extensively. More than thousand partners are mobilized around the urban regeneration project including existing residents.

In the French approach, illustrated by the example of regeneration of La Duchere, fighting social exclusion and improvement of connectivity between neighbourhoods and rest of agglomeration are two main driving forces. This approach gives a good case of balancing area-based approach in the context of wider city-region renaissance. However, policy and institutional innovation is lacking bottom-up planning and participation of the residents.

Marzahn-Hellensdorf

Quite different process took place in former Eastern-Berlin Housing estate Marzahn. It is a combination of inward and outward looking approaches.

The history of urban regeneration project begins shortly after with re-unification of Germany. Marzahn, the ambitious modern urban project to solve the “housing question” in the former GDR, was stigmatized after the fall of the reunification.

Marzahn is situated on the North-eastern border of Berlin. It has an area of 31 km². The settlement was built between the years of 1976 and 1989. 58,500 apartments were built. Based on the modernist urban concept the principle of separating functions was applied: the commercial areas in west, the residential area in the middle and the landscape for recreation in the east. The apartment buildings were generally 10 –11 story buildings and 6-story buildings and high-rises with 18 or more stories. Emphasis was placed on providing a social infrastructure, especially for children. There were 75 day-care centres and 59 schools.

In Germany, after two decades of renewal large scale estates are in satisfactory technical and environmental condition. However, some estates require permanent subsidies. The major issue is out migration from the estates located in the former Eastern Germany. In 1992 there were 164,907 inhabitants, but in 1998 only 142,000, decrease of 22,907 persons or 14% occurred, which is much higher than Berlin average, which is 3% (Cremer, 1999).

The objective was revitalization of the large scale settlement. This meant that both improvement of existing and new development were necessary. There were no new concepts or strategies adopted. Much attention had been paid to governance of the regeneration process.

The method to be employed was integrated development planning. It was not intended to design a masterplan for a different Marzahn, but a process initiated in which old errors could be removed one after the other and new developments introduced. The goal was to ensure that building, urban planning, cultural, social, economic and political developments are supporting each other.

The process changed over time. Right after 1989 insight view was positive, inhabitants liked to live there but outside view negative, western experts criticized the estates which was supported by the media. Later on view differentiated depending on areas: some stabilized by successful modernization and individual privatization; some areas declined despite of modernization. In 1990s, estate was heavily subsidized by the government: major improvement of residential environment and creation of new employment locations and trade were implemented. Also, the technical improvement of energy efficiency of buildings took place in this period. On the district level, urban design was aimed to the creation of
distinct identities for neighbourhoods and several teams of architects were invited to design new identity. Since 2000s, negative social trends started to surface. Emigration from East to West Germany increased its pace, lower strata of population started to accumulate in the area, as a result of outward migration percentage of elderly increased. This resulted in big apartment vacancy, which estimated up to seventy percent. As a response to this trend, the second round of renewal took place. Dubbed as “Urban Regeneration East”, its goal was to fund demolition and partial demolition projects of buildings with high vacancy rates. This program was rather costly, in seven years 2.5 billion euros had been spent. In Marzahn Hellensdorf, 1670 flats were demolished and 406 new were built or transformed. The results however are alternating. The demolition programme was supported later on by extensive improvement of residential environment: creation of new open and green areas, and transformation of high-rise blocks to low-rise housing with suburban character. In Ahrensfelder terrasen project, for example, twelve storey slab was transformed to three to six storey building with 38 different flat types. In the meantime, the demand from housing market shifted towards more differentiated but housing estates have very homogeneous offer of dwelling types. In response to this, some innovative housing projects were initiated: the assisted living, low cost small apartments, luxury condominiums and single-family homes. Currently the population in Marzahn-Hellensdorf is slowly growing at the slow pace of 1.8 percent (Knorr-Siedow, Droste & Alsen, 2005).

The another aspect of physical renewal was reclamation of areas after the demolition of kindergartens and school facilities. In the original plan, these facilities were abundant and due to population shrinkage are no longer needed.

Altogether, in recent decades there were implemented around 150 physical regeneration projects worth from tens thousand to several tens thousands of euros. The commissioner and funding are from Berlin government and district administration.

Dutch examples

In the Netherlands in recent decades many regeneration activities targeting large housing estates took place; in many of them urban design played important role in steering physical transformation on the neighbourhood and building ensemble level.

One of the main intentions of regeneration projects and visions is new spatial definition of primary and secondary territories. Tool developed by Palmbout Urban Landscapes can be appropriated (Palmboom, F., 2010). It has been developed in order to “direct relationship between the ground plan and the building in long time-span of development and by multiple designers. Framework, printed circuit, envelope and idiom are keywords for these tools. Framework is the most stable and is defined mostly by infrastructure. Printed circuit is a shape of public spaces; envelope is a cloud of possibilities for a building; idiom is a prevailing tone of architecture. According to different design tasks, tool can be transformed. In a project for Staalmanpleinbuurt, part of Western Garden Cities, in Amsterdam, Framework is an urban context of extension plan, printed circuit defined public space of the neighbourhoods territory which is supported by envelopes of new and existing buildings, idiom as a restfulness, rhythm and regularity of modernist architecture. Thus, in Poptanhof in Delft, solutions for problems of post-war neighbourhood were translated to the new design of printed circuit and envelope. This vision «prepares ground» for restructuring process with duration of 15 years. Spatial quality is spacious due to the diagonal sightliness of open...
courts surrounded by residential high-rises. Infrastructure lines bordering site on both edges have character of a parkway, and there are few residential buildings with addresses on this streets, thus emphasizing inward orientation of the neighbourhood. The main idea of new territorial organisation is to recreate the original spatial qualities of the neighbourhood in a contemporary way, respecting privacy performance achieved by raising the level of secondary spaces — courtyards while maintaining visual relationship to the common space in the middle of the neighbourhoods and with other courtyards. Better territoriality is thus introduced satisfying the need for new parking.

Note that majority of the plans however are dealing with the early postwar neighbourhoods. Seldom there are plans for late postwar neighbourhoods. One striking example is Bijlmeer in Amsterdam. It is confusion what to do with such an over-scaled structure. One of the rare interventions took place in Florijn, a neighbourhood in Bijlmer large housing estate. After twenty five years of existence, the monotonous area is turning to more traditional urban environment structured by the streets faced by the building entrances. In Florijn, the approach was to integrate high rise with the low-rise additions. Here however demolition took place as well. Architectural project on the urban scale by van Schagen architects envisioned new public space definition, and mix-use programme for the whole neighbourhood. The scale thus of the original complex is broken. It is done by first, demolition, and second, addition of the row houses and commercial programme on the ground floors. According to the architects, this new complexity will prepare the neighbourhood for the future challenges.
### France

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960s</td>
<td>Inception as a response to acute housing crisis.</td>
</tr>
<tr>
<td>1970s</td>
<td>First decade: no problems, everything works.</td>
</tr>
<tr>
<td>1980s</td>
<td>Early problems: vacancy, crime, accumulation of the lower strata.</td>
</tr>
<tr>
<td>1990s</td>
<td>Early renewal: regeneration.</td>
</tr>
</tbody>
</table>

**1960s: **
- Estate built as a response to acute housing crisis.
- 5,300 families
- Location chosen in a small village, self-contained scheme.

**1970s: **
- Shift from physical forms of renewal-urban to socially addressing social, economic, and physical issues in more deprived areas.

**1980s: **
- Role in subsituation areas: initial focus on local needs.
- Move towards a wider regional focus: solving solidarity and linking areas between the poorer-communes and others in the city region.

**1990s: **
- Emphasis on social development districts.

### The Netherlands

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1966</td>
<td>Masterplan for 50,000 apartments.</td>
</tr>
<tr>
<td>1970s</td>
<td>Population grows slowly.</td>
</tr>
<tr>
<td>1980s</td>
<td>Integration of illegal immigrants major problems.</td>
</tr>
<tr>
<td>1990s</td>
<td>Renewal plan.</td>
</tr>
</tbody>
</table>

**1966: **
- Masterplan for 50,000 apartments.

**1970s: **
- Partly run down with apart-ments which were too small and squeezed into an urban layout with an abundance of green open spaces that loosened feelings of insecurity and anxiety rather than the pleasure of outdoor recreation, they aged along with their original inhabitants, or at least those who remained. From the late 1980s, their population started to change.

**1980s: **
- Netherlands. BiJlmermeer regeneration proposal.

### Germany

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950s</td>
<td>Early use: 1970s, construction starts.</td>
</tr>
<tr>
<td>1960s</td>
<td>First decade: no problems, everything works.</td>
</tr>
<tr>
<td>1970s</td>
<td>Early problems: vacancy, crime, accumulation of the lower strata.</td>
</tr>
<tr>
<td>1980s</td>
<td>Early renewal: regeneration.</td>
</tr>
</tbody>
</table>

**1950s: **
- West: removing urgent needs in the housing sector.
- Construction on cleared sites in inner city areas.

**1960s: **
- Construction of new housing and neglect of neighbourhood with old buildings.

**1970s: **
- West: car-based city representing the message of progress, growth and influence available to every member of society. Criticism: the bleakness of our cities (Wright, 1965). |
- East: 1971 Brasselsbouwvereniging: federal and land subsidies encouraging physical renewal, provision of contrasts to the building industry.

**1980s: **
- Integration of demographic development, shifting the focus towards home ownership assistance in housing policy, orientation towards inner-city development in urban policy.

### Latvia

### 1995–1999: Urban Renewal

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Technical modernization of buildings: no differentiation, same standard and types of modernization.</td>
</tr>
<tr>
<td>1996</td>
<td>Designing greenery and open space. Urban Design: forming images and identity through defining neighborhoods with different design topics.</td>
</tr>
<tr>
<td>1997</td>
<td>Privatization of prefabs housing: (land and buildings).</td>
</tr>
<tr>
<td>1998</td>
<td>Lost 20 percent of the population.</td>
</tr>
<tr>
<td>1999</td>
<td>Developed new urban areas and economic challenges.</td>
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### Present

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2000</td>
<td>Awareness of overall economic decline.</td>
</tr>
<tr>
<td>2001</td>
<td>Growing number of “poor” people in prefabs housing estates.</td>
</tr>
<tr>
<td>2002</td>
<td>Awareness of overall demographic decline.</td>
</tr>
<tr>
<td>2003</td>
<td>Emigration from East Germany to South Germany.</td>
</tr>
<tr>
<td>2004</td>
<td>Growing number of old people in prefabs housing estates.</td>
</tr>
<tr>
<td>2005</td>
<td>Big rate of apartment vacancy in Eastern Germany: −15%.</td>
</tr>
</tbody>
</table>

### Future

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<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2020</td>
<td>Awareness of overall economic decline.</td>
</tr>
<tr>
<td>2021</td>
<td>Growing number of “poor” people in prefabs housing estates.</td>
</tr>
<tr>
<td>2022</td>
<td>Growing number of old people in prefabs housing estates.</td>
</tr>
<tr>
<td>2023</td>
<td>Big rate of apartment vacancy in Eastern Germany: −15%.</td>
</tr>
</tbody>
</table>

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van den Berghe, B. (1999) “The art of urban design” starts as a preventive instrument to combat social segregation.


Knorr-Siedow T, Droste C and Alsen S (2005) Large Housing Estates in Berlin, Germany. Opinions of residents on recent urban renewal processes: -3%.)


Strategic aims put into the perspective

Conclusions

The range of regeneration approaches can vary from inward oriented to outward oriented, i.e., focusing on improvement of existing conditions of residential environment to very outward — integrating the area to the city region by new connections, demolition of large portions of housing stock and introducing new balance of tenure types. Both projects however are characteristic for large demolition plans, but the reason for this is different.

Urban design approaches also vary. In case of Marzahn, there were no overall urban design vision formulated. In LaDuchere, urban design played pivotal role in the regeneration project.

In Riga, it is important to take into the account several aspects. First of all, the demolition is not an option and it is hardly imaginable that large estate will be restructured this way. The task is to find ways how to reuse and improve existing urban structures.

There are no urban policy or regeneration policy. The National government has transferred its responsibilities to the municipalities and hence also there is no financial support to possible regeneration policies.

What would be the role of the urban designer working with urban regeneration issue in case of large postwar estates or microrayons? First of all, the future context will determine urban regeneration agenda. It is ascertained in the next chapter — “Future context — study proposal” on page 42.

Second, the role of designer is to search for the possibilities to diversify the residential environment of microrayons. It can be done in at least three ways, which is also refelced in the previously presented examples. Structural diversification is often overlooked possibility. It can be on the scale above the area or neighbour- hood, as can be noted in the case of LaDuchere, or on level of the building, such as in the Dutch examples.

This structural diversification however should condition functional diversity, and here design plays pivotal role. The role of structure is expected to rise. Therefore, it is important to address actors on various layers and levels of scale.
Criteria for the ongoing study
What are the criteria for the research of diversification of the micro-rayons? First of all, the term research is used denoting academic nature of the project. In fact, it is appropriate to use the term “study” for the part of the project. The difference between “research” and “study” is in the object of the investigation. Research is focused on the existing, empirical reality and hence generalises the phenomena for better understanding of the other settings and contexts. “Study” investigates the future, non-existing, possible objects and sometimes contexts. These two components vary in their level of determination and permanence, hence the type of the investigation varies in steps or gradients from very empirical to very visionary.

For the empirical research, which is the most elaborated type of the study, strict quality criteria exist. Three quality criteria for the assessment were formulated by de Jong and van der Voordt: objectivity, verifiability and validity (2002).

Objectivity means that someone else should be able to get the same results if using the same method. This requires a careful description of measurement methods, use of additional independent measures intermediary verification of findings by third parties in order to increase the probability of objectivity, or in other words, inter-subjectivity.

Verifiability means that it should be clear how investigators reached the conclusions. This should offer other investigators to repeat the study in different times and different places. It is crucial to separate in the report of the study as much as possible the factual study results from the interpretation s and conclusions to leave the possibility open to reach different conclusions based on the same material.

Validity is the appropriateness of measurements and data analysis to the questions under investigation. There should be a theory behind, which is critical in a sense to be able to be proved by the others. There are also other sub-criteria for validity: efficiency and effectiveness. Efficiency is the economy of means for the investigation, e.g. using less measurements implies using (critical) presuppositions. Effectiveness means that the methods should be the answers to the questions of the study. This requires: thorough analysis of the problem, an inventory of the of sources of information available, a clear and unequivocally formulated statement of the problem and the purpose of the study, and critical reflection on the most appropriate study methods.

Criterial elaborated above are relevant for the strictly empirical study or research, such as ex post evaluation of the building sand the environments similar to those employed in this thesis (see “4 Understanding of the user” on page 58).

This project is more a study (to be precise, it is a rather conventional design study) than a research based on empirical data. Hence to what extent the criteria mentioned above has limitations for this type of study. Below are some remarks on this limitations and peculiarities.

Objectivity or intersubjectivity in case of possibility search means that results of study — design could be investigated by the different people in the same way. Similar as in the artwork, the main idea should be legible and thus interpreted irrevocably, leaving certain room for discovery of the hidden possibilities in critical way.

Reliability here, means that the design demonstrates under different circumstances determined ex ante behaviours which are determined ex ante. These are the limitations of the boundless combinatory possibilities of design.

Verifiability points to the descriptions of the design in terms of the grounds on which the decisions have been taken, including validity and tenability. Tenability here denotes critical ability to discuss design by the stakeholders and actors — clients, users, administration, those who implement, check, finance and use and their subcontractors, future users and opposition. Additionally, “verifiable” includes that the design can be specified according to concrete situations and can be generalised to possible applications in different situations or contexts. This includes Newman’s proposals for the scientific validity of architectural design publications, emphasizing working hypotheses over egocentric aesthetic judgements.
Future context — study proposal

The object of study has the resolution of a drawing for 2030 on District(1km) scale with smallest details on Building(10m) level. The actual object will be located in Pļavnieki neighbourhood, Riga. See “Description of the cases” on page 18.

Field of problems
As far as this future is not desirable it will generate a field of problems (Jong and Priemus(2002).

As relevant probable but undesired developments (emerging problems) I consider: State legislation is not sensitive to the local urban impacts of the policy. There is a bad state and municipal coordination of the policy. Centralized management, distance to the authority. State Culture is national, but urban culture is diverse. State economy is growing, same is for regional and urban, but local economy is in decline.

Declining local economy and decreasing population, traditionalization of neighbourhood culture, centralized and inefficient management, problematic co-existence and lack of tolerance among national groups are the main problems or future challenges for large-scale neighbourhood before large scale decline.

Field of aims: actors
They also indicate which actors (problem owners) will be primarily favoured by realising the results of my study:

Actors in management on the level of National goverment is expected to solve the dual ownership problem (“Divided ownership problem” on page 106), which is less likely so. Hence the main problem in the managements is from the National Goverment.

Municipal goverment is expected to be initiating and looking for innovative solutions and interventions.

There are crucial actors and stakeholders below the Neighbourhood (300m) level to be involved in the process. Since the user control is evolving performance of the residential environemnt, great deal of the effort is expected from the residents and the owners of the problems and the solutions. Especially relevant are the actors on the building ensemble level.

The clash of the national culture which is expected to be traditional will clash with the more innovative neighbourhood culture. Some form of the spatial segregation might be expected.

Actors in economy on the level of Town(3km) and District(1km) are growing; like large employers: retail, education, childcare, healthcare, local services like construction, hairdressers, catering, maintenance. Declining on the level of District(1km) and Neighbourhood(300m) like small entrepreneurs like local shops, services.

Actors in technique on the level of Neighbourhood(300m) internally combining subfunctions like entrepreneurs and service providers settle neighbourhood centre. Internally combining subfunctions Ensemble(100m) like house managers taking initiative to overtake public space management internally specializing subfunctions Buildingcomplex(30m) like residents.
Actors in mass on the level of Town(3km) dispersing in space like in fill development with car orientation. Dispersing in space Neighbourhood(300m) like in fill housing development in the courtyards, concentrating in space on the level of Ensemble(100m) — land owners and developers, like densification of some parts of the tissue.

**Future context factors on location**

If the context will change like it is assumed in “Field of Aims” on page 42 it will influence the location as follows

If management will be initiating not on National(300km) on Town(3km), on Neighbourhood(300m) level, it will influence the location by new programme and demand for the regeneration.

If culture will be innovative (>) not on National(300km) on Town(3km), on Neighbourhood(300m) level, it will influence the location by spatial segregation of the residents. It is desirable however to mix various households and lifestyles on the Neighbourhood level (300m).

If economy will be growing (+) on Subcontinental(1000km), on National(300km), on Town(3km), on District(1km), not on Neighbourhood(300m) level, it will influence the location by ....

If technique will be internally specializing subfunctions (/) not on Town(3km) on District(1km) not on Neighbourhood(300m) not on Ensemble(100m), on Buildingcomplex(30m), on Building(10m) level, it will influence the location by ....

If mass will be concentrating in space (C) on National(300km) not on Town(3km), on District(1km), not on Neighbourhood(300m), on Ensemble(100m) level, it will influence the location by ....

**Motivation or Programme of requirements**

With regard to my assumptions about the future context and referring to the intended impacts as a result of this study:

National(300km) management usually executing or controlling initiatives should delegate decision making to the Neighbourhood level.

Town(3km) management usually initiating should involve residents.

Town(3km) culture usually innovative (>) should respect traditional views and basic needs.

Neighbourhood(300m) culture usually innovative (>) should ...

District(1km) economy usually growing (+) should ...

Neighbourhood(300m) economy usually declining should grow in new centres.

Town(3km) mass usually dispersing in space (D) should accumulate within municipal boundaries.

Neighbourhood(300m) mass usually concentrating in space (D) should be balanced in terms of built density.

Ensemble(100m) mass usually concentrating in space (C) should ...

**Field of means**

See “Two examples” on page 32.
The built environment can facilitate user control. It can be conceptualized as a function or outward operation of the residential environment, and it is conditioned by the structure, which is conditioned by the form. However, it is also a quality, which we can evaluate to understand built environment better. User control thus can be evaluated as a content of the environment, which is conditioning the form. This ambiguity however forces to address theory of the user control perpetually from different perspectives.

The relationship between form, structure and function is represented as a network. Tzonis developed Form-Operation-Performance to capture the reasoning architects are using while designing artefacts like buildings. He suggested causal relationships between form or morphology, operation and performance [maybe include the ‘translation of FSF and FMO?’]. The reasoning thus can follow diagnostic and predictive line of reasoning. Three performances were defined in a literature review: Control quality in relation to values: congruence, responsibility and certainty (Lynch, K., 1981), Territory and territorial behaviour (Lawson, 2001), Defensible space (Newman, 1978).

In order to be used in a design study, user control performances were translated into environmental variables. Thus each variable has two extreme values: for control quality it is wasteland and oppression, for territory it is simple and complex territory, for defensible space it is stigmatizing and enhancing value.
The aim of this chapter is first, to draw the relation between built environment and user control, and second, to define useful variables of this relation.

For this paper, the problem field of large-scale neighbourhoods in Riga inspired to pay attention to the topic under investigation and specific literature selection. Choice had been made in favour of more general theoretical literature, because current research of problems is elaborating only social and economic aspects of large-scale neighbourhoods disregarding relationship of user control and the built environment.

Design should provide users certain degree of control to the users of built environment — using the vocabulary of authors of “Responsive environments” a design manual, ability to control permeability, be supported by a characteristics of a place for new activities, and modify the environment according to the personal needs. User control of living environments is a frame for the complex issues of large-scale neighbourhoods in Riga.

In the current situation in Riga, these neighbourhoods are not in decline, however some problems are beginning to occur. Major spatial failure is the lack of control means available for the users. This may be cause of neighbourhood decline, because it may affect social safety and finally well-being thus making these neighbourhoods vulnerable in the context of social change. One of the major questions in urban design in large-scale neighbourhoods is whether the physical measures can reach expected positive impact on living environment. In order to ensure that, is necessary to understand spatial components of the problem and their relation to the users.

Research question this literature review tries to answer is “how user control is related to the built environment?”.

Control is complex feature of the built environment. To understand how user control is related to the built environment and how control performance is affecting the existing theoretical knowledge and concepts should be seen in line with how knowledge is informing the design. One possible solution is to use analytical framework form-operation-performance proposed by Alexander Tzonis (1990) to both use the existing knowledge and to diagnose existing situation to find proper solution using collected empirical knowledge. Framework is a restriction which allows to structure the problem in relation to morphology, operation and performance of the built environment. Initially it was intended as a knowledge system able to capture essentials of intuitive and experienced thinking in architectural design. Here, this methodology is used to build an analytical framework of user control problem, to be used later for urban analysis. This paper focuses on the part of analytical framework which help to link spatial and physical features of the environment with the user control by extracting the reasoning the researchers were using.

In next paragraphs, analytical framework is briefly introduced. Next, three topics of user control in the built environment are elaborated and structured according to their form, operation and performance.
Analytical frameworks

Analytical frameworks are used to solve complex design problems consisting of many components. For such complex problem as control of living environment in large-scale neighbourhoods it should be capable to decompose problem to elementary units and find how those are related. One of the first analytical frameworks was invented by Alexander and Chermayeff (1963). Its purpose was to address the issues of privacy and to build its analytical framework, which according to the authors, was neglected in contemporary design. Input was a set of design requirements for privacy. The outcome of the analytical procedure was a set of requirements grouped together, translated to the graph-like diagrams to be used in design. Analytical paradigm initiated by Alexander and Chermayeff was intended to optimize design. Most of urban design knowledge in relation to the user is empirical and qualitative. How it is possible to extract “deep” structure and reasoning patterns applicable in analysis and design of existing living environments like large-scale neighbourhoods?

When designers such as architects use knowledge, they do not use isolated facts. This knowledge is highly organized information about form, operation performance and context. Representation of architectural knowledge developed by Tzonis (1990) elaborate aspects of “how artefacts are made out, how they work, what they do in respect to what has to be done, how they fit into the environment, and how all these aspects relate to each other.” He introduced a method of Artificial Intelligence called frames to represent architectural knowledge. Frames contain slots which capture facts; visually frames can be displayed as graph with nodes and links. Slots capture standard cases like form, operation or performance. Also, slots spreading out of this graphs capture particular facts which link frames.

The restriction of form, operation and performance first was coined analysing texts where architects described their buildings. Form is the most basic concept to describe architecture. Operation is way how function works; thus for example operation of the corridor is circulation. Performance is a quality of operation.

Two kinds of reasoning can be used to link these constraints. First is called design diagnostics, which identify operational and formal causes for performance of the building, whether anticipated or not. Diagnostics answer questions such as “why this apartment complex is unsafe” or “why this office layout makes people come face to face so rarely?” A second type of reasoning processes information the opposite direction. From morphology it predicts operation, and from operation performance. This makes it possible to predict how close the performance of the artefact is to normative one, it answers the questions such as: “Is this sequence of rooms making people wasting time going from task to task?” or “Which of these different locations of the entrance gives to users more information about events in the complex?”

Literature analysis
Until now form-operation-performance was used for analysis and architectural design of buildings. Tzonis illustrates evaluation and diagnostics using example of Le Corbusier’s Unite d’Habitation (U.H.). Evaluation or design explanation starts with form: the building consists of three major parts: columns at the base, body and roof. Operation follows: air can circulate under the building, each unit is interdependent because of structural system of the body, and residents can look around from the roof. In terms of performance, building is remarkable because it is environmentally good, affords flexible lifestyles and enjoyable views from the roof terrace. The links between performance, operation and form are described as follows: "The building is: environmentally good because air can circulate under the building thanks to the “piloti”; U.H. offers: large choice of life styles due to the way bearing and enclosing structures of the building are kept independent of each other, thanks to its rack slab body, and the views of U.H. are enjoyable because people can look from high up thanks to its “piazza” roof." Tzonis then proceeds with description of morphogenesis, which goes other way around.

Here, the framework is going to be used for extracting knowledge system about control of space and to find out the reasoning each author is using. The current task is to analyse control aspects of large-scale neighbourhoods. Next three chapters focus on three views on problem of user control of the built environment.

**Precedents**


Image66. Use of analogies as described by Tzonis. Source: Tzonis A (1990) Huts, ships and bottleracks: design by analogy for architects and/or machines.

Control performance

Kevin Lynch presented his normative theory of the city form in »Theory of Good City Form« (Lynch, K., 1981). It is a book about values: “It deals with the generalizable connections between human values and settlement form, or how to know a good city when you see one.” Settlement form is “the spatial arrangement of persons doing things, the resulting spatial flows of persons, goods, and information, and the physical features which modify space in some way significant to those actions, including enclosures, surfaces, channels, ambience, and objects. Further, the description must include the cyclical and secular changes in those spatial distributions, the control of space, and the perception of it.”

He defines five performance criteria and two meta-criteria to support his normative theory of good city form. These performance criteria are identifiable and distinct characteristics of city form, they are primary spatial and are measurable, and each group is able to take their own position on these performances. With this performances, it is possible to analyse any city form or project, either by measurement, or in »more« or »less« categories. These performances of city form are general enough to be relevant in any culture. These five performances are: vitality, sense, fit, access and control. Two meta-criteria, efficiency and justice, are embedded in five basic criteria and become meaningful when values are clear and costs were weighted.

The fifth criteria is control. According to Lynch, it is “the degree to which the use and access to spaces and activities, and their creation, repair, modification, and management are controlled by those who use, work, or reside in them”. Control primary refers to the human need to regulate space and associated behaviour to save life and resources. It has serious consequences on feelings of anxiety, pride, satisfaction, refers to expression of social status. Commonly we associate control with ownership, however it is not permanent nor total, as Lynch notes: “we do not own the earth”. There are five spatial rights: right of presence, right of use and action, right of appropriation, right of modification, right of disposition. The fact is that these rights are separable, thus making control a variable with wide range of resultant qualities: explicit or codified, implicit, informal, illegitimate effective or ineffective; continuous, temporary, or recurrent. In order to tell something how variations of control affect the quality of space, Lynch suggests three dimensions of control: congruence, responsibility and certainty.

Congruence of use and control is “the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it.” High congruence has many advantages: the space is controlled by the most informed and motivated to improve, which results in sense of satisfaction, security and freedom to act. In some situations, however, there are doubts whether the users by their nature are able to control the place therefore Lynch suggests »competence« or responsibility as a criteria which balances congru-
ence. This means, that place control should be developed step-by-step, where level of congruence is rising together with user competence. Third control dimension is certainty, the degree of which people understand the control system and can predict its scope.

Taken in analytical framework, these three dimensions of control constitute performances of control in the built environment. Further Lynch focuses on physical means and types of activities which help to achieve desired levels of performance. Physical means like symbols, markers and barriers and territories are discussed in the next chapters. Five operational means are described in order to lessen conflicts related to control. First is clarity and consensus about rights in space. Second, involvement by central authority to mediate conflict. Third is tolerance and various ways to achieve co-existence in the same place and time. Fourth is physical separation to clearly marked spaces. And fifth is temporal segregation, which can balance the inevitable waste of space characteristic for the spatial segregation.

In order to access the place control, Lynch suggests two ways: first to identify the settings and communications systems, then to look for control activities and spatial rights, which then gives an idea of control performance dimensions. Second way he suggests is to look to the groups of actors first and then go to their settings and communication channels.

Next chapter looks at control from the other side: if Lynch concentrated on how to balance three dimensions with operational and formal means, idea of territory elaborates the very spatial aspect of control: territorial behaviour or territoriality.
The territory

Physical means of space control, briefly touched upon by Lynch, are elaborated in the literature which stems from environmental psychology. The common ground here is the »human dimension« of space, the one that is congruent to the basic human forces or needs, such as community or privacy. The places and characteristics which relate to certain human forces called behaviour settings. Robert Ardrey suggested that basic spatial needs of stimulation, security and identity not only universal for all humans, they also help to explain spatial behaviour (Ardrey, 1997).

Bryan Lawson in his book »Language of space« describes territory as a means to achieve basic human spatial needs of stimulation, security and identity (2001). These central and crucial ideas are that the territory is essential for the survival of the species not only in terms of physical comfort but also in terms of its social well-being, and it achieves this through the provision, organization and structuring of space. In environmental terms, territory is defined by two features: border with neighbouring territories and their »heartland«. Although spatial definition, territory is not purely spatial, it is also social phenomenon: for example, the most enduring territorial phenomenon is family.

Defence of the territory is a natural phenomena, and is related to the spatial needs of security. The spatial characteristics of defensible spaces are elaborated in detail in the proceeding paragraphs. Lawson illustrates how and when environmental designers are failing to exploit this phenomena of territorial behaviour which in some instances can become a nightmare for the users. In some cases, environmental designers are failing to define the primary user/owner of the territory, which results in conflicts of users. The residents of terraced houses with their blind firewalls facing the streets, for example, due to ambiguous territorial definition of space just on the other side of the wall, may be »terrorized« by the kids or adolescents who are looking for play spaces which are the least surveyed by adults whereas residents of the apartment perceive the area as extension of their home territory — as their front garden and as a part of the entrance space. Other typical failure is spatial provision for communal territory. In some modernist schemes (author describes social housing in Sheffield, England) architects used analogies with the streets while providing access decks in gallery-access apartment blocks. Lawson points out two mistakes which make these »streets in the air« far from the notion of street in a language of space: first, traditional streets lead somewhere, streets in the air are detached from the ground; second, the circulation core located in the middle of the deck together with refuse chute as “a modern equivalent of village pump” — were not able to provide by analogy the social setting for the community life, borrowed from the image of the village life; resulting scheme of circulation worked as a simple high-rise, not as a complex setting of the street.


Yet another issue with territories occur in Urban Renewal projects. As described by Werner (1984), territorial behaviour develops over time. She studied an early post-war neighbourhood Traneberg in Stockholm. Originally it was built in 1930s for low-income families with children. In this scheme, no closed blocks were built, free-standing parallel rows of narrow staircase access houses were used in a layout to ensure maximum sunlight in dwellings. Initial overcrowding situation in the dwellings pushed residents to explore outdoors of the neighbourhood and to extend their territories beyond the apartment walls. Werner discovered through the interviews that due to the initial housing condition residents “delineated and mastered the area, could and would identify themselves with the environment and the people, shared a common local history and tradition, took an interest in the common problems of the area, and were willing to mark this belonging.”

Urban renewal which took place in 1980s pursued goals of upgrading housing standard, better service and social mix. Some changes in the environment had to be made in order to make room for the new construction: trees were cut down, slopes were flattened, playgrounds and benches between houses removed. By many residents, as it was uncovered in the interviews, this was perceived as an intrusion to the established collective territoriality.

Hence it is possible to consider territory of the individual, of the family and a broader group, if one was established in time. Dorst (2005, 2010) had been studying how physical environment facilitate levels of control over social interaction, or in spatial terms, the gradation of the territories in relation to their degree of privacy. He started upon the division proposed by Altman (1975) to primary, secondary and public territories. However, this distinction is made from the individual point of view. In reality, as Dorst had observed in various settings around the world, groups can have their private territories: “it is a fact that an individual can be part of a group which in turn can be part of a bigger group; for example, a person is part of a family and the family is part of a religious denomination or a neighbourhood,(Dorst 2010)” Thus secondary or semi-private/semi-public territories are complex nested systems, and the task for design is to provide recognizability of the group and associated spatial behaviour.

To conclude about territory, it has a form defined by an edge and a «hearth» which is however a part of complex nested system (figure 5). Primary operations which support territory are defence and various forms of rivalry or cooperation. And finally, territory and territorial behaviour are in support of spatial needs of individuals and groups, such as security, identity and stimulation. In the next chapter, various applications and criticisms of Oscar Newman’s hypothesis of Defensible Space as a relevant physical and social means to provide user control of space in order to eliminate crime and malicious behaviour.
Defensible space

One of the most obvious problems of user control of built environment in large-scale neighbourhoods is crime and/or fear of crime. The topic of relation between crime and built environment has been elaborated thoroughly. Starting point for the discussion whether certain setting are more favourable for crime and some not begun with Oscar Newman’s Defensible Space.

Newman gives credits to Edward Hall, Jane Jacobs and Christopher Alexander for inspiration in problem statement. In initial research which lead to the hypothesis named «Defensible Space», data of New York City Housing Authority Police was used: it covered the type and location of the crime act. Authors define Defensible space as “a surrogate term for the range of mechanisms — real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance—that combine to bring an environment under the control of its residents. A defensible space is a living residential environment which can be employed by inhabitants for the enhancement of their lives, while providing security for their families, neighbours, and friends.” Aim of Defensible Space is to make productive use of collective space just beyond the apartment doors.

Four principles had been put forward: territoriality, natural surveillance, image or avoidance of stigma and milieu or positive juxtaposition with the urban context of the residential areas. The first two are the most accepted qualities of Defensible Space. Two latter are also relevant, but it is important to realise that in New York City public housing used for research accommodated mostly lower middle class, and very often areas were associated with poverty and hence crime. Juxtaposition with other urban areas is often overlooked criteria in Defensible Space evaluations.

Territoriality and natural surveillance are two qualities of built environment which had been coined out from empirical studies. For explanation of territoriality, Newman first explains physical features of site design, overall architectural approach to the buildings (organic or compositional), street design, appearance of symbolic and real barriers. He continues with describing significance of number of apartment units per project and ways to incorporate extension of private terri-
Built environment Defensible Space
Is a PerformanceOperationForm
Ask for affordances
Ask for affordances
Shape Positive space L-shaped inner corner
Contain other spaces Sitting area
Stay outdoors Circulation
Social contact Routine
Circulation Image
Stay outdoors Social contact
Territoriality Natural surveillance Image
Milieu

In a language of analytical framework, these are mostly formal or morphological prescriptions. Natural surveillance is related to the territoriality, but the prescriptions are focused on operations, as they can be put in the analytical framework. Basically natural surveillance as a capacity of residents or agents to control visually interior and exterior areas refers primarily to spatial relations of dwellings, streets and circulation areas.

In order to make Defensible Space theory usable in design, the evaluation/diagnostic checklist may help. Voordt and Wegen (1988) developed one which can be applicable in the design brief, while testing design for alternatives, or when evaluating existing environments prior to urban renewal activities. Framework of the checklist constitute essentials of Defensible Space. Although much attention paid to the physical and spatial characteristics, checklist include questions of social environment and maintenance. Checklist is easily applicable in form-operation-performance analytical framework. Its predictive power had been tested in field projects in the Netherlands. Authors concluded that it is impossible to pinpoint exact crime locations because it is a matter of coincidence. Nevertheless it is possible to check the design or area for vulnerability, especially to distinguish those areas which are extremely vulnerable. This checklist is elaborated in the pattern “Explicit Presence” on page 140.

There were also attempts to build interactionist model based on Defensible Space, which would explain relations of fear of crime and the environment (Wurff, 1988). In Newman’s work, there is an implicit remarks about physical environment provoking feelings of unsafety. Nevertheless authors state that in fear of crime social components, like adolescent–adult ratio or income are crucial whereas physical characteristics play the background role. To conclude, it is relevant to use Defensible Space to hypothesise the vulnerability of the environment but the objective characteristics are less influencing the fears and anxiety of the users directly.
Conclusions for inquiry and theory

Three views on the problem of user control of the built environment, the performance dimensions of Lynch, territory and territorial behaviour and defensible space are ways to evaluate existing environments or designs for their existing and potential control qualities. It is possible to conclude the answer to the initial question of “how user control is related to the built environment?”. First of all, who is doing control is crucial, and then it is the quality of the built environment which helps or prevents control. Kevin Lynch stressed the importance of appropriate subdivisions of space to provide desired level of control. This not to be understood as purely spatial division; temporal division and co-existence can also work as a good control mechanisms to avoid stress and conflict. Knowledge of territorial behaviour, suggested by Lawson, can help to make control efficient by assigning territories with appropriate »equipment« of borders, heartland and spatial relations to neighbours in order to make control variations appropriate to the group or individual. Although it is impossible to design territories, especially secondary with clear reference to owner or activity, study of the existing spatial issues can uncover the mechanisms to improve design tools for territorial behaviour. Defensible Space with further elaboration gives a robust framework, which is linked to the theory and empirical data. There is no exact level of user control, environmental quality should be studied in relation to the spatial, social and cultural context of the place. Reasoning based on qualities of control, problem components related to operation and form of the place, can serve as a guide to search for precedents or inventive design solutions.

Environmental variables

The literature review and its interpretation using form-operation performance was finished before P2. However, it was hard to use the resulting frames directly in the design and further specific research of user control in the large housing estates. Therefore, shortly before P4, the performances of the built environment elaborated in this literature review were translated into environmental variables of content.

For control quality, it is possible to distinguish wastelands as places of minimum control and claims and oppression, which is analogous to prisons and supermarkets — where . For territory, it is possible to distinguish simple territories with the clear control, and complex, where many groups are claiming rights of use. And third variable is defensible space — one extreme is stigmatizing, and another is enhancing. However, in the residential environment, it is hard to distinguish the clear extremes of this variables.
residential environment has:

- quality of control
- wasteland . . . oppression

something in the middle is desirable

- territory
- simple . . . complex

either values are appropriate

- defensible space
- stigmatizing . . . enhancing

enhancing is desirable

Image78. The environmental variables derived from the extremes of performance.
User control is an important feature of the existing environment; it characterizes relation of the users, their relation to the environment and among themselves. As a method of inquiry, direct and indirect observation helps to understand this feature in the existing environments (Zeisel, 1984). The objective of inquiry as a set of tools for user-environment research is to collect knowledge about the use of the environments by people to design better settings (Zeisel, 1984).

The data collected in a form of interview transcripts and the notation of the behaviour traces. The most effective way to study Environment-Behaviour problems is to employ several methods in parallel. The method of focused interview was used: a loose interview guide was formulated based on a theory of the user control. Two microrayons with different social fabric were chosen. Users thus were perceived as informants about the performance of user control of the residential environment. Informants were chosen among those who potentially might have had a better understanding of the issue: in other words, those who are present in the residential environment and able to evaluate it. Seven focused interviews in two cases were collected. Interviews afterwards were coded using form-operation-performance frame-semantic network. The second method employed is observation of behavioural traces — paths, parking, wear and tear signs, in line with the focused interviews. These were mapped and later used for the diagnosis.

Thus the performances of the environment, which are formulated as a misfit, problematic performances (functions) of the residential environment, could be used in the design or formulation of regeneration policies in a reversed fashion. Links to operation (structure) and form (morphology) however could be adjusted later. The »misfits« (Alexander, 1971) which residents state, can be used formulating design program and further analysed. Analysis thus becomes a crucial step in each design act.
The aim of this chapter is to understand user control performance for an area within large-scale estate. Performance of user control can be understood using inquiry. Inquiry here is used as described by John Zeisel. Observing physical traces, environmental behavior and focused interviews are three main techniques in the arsenal of this approach. In this project, the goal was to try the techniques as a data collection and analysis tool which supposedly urban design and planning is currently missing. The idea is not to construct a theory of the setting, but rather a better, deeper insight and hence understanding of the problems in the microrayons. On the other hand, the challenge was to understand who the user is and how she may be identified.

Research tools
Observing physical traces is a natural skill but if done systematically can become an effective tool; it is unobtrusive and can be easily space-related. Results can increase designers’ control over effects of their designs and to increase everyone’s ability to make settings better suited for their activities. Main research questions are “How do people use environment as means to an end? And to what ends?”, “How do people change environments to meet their needs?”

Observing environmental behavior is dynamic and variably intrusive. It generates data about people’s activities and the relationships needed to sustain them; about quality of use and about behavioral opportunities and constraints that environments provide. Main research questions are «Who does what with whom? In what relationship, sociocultural context and physical setting?»

Focused interviews follow three main objectives. Definition of the situation by a user helps to interpret data gathered through observational methods. Second help to ascertain the strength of respondent’s feelings and helps to make decisions about priorities in the statements and values of the respondent. Third, intentions of actions help to distinguish conscious intent from unintentional side effects.

In this projects, only two techniques were employed systematically and carried out regularly through two field-trips and in the preparation phase. Observation of the traces and focused interviews are two major data gathering techniques employed. Observation of the behavior took place occasionally due to the nature of the observation: a natural setting on the normal day did not offer a variety of activities taking place.
Observing traces and behavior

Observation of physical traces had already started in Delft. One of the most effective behavioral traces to study are so called »elephant paths« — the trails in the lawns which were not planned and appear in seemingly random locations. These were mapped in ArcMap and thoroughly overlapped with different data sets — properties of the isovist fields, various locations in the microrayon, and Nolli maps of the built form. This observation eventually lead to the reconsideration of the importance of levels — the network of paths is related to the large-scale networks of activities like shopping and has complex links. Second, some emergent properties of built form were discovered and documented in the »understanding what was built« section.

Observing parked cars took place on the field and then respondents were asked about their parking preferences. Three parking rules were distinguished from the observation. Respondents mentioned changing attitude of the drivers comparing to the one decade ago, but it is still a problem which has many manifestations. First, parking was not provided sufficiently in the initial masterplan. Second, it is not safe to leave a car in the microrayon due to many reasons. And third, it turned out, that there are no cues for how to park and none can claim their territory for parking even in front of their residential building.

Observing graffiti helped to trace places of weak control and surveillance. Graffiti mostly are of bad quality and are seldom made for artistic or representational purposes. It is mostly crude vandalism and abuse.

Observing playgrounds for their utility and degree of use helped to pinpoint play areas which are used and which are abandoned, which were designed initially or added later. This observation proved the initial hypothesis that people do not feel well in the open space due to the constant surveillance from the windows but on the other hand are seldom attracted by nearby green areas due to the feelings of insecurity.
On the field, how people park their cars were noted using three simple types. This for example is the type of parallel parking opposite of the entrances.

In some occasions cars are parked on the entrance side of the carriageway, blocking a sidewalk and sometimes entrances.

Much less often there are parallel parking on the opposite side of the entrances.
Interview guide

To proceed with problem definition and to test it, several interviews were held in early November 2012 and January 2013. Focused interviews (Zeisel, 1984) was chosen with the aim to find out respondent definition of the situation. The idea is to set loose interview guide to list topics needed to be covered. Interview is guided using probes — non-directional questions, expressions, body movements etc. to continue conversation and get users’ insight onto the problem of control.

Interview guide covered aspects of control of neighbourhoods formulated in theoretical overview above: how congruent, responsible and certain control levels is from the users’ perspective. In other words, do residents are in control of their environment and how its limits are defined spatially, whether the knowledge and power of those in control is adequate, and can residents rely on control system. Interview started with questioning general response to the environment: “describe your neighbourhood, what do you think of your neighbourhood” and so on. If conversation was not moving further, more specific questions about neighbourhood were raised, like “What is your opinion about police patrols in the Neighbourhood? Do you think it is necessary” Although in these instance interview became no longer unguided, several useful explanations, beliefs and attitudes were gained. If conversion went proceeded, less guiding probes were used. Sometimes questions like “how long are you already leaving in this neighbourhood?” helped to begin conversation.

If respondent expressed appreciation with the neighbourhood, feelings for safety were questioned, experiences in the environment, features of the environment which relate to the appreciation ascertained. In case respondents expressed depreciation, relevance of conditions of the environment were ascertained and in case actors were involved in negative events mentioned. Relations to other residents, social network, range of acquaintances, social ties, degree of anonymity, need for socialization and means to achieve that were expressed as a general response to the environment; probes to find out relation of socialization and physical environment helped to pinpoint important places from users’ perspective. Familiarity with the environment (social, physical, managerial), spatial and behavioral preferences were questioned in relation to the expressed appreciation and described experiences.

Last group of topics related to the history and vision of the future of the neighbourhood. Actual and potential involvement in the shaping of the environment was questioned directly, using directional questions. Sometimes it was easy to

<table>
<thead>
<tr>
<th>Probes (Zeisel, 1984)</th>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>General unstructured question</td>
<td>Describe your general opinion about Pļavnieki.</td>
<td>It’s quiet: no one is disturbing us.</td>
</tr>
<tr>
<td>Probe requesting specification</td>
<td>Hence, you are feeling yourself safe here?</td>
<td>Safe? We are walking during daytime here, thus everything is fine.</td>
</tr>
<tr>
<td>Cued probe.</td>
<td>And how it is in the evenings?</td>
<td>Well, I have bad experience. My sister was injured in the staircase, here, in Pļavnieki, on Jukuma Vīciela street, at the door of her apartment. She died because of the injuries.</td>
</tr>
<tr>
<td>Response moved back to interview topic: safety</td>
<td>Are there any places you prefer in Pļavnieki?</td>
<td>We are going to the school campus site …</td>
</tr>
<tr>
<td>General question requesting reaction to environment</td>
<td>Why there?</td>
<td>Is is close to our home, it is easy to get there and other elderly people also are there. But for us it is important that it is just around the corner.</td>
</tr>
</tbody>
</table>
start with evaluation by the respondent of changes and ongoing processes in the neighbourhood.

**Conclusions**

General conclusions are that residents are coping with their environment. In more eloquent interviews where the topic of control was touched upon, some residents expressed hopelessness to change the situation for better.

Five classes of causes of the issues were distinguished: residents themselves, people not identified as residents, places, conditions of the environment, and institutions and organisations (see table). Nearly everyone claimed that residents does not have responsible and caring attitude to the environment in the neighbourhood and therefore external control is necessary though not desirable. Second, the presence of unknown people causes feelings of insecurity, they are blamed for vandalism and often identified as criminals. Third, specific places were identified as opportune for criminals, whole neighbourhood was identified as dangerous in comparison to other places in the city. Third, conditions of environment in the broad sense were emphasized. Here, the causes related to people, society in general, and local environment can be distinguished. In this category, however, it is hard to make clear separation between places, people, or quality or performance of the environment. And fifth group of causes relate to institutions and organisations which performance affects neighbourhoods.

Following the same line of the inquiry, interview data had been coded for form, operation and performance. Results are shown above. It is possible to conclude, that some problems of defensible space exist. From control quality perspective, control is not congruent and effective: people lack symbolic barriers which results in conflicts and depreciation.

Triangulating data with behavioral traces — «elephant paths», activity spots, use of space for parking etc., it is possible to understand which spatial elements are involved.
5 Understanding what was built

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Initial set of patterns p.66
District as a whole p.68
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Emergent levels: Gates p.76
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Design test 1 p.82
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Theory of the user control, and inquiry to the user control performances «on the field» suggested that certain conditions of the built environment affecting user control. The same cases as in inquiry were studied for the form (morphology) and operation (structure). The issue of microrayons is different from that of the building. One of the distinctions of the built environment is that it is multi-level system. Design elements on the level of the district and above like major roads define divisions to sub areas. On the level of the microrayon, design elements define shape of the collective space. On the level of building ensemble, design elements are residential buildings and access roads. Their configuration and juxtaposition is the most crucial for the user control variables. Thus it is the most crucial level in design for user control.

Drawings inspired by illustrations in Oscar Newman’s Defensible space were made. This technique, which retains the proportions of the plan and adds vertical dimension can be helpful to study control performances. However, to study artefacts like microrayons, multiple drawings are necessary with different legends for physical structure, territories and interfaces.

Alexander stated that actors who create the built environment follow rules of thumb — simple combinations of places and events (Alexander, 1979). Microrayons are no exception — it is possible to distinguish those for the past and present. These rules can be written down as patterns, which link the activities and places. When written in this fashion, it is possible to link activities and places however without knowing exact performances but having a model suggesting the missing links. Knowing missing links enables to use precedents with distinct user control performances and match them with the context of the microrayons using design by analogy — a transfer of performances based on a structural match between the analogy (source, precedents) and the target (designed artefact).
Large scale neighbourhoods are designed entities. It is important to understand the initial design and its implications in line with theoretical and empirical inquiry. The aim of this chapter is to define the structure and form (morphology) of the built environment which is crucial for user control performance in large-scale housing estates.

**Patterns as designed place-events**

Alexander in the "Timeless way of building" calls a pattern an elementary unit of the environmental structure which affects the quality of life. Activities, events, forces, situations, are all patterns of events and they are what is crucial for the character of the built environment. Any combination of events which are affecting our lives matters. The life of the built environment is given by the quality of events happening there. The most often recurring events are the most crucial for our lives and hence to the quality of the environment. Patterns of events are linked to space. First, people know that certain event is happening in some places, it is part of their culture. Second, it means that patterns of events are inseparable of space they occur. Pattern is a space and event combination. Places can be considered as a collection of events.

There is a relationship between space and event. For designers, it is hard to escape causality of space and event. Pattern as a space and event is in minds of the people, and pattern is culture-bound. Seemingly same geometric configuration is not the same pattern in different cultures. Built environment consist of endless sets of elements. However, elements are myths. They are rather labels for relationships. Patterns of space are morphological laws, which establishes a set of relationships in space. These laws consist of interlocking non-material patterns. Patterns of space does not cause the pattern of events. It is culture which the resulting pattern is part of. There is a direct congruence of pattern of events and pattern of space — specific elements of pattern of space are congruent with the pattern of event.

Set of patterns from which specific built environment is made is finite: patterns exist on levels, and there are always levels which are below and above. Hence Alexander suggests a certain hierarchy or assymetrical relationship among levels. The objective of this chapter is to understand with which patterns or place-event large-scale neighbourhoods were made.

**Levels**

How is it possible to distinguish levels of the built environment and establish this special kind of asymmetrical relationship? Habraken (1988) suggests to use levels for physical systems with assembly and dependency hierarchies, and territorial units with territorial hierarchies: they form interdependent hierarchy of structural systems and territories. He suggests five levels which actually are physical systems which are designed and constructed. On the other hand, the territorial units which are also by part designed, are in between two adjoining levels of physical structure. These territorial units are given names such as «room», «dwelling», «neighbourhood» etc. However, he notes that "any given configuration of physical parts can be interpreted territorially in different ways." (Habraken, 1988).
In this research, three levels are considered — that of the aterial roads defining districts, the main streets separating microrayons, and urban fabric to large extent defined by the building ensembles.

Yet another view on relation of the structure and control is types of control hierarchies in micromorphic artifacts. For the global structure control hierarchies defined by Habraken used making distinction between sets of physical structures and territories. Each level is related to certain actors and control agents: the subjects enabled to create units, control them, remove them, and posses spatial rights to act in territory.

Territorial units consists of: edge, hearth and control hierarchy — relations to neighbours and place in the nested system. These are sets of actors, activities and related territories (Lawson, 2001). Definition of edge and hearth of the territory may be formal or by convention and informal, strict or loose, intentional and unintentional (Habraken, 1987). Physical structure consists of routes, barriers, and terminals to establish or prevent exchange of people, information, energy and resources, to isolate and connect (Lynch, K., 1981). Consist of elements designers put in place: physical structure. Addition: set of interfaces — relative hierarchies: connections of infrastructure: road crossings, transitions, gates, doors — descending level of control and contrast on both sides (Salingaros, 2008). These are very similar to those patterns of Alexander related to the urban interfaces like "subculture boundary", "neighbourhood boundary", "connected buildings", "arcades", "building fronts" and others. De Jong (2012) calls structure as a set of separations and connections, thus defining interfaces and physical structures (interpreted here as a separations) as a structure which stabilizes the form.

Initial set of patterns
In order to start with analysis, 33 patterns were found, applicable in both large-scale neighbourhoods. Initial selection was based on pattern language by Alexander. Pattern is place-event: it means, that certain physical configuration is related to some sort of human activity and has relation to the user control of space. Patterns distinguished from the studies of morphology, activities and events taking place and known issues of the neighbourhoods. They are recurring.
space-events inherent to all 13 large-scale districts in Riga. Each pattern has a name, description of problem, and analytical procedures. However universal, some patterns have important differences which is expressed in specific pattern relations.

Primary source for pattern definition were interviews with residents. For example, they mentioned activities like shopping or using public transportation and feelings of insecurity in some places like school campus sites. Thus here it is possible to distinguish network of roads and paths residents use to commute; web of shopping or public transportation stops which form nodes of road and path network for pedestrians and there are territories which are not safe for the people who are commuting through them. Hence patterns for the stage of analysis are products of interview coding. Unlike patterns of Alexander, in initial stage of elaboration pattern language is about complex problem of large-scale neighbourhoods: they are found through empirical research, site analysis, and observation.

Five general types of relations among patterns were found, referring to the Pattern Language of Alexander (1977) and suggestions of Salingaros (2008). Every pattern have at least two relations to the other patterns, some of them relate to others in five different ways. Horizontal: relation between patterns on the same level. It can be interaction where patterns has reciprocal relationships or isolation if patterns co-exists without influencing each other on this level. Vertical top-down: pattern consist of patterns from lower levels. Vertical bottom-up: pattern constitute higher level pattern, together with other patterns on the same or different levels. Oblique top-down: pattern consist of other patterns from lower levels and from different category: for example, 「neighbourhood edge」「 as an interface pattern consist of 「parking lots」「big-box shopping sites」「front-」「 and 「back yards」「 — territorial patterns. Oblique bottom-up: pattern constitute the other pattern from higher level and from different category: e.g. 「Public shelter」「 is a territorial pattern but it is a part of 「gates」「 which is an interface pattern. Other relations are possible: for example, patterns need other patterns to connect to patterns on the same level: e.g. 「school site」「 is related to 「courtyard sites」「 via 「city streets」「.
District as a whole

Districts were designed and built to support the needs of primary group of nuclear family, with two working parents. Therefore each district provided all necessary services to support daily life. On the level of district, shopping facilities and medical centre were provided. In most of the cases, large, natural green space was incorporated in a masterplan for a district. Each district consisted of two or more neighbourhoods, population size and area of which were defined as a catchment area of a school. Pre-school facilities had smaller catchment areas, and each neighbourhood included three to four kindergartens.

On this level, division of the district to sub areas can be noticed. Each sub area and a district as a whole has or was supposed to have a certain centre which is meaningful for its residents. This sub areas are defined by separations — boundaries with various width and permeability. These boundaries are also served by public transportation. The nature of this boundary can help to understand the connectivity of the district within itself and to the larger scale elements.

Physical structure which defines a distinct is a grid of major roads. Everyday fa-
Facies like schools defined the range of the district and its territorial hearth. Web of shopping is also related to the territory of the district.

Districts consist of several microrayons, which are separated by boundaries, where commercial functions are located and where public transportation is reached. Thus physical structure is mainly related to major roads, territories to catchment areas and interfaces to microrayon (neighbourhood) boundaries.

For the residents, this level serves mainly as the geographical area with the name to which they belong to. However, they master the area well in their mind — the boundaries of the neighbourhoods, where public transportation shops are located and connections to the other parts of the city. Normally residents can describe the whole district, this is because they are using the whole area, where the functions are scattered on the larger territory. This is not the case for the newcomers, or in some neighbourhoods it is ethnicity and status dependent. But majority of the respondents were satisfied with the large area of the district because of the satisfactory provision of facilities and services.
Microrayon or neighbourhood unit

Basic unit of the district is a neighbourhood or a microrayon with population of 10,000 and size up to fifty hectares. Neighbourhood was defined by major roads, neighbourhood streets were limited to the service and access roads. Thus inner space of neighbourhood was intended as primarily pedestrian realm, where car access was of secondary role and traditional street as a form of public space was abandoned in favour of spacious green areas. In initial plans, the immediate living environment was supposed to support daily life of primary groups — families with children. Facilities such as playgrounds for children, active recreation and socialization were planned in a courtyards. Not everything intended was implemented, but institutions like schools and kindergartens played pivotal role in organisation of community life. Thus each school was equipped with stadium and pitches for football and basketball, and modest facilities for sport and physical culture are still present in virtually every neighbourhood.

Microrayons often has names of the districts and numbers which indicate the sequence of their construction. In this project, Imanta-V (the last microrayon in Imanta district) and Pļavnieki-II (second microrayon built in Pļavnieki district) are studied.

Microrayons normally have the specific arrangement of structures within it. Using two cases, which are representative for second and third phase districts, two patterns can be derived. First, is the structure of blocks — groups of buildings around a daycare centre. Second is a common — the negative image of space.
outside the blocks and neighbourhood boundary. This common is a territory where many public functions are located — normally large part of the common is school site with running track. There are several physical structures within the neighbourhood. Looped local streets and building blocks are linked by dependency hierarchies. In each neighbourhood, certain form of common or public open space is defined by physical structure.

Each neighbourhood has the same environmental structure and is made of equal patterns, on the level of microrayon these differ and has individual characteristics which are defining qualities of the built environment. Defining blocks and common is highly abstract; these are not parts of the mental equipment of the residents. Questions remain open how the configuration and properties of the blocks and common are related to the problems occurring in the microrayons.
The level below microrayon is a building ensemble — the group of buildings arranged around kindergarten or school site.

In Imanta, residential buildings shape courtyards. In Pļavnieki, building ensembles are shaped by two parallel rows of residential buildings which shape vast spaces divided by fences and few perpendicular buildings. There was a tendency to use large residential buildings in a later stage of microrayon development — in Imanta, there is a variation of two buildings five and nine storeys. In Pļavnieki, practically every building is nine-story slab.

On this level, the elementary design unit of each microrayon can be distinguished in relation to the whole. Regarding the composition chosen by the designers, the resulting scheme vary from the one with well-defined territories which has clear and distinct character as they are in Imanta and ambiguous and monumental as it is the case in Pļavnieki.

On image “Image59.” on page 72 and “Image61.” on page 73, two levels of physical structure are distinguished: building ensemble and address unit. Address unit may consist of two to five residential buildings with separate vertical
access. Address units have front side with entrances and back side. Initially, there were entrances from this side as well. In time, these entrances were closed in every address units. Residents were lacking control of this entrance because it faces pedestrian paths which are not well lit and presence of people there is occasional. Later on, in some of these entrances small shops were opened or the indoor area of the back entrance was added to the adjacent apartment.

The combination of address units define character of territories such as courtyards. Thus each residential building influence control in three different ways: there is a frontside, which is an entrance area of the residential building, there is a backside, which is visually surveys from the interiors and there are firewall side of the buildings. In a drawing, larger territories are mapped in relation the edges shaped by address units with their smaller territories. This is an essential level for user control.

There is also a special kind of building ensemble which defines a school site. As a rule, it is shaped by a street with residential buildings facing school site on one side and residential buildings facing it with backsides on the other.
Emergent levels: Boundaries

Boundaries between levels are not a part of original pattern language. In Pļavnieki, neighbourhood boundary had not been implemented. New additions such as big-box shopping malls with their own pattern languages are seldom have any relation to the structure of the microrayon. In Pļavnieki, however, the neighbourhood boundary is well defined entity in the structure, because it contains vast parking lots which remove pressure of parking from the inside of the neighbourhood.

In Imanta, local looped roads are not the boundaries of the blocks. This makes the perceived structure rather different from the intended one. Residents learn the structure of their environment over the long term, and its mental image is seldom shared. This makes it hard to talk about the environmental values and the vision about the future of their microrayon because of the fuzzy definitions of what is the elements and structure of their environment.

Some patterns emerged unexpectedly, as a sum of the planned elements. Whether these new patterns are relevant, they form part of the current pattern language microrayons and large-scale housing estates are associated with. To go deeper on the topic of the emergent boundaries between and above levels, zoom out view is necessary to see the position of the each neighbourhood in he city-region and its networks.
Emergent levels: Gates

Another property of the microrayons which was doubtfully intended is size of the blocks and count of constituting units. Now it is becoming relevant when it comes to energy efficiency retrofitting — the earliest areas consist of smaller units and later microrayons were built from gigantic ones. The issue here is that in smaller units the residents are able to negotiate among themselves about measures and to take collective action thus a middle-size apartment block of 36 flats can be regarded as a certain kind of »street neighbourhood«. But in case of the building with 216 apartments it is less likely that residents would get along in the negotiations or even a simple inquiry might become a challenge.

Yet another property of the microrayons are the sightliness shaped by gates between buildings — the gaps formed by free standing structures. These sightliness are sometimes more active structuring elements than streets and designated paths taken from the pedestrian point of view.
Image 110. Building units in Pļavnieki

Image 112. Building units in Imanta

Image 111. Gates in Imanta
This part is a concluding note on the research and a claim for the study. Looking at the microrayons as a top down entities and using idea of the model consisting of physical structures, interfaces and territories, it is possible to trace the structure which would be desirable to achieve more congruent, responsible and certain control.

In Imanta, well defined blocks and common land should be supported by the streets or other physical structures offering circulation along. In Pļavnieki, on the other hand, the well defined streets are the defining interior of the blocks with more calm areas in the middle. In Imanta, territories are defined by blocks and streets and new buildings can easily continue this principle. In Pļavnieki, the territory has definition on a bigger scale and physical structure elements do little for the differentiation. The more important features here are those of the interfaces which defined the modes of access.

Physical structures which follow the edges of the territories should afford movement along in both neighbourhoods. It is more possible and imageable in Imanta.
than in Pļavnieki due to the configuration which allows interpretation. More rigid structure of long parallel streets is not easy to interpret.

These images and descriptions represent a desirable pattern language which we can know right now. Though results are not satisfactory for many reasons. The most important reason is that it is necessary to formulate the pattern language in the way it is possible to implement it in the given context and with existing elements and actors of the situation.

Therefore, it is necessary to know what exactly is wrong in the present situation. This knowledge should be explicit enough to use in the design which is persuasive. In the next chapters, the research knowledge is used in the study resulting in pattern language and design diagram for Pļavnieki-II microrayon.

This neighbourhood was chosen because its ambiguity of the problem — on the one hand it is well defined masterplan with its order on various scales; on the other hand — the absence of some levels in the structure and unfinished character of the neighbourhood. It is possible to conclude that Pļavnieki-2 microrayon can be the case which potentially hide many possibilities on the level which is relevant for the user control.
Design by analogy

It is important to remind that initially farame-semantic networks were intended for use in design, not research. Here the attempt to use form-operation-performance descriptions of artefacts like microrayons to creatively design for user control performance.

When the new problem is faced, thinking by analogy may help to find an appropriate solution: similar situation is recalled, matched with the new one and conclusions are made (Winston, 1980). Experts in various disciplines like law, economics and medicine use analogy to relate new situations to case studies. Analogical reasoning is an important process for creativity. Creativity is a novel generation fitted to the constraints of a particular task. Novelty and constraint are key components in analogical reasoning (Green, Kraemer, Fugelsang, et al., 2012).

Novelty of design is determined by semantic distance of analogy: more distant relations are generally less obvious and so they tend to be more novel. Design is a creative domain, therefore distant analogies are frequently used. However, close analogies involve greater similarity and are easier to access; distant analogies, on the other hand, may be related to originality of design (Christensen & Schunn, 2007).

Creative design process represented by Tzonis (1990) illustrates how distant analogies are used in architectural design by giving the example of Le Corbusier’s Unite d’Habitation. It starts with formation of presuppositions and design input which is followed by design process. First, sort of causal theory of design is formulated as principles linking form-operation-performance. Second, topological theory of design is formulated to specify how objects can be decomposed and recomposed in parts. Third, architectural program is formulated as performance norms. And, »design thesaurus« of precedent projects and artefacts is one of the most crucial parts of input to creative design process: it starts with identification of operation in planned project. Then designer searches in her memory for precedents with operation slots which correspond to those of the planned project. The matched component is extracted out of the precedent and finally integrated into the new product.

Tzonis uses the same frame form-operation-performance used for diagnostic and description reasoning in “Analytical frameworks” on page 46 of this thesis for design explanation. Given performance descriptions: do not disrupt the natural continuity of terrain; have independent commanding vistas, have public spaces with commanding horizon vistas which are related to three form slots: base, top and body respectively. Search in the memory and finds three artefacts: the »peasant hut« which does not disrupt terrain continuity; the »wine-bottle rack« which has bearing framework which is relatively independent from the shell of the bottles; the »ocean liner« which has a deck with commanding vistas. Each precedent frame has many slots, but the only one is related to the total form of designed artefact. This so-called »syntactic« slot restricts the possible connection of a part of an artifact to the rest of its parts. It constraints the way parts from precedents may be put together to form a new design product.

Creative cognitive process in design is supported by external representation systems, such as sketching, and unsupported cognitive structures (visual patterns, object forms, or mental models) (Christensen & Schunn, 2007). Pattern language, its structure and representation (see “7 Pattern language” on page 108) are essentially representation systems which serves as input and topological theory for user-control-facilitating urban designs in large-scale neighbourhoods.

"Reasoning takes place when analogy is used to answer question about one situation, given another situation that is supposed to be a precedent, as when we answer questions about Hamlet by way of knowledge about Macbeth." (Winston, 1980)

2 Analogical reasoning (e.g., blizzard is to snowflake as army is to ?) centres on analogical mappings, which can constitute novel connections between situations or representations that do not seem similar on the surface (e.g., the mapping between the relational representations [blizzard : snowflake] and [army : soldier]). In addition, analogical reasoning must fit particular constraints. As an example, attempting a mapping between [blizzard : snowflake] and [army : war] may be novel, but it does not succeed as an analogy because it does not adequately fit the constraints of analogical reasoning. In this case, a pertinent constraint is that the words within the second relation [army : ?] must not only be related to each other but must be related to each other in a way that is similar to the way in which the words in the first relation [blizzard : snowflake] are related.” (Green, Kraemer, Fugelsang, et al., 2012)
This chapter formulates the input to the design process. The frame for design consist of three slots: spatial system (of territorial units), communication systems (physical structure) and control systems (interfaces). Design objective is formulated as a «how» question, following form-operation-performance structure. Then, objective is re-formulated as a search phrase for precedents in design by analogy process.

Communication systems → physical structure Keywords: connections, physical networks, borders, channels. How is it possible to improve communication systems to manipulate access of people and information, in order to make territorial control more certain and effective?

Which communication systems can facilitate more congruent connection and separation of territories and people in order to achieve more certain and effective control? Spatial system → territorial units Keywords: spatial organisation, territory, nodes, catchment areas, nested system How is it possible to provide, organise and structure space in order to facilitate spatial process of defence, more productive use and willingness to take care of territory to ensure order and security of daily lives of residents, physical comfort, to prevent decay and social problems and protracted misery as residents battle between neighbours and with delinquents?

Which spatial system can facilitate territorial behaviour in order to achieve congruent, responsible and certain control?

Variations and systems of control → interface Keywords: spatial relations, gates, extended territories, interfaces. How is it possible to change variations and systems of control in order to facilitate spatial process of defence, participation in maintenance to achieve positive social consequences. Which variations and systems of control relative to land use, characteristics of routes, vacancy rate etc. can facilitate presence of people, activities, surveillance, exclusion of enemies out of territory, participation in maintenance in order to achieve congruent, responsible and certain control?

In order to start with the search for precedents, design objectives were represented using form-operation-performance frames for physical structure, interface and territorial system. The diagram and text explanation illustrates how frames help to search for precedents. Here, form, operation and performance slots are formulated using theory of user control — see “3 Understanding theory” on page 44. Causal theory of design was also derived from theory — using hypothetical relationships among form-operation-performance.

Communication systems are kind of physical structures. Form of the physical system has horizontal, vertical elements and control hierarchy. Horizontal elements are kind of infrastructures and vertical are kind of buildings. Control hierarchies have two variations: assembly and dependence hierarchies. These slots of form are related to the slots of operation: horizontal elements are for connecting, vertical are for separating and control hierarchies are for building and for managing/supplying. Design performances are respectively fast and direct connection, independent separation and low-cost construction and management.

Systems of control are kind of interfaces. Form can be described as physical control systems, as edge of the interface and two sides interface is between. Operations are confronting, exchanging and interacting respectively. Design performances are avoidable, congruent to needs and controllable.

Spatial system is kind of territorial system. Its form has control hierarchy, hearth and edge. Operation consists of belonging, habitation and cohabitation. Design performances are local patriotism, prosperous and peaceful.

3 At this moment, various linking slots are considered. The causal relations explained in theory of control may be complemented with the concept of affordance, as Gibson defines it: “The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment.” in Gibson, J. J. (1986): The Ecological Approach to Visual Perception. Lawrence Erlbaum, Hillsdale.
In Pļavnieki, neighbourhood boundary is permeable. It is a key issue for qualities of control such as congruence and responsibility. Pattern »neighbourhood boundary« has multiple oblique relations. It is shaped by territorial units of »district green«, »web of shopping« and »big shopping site« and »parking lots«. It is connected to »common space«.

The search phrase for interface is “Which variations and systems of control relative to land use, characteristics of routes, vacancy rate etc. can facilitate presence of people, activities, surveillance, exclusion of enemies out of territory, participation in maintenance in order to achieve congruent, responsible and certain control? “ In this situation, neighbourhood boundary is not asserting certain and responsible control, because of permeating movement in all directions and has territorial users with one-sided oriented control from outside, due to character of edge and physical control system. Hence I searched for precedent for interface which: has one-sided control from within, not permeating movement in all directions, with wide edge and control system related to movement.

In interface frame of »neighbourhood boundary« in Pļavnieki, there syntactic slots and empty slots representing control issues (“Image80.” on page 83). Both are related to slots in Hamburg precedent. Thus, the shape of »city streets« and »blocks« are resembling waterways and gates to the city. »Big-box shopping sites«, »district green« and »parking lots« are similar to city/surrounding landscape interface condition of Hamburg (dashed line). There are two performance problems of »neighbourhood boundary«: insecure isolating of physical control system and not congruent communication through the boundary’s edge. These are replaced by respective slots of the precedent.

Resulting new design solution (“Image79.” on page 83) changes the nature of the interface, making edge sharp and not permeable (canal or ditch) for walking, thus establishing clear territories which belong to the neighbourhood’s common and for other, road-related uses like »big-box shopping site«, »new building site«, »parking lots«. Expected control performance of congruence (distinguishing neighbourhood and district users) is reached by isolating levels making city streets as connections more important.
Another precedent from Hamburg was recalled – this time real – Veddel prewar neighbourhood. Tical street view and plan Scale, positions of magnets, shape of blocks and common in Veddel Scale, positions of magnets, shape of blocks and common in Imanta match: shape of the blocks and web of shopping and public transportaion. Transfer: control hierarchy of common space established by a school and church, and symbolic and real gates. Resulting design solution establishes territorial hierarchy by introducing real and symbolic edges. Neighbourhood boundary: distant analogy how to humanize? Common: close analogy: how appropriate in the local context?
Image 124. ANalogical mapping

Image 125. New design solution
The case of Pļavnieki is representative for late microrayons with characteristic spatial problems applicable in other areas of the same type. The process of regeneration can be compared to the environmental repair as described in the Oregon Experiment (Alexander, 1975). This process is not guided by the masterplan, which has inherent weaknesses of imposition of totalitarian order and inability to establish meaningful relationships between parts and the whole. “Masterplan shows what is right for the future, diagnosis shows what is wrong in the present.” Diagnosis thus locates the extremes of user control performance in space — it is process of filling the gaps left in the previous take on the analysis.

Diagnosis was based on a land use plan, distinguishing street-scape and pedestrian realms. Also, the parking problem and the divided ownership problem were mapped. The diagnosis of streets started with the investigation of street profiles, distinguishing road profile elements and wastelands. Wastelands along the streets were mapped in relation to other uses of the street-scape: parking patterns, encroachments to the green areas, and relation of the street to the building entrances. Pedestrian realms – publicly accessible spaces were examined for quality of control as well distinguishing wastelands and vacant lots, and also defensible space variables distinguished. Variations of control in pedestrian realms were mapped as well, in relation to the building ensemble level.

The parking problem is urgency in microrayons — it is the one which is going to be addressed in a near future most probably, almost inevitably. Parking patterns recorded during the field trips were mapped. Areas within microrayon that are relatively deprived of parking were identified. Also, the divided ownership was mapped in relation to the physical structure. Divided ownership is the unique situation emerged in Latvia after regaining independence, when land and buildings belong to two different owners. Three problematic situations were identified: when one building is divided into several land units, one large land lot include several residential buildings and public spaces and when the lot associated to the building is spatially not associated with the building.

Thus diagnosis enables to understand the form of the problem, which is conditioned by content of different type.
From research to study

Study
The aim of this chapter is to specify the spatial distributions of control performance variables. This is the second part of the project which can be called a study. It looks for the possibilities of design to diversify the residential environment of microrayon.

First part is a diagnosis. The main objective is to come up with a description of what is wrong with the residential environment of microrayon in relation to the theory and inquiry. Second part is a “7 Pattern language” on page 108, where planning principles targeted to the resolution of the current problems identified in the diagnosis are formulated in the explicit way — as a relationship of he context, spatial configuration and the conflicting forces.

Third part is the formulation of the design principles, “8 Design diagrams” on page 144 which address the design problem. Patterns are synthesized in three design diagrams. These three design diagrams are elaborated in seven projects and a masterplan for the area.

The principle
The methodology which is used in this project for the analysis and design is inspired by the work of Christopher Alexander and centre for environmental structure. The books »Timeless way of building«, »Pattern Language« and »The Oregon Experiment« are used as a basis for the formulation of the method.

Masterplan
Diagnosis of the residential environment is intended to guide the process of spatial development in the microrayon. Unlike masterplan, which defines the future conditions of the environment, diagnosis indicate the current, existing problems which exist in the environment.

Christopher Alexander indicate several major problems which are inherent to the masterplans in »Oregon Experiment« — an alternative for the University of Oregon masterplan. He propose to replace masterplan with the process, which can encourage the emergence of the global whole — which can be characterized as the »quality without the name« — complex concept, which in the University environment, would mean successful environment: human scale, common meeting ground, and comfortable work space.

The objective of each masterplan is to create and ordered environment and establish relationship between the parts and the whole. However, Alexander states that »It (masterplan) can create a totality, but not a whole. It can create totalitarian order, but not organic order« (p. 10). Totalitarian order has two problems in establishing the relationship between parts and the whole. First, when the whole dominates the parts there is a functional breakdown on the level of the parts. The needs of individual places are suppressed by the architectural concept which results in arbitrary shaped rooms, without widows etc. Second is when parts dominate the whole there is a functional breakdown on the level of the whole. The individual buildings do not make the whole; streets are congested and circulation is maze. Conventional masterplans are too rigid. When unpredictable changes occur the whole breaks down again and the masterplan is no longer followed. When the masterplans are followed, their inability to establish humane relationships among parts and open space becomes evident.

Therefore, in the Oregon Experiment Alexander proposes to replace masterplan


with the process, which is guided according to six principles: the principle of organic order, the principle of participation, the principle of piecemeal growth, the principle of patterns, the principle of diagnosis, the principle of coordination.

There are two principles which are related to the urban design. First is a principle of patterns. Second is principle of the diagnosis.

These found to be appropriate for the microrayons. In this project, diagnosis takes two steps. First, the places which are broken down are identified from two points of view. Second, the environmental qualities of places are explained in the Pattern Language.

**Patterns**
In “Timeless way”, patterns first defined as place event combination. It is a rule of thumb everyone follows. See “Patterns as designed place-events” on page 65 of Chapter “5 Understanding what was built” on page 64.

Later, when discussing how the Pattern Language becomes shared, Alexander defines pattern differently: “The pattern as an elementary unit of the shared language. formulated in the form of a rule which establishes a relationship between a context, a system of forces which arises in that context, and a configuration which allows these forces to resolve themselves in that context” (p. 102).

In »Oregon Experiment« pattern is defined “as any general planning principle, which states a clear problem that may occur repeatedly in the environment, states the range of contexts in which this problem will occur, and gives the general features required by all buildings or plans which solve this problem.”

**Principle of diagnosis**
The emergence of the global order is analogous to the process in the living organisms. The global order in the organism is governed on two levels. Those parts of the organism where critical variables have gone beyond their allowable limits are identified. The process of the diagnosis is definition the growth fields. In response to the diagnosis, the organism sets in motion growth processes to repair this situation. At those places where growth occurs, the cells multiply. The detailed configuration of the cells which grow at these places is governed mainly by the genetic code, carried by every cell. In case of the Oregon Experiment, the department is successful to the extent it is solving its internal problems. If some patterns are missing, it is unlikely that university departments are the living entities.

Diagnosis in Oregon experiment indicate where the patterns have broken down. The diagnosis is represented in a map.

**The appropriated principle**
In this project, the diagnosis precedes the formulation of patterns. It is done for the very important reason. The patterns of Christopher Alexander were formulated in longer period of time by many collaborators in the Centre for Environmental Structure. These are the general principles. In «Oregon Experiment» few pat-
terns were selected from general pattern language and several patterns added specific for the University environment.

In case of microrayon, the diagnosis of the environment were made first and then pattern language formulated. It is done to ensure that patterns are place-specific.

Microrayons are created according to the masterplans with problems characteristic for the masterplans. Although there are considerable problems with the whole-part relationships, the environment should be examined somehow.

Therefore, for this project, the view of the user is adopted in order to formulate the patterns. It has two manifestations. First, the user-commuter, who is using the streets. Second, is the pedestrian-user, who is using vast pedestrian realms in the microrayon. On next pages, these two views are elaborated.
From the structural analysis, the streets were the backbone of the initial master-plan. The streets are primarily provided to ensure access for emergency transport to the entrance of the residential building. Other uses like parking were of secondary importance.

In the streetscape (the space defined by two adjacent buildings or fences and road profile) it is possible to distinguish two extremes in the user control variables: public street with parking, large parking lots and wastelands — medians covered with grass.

There are two types of street profiles in Pļavnieki: one with the perpendicular parking, eleven to thirteen meters wide and narrow profile, five meters wide with only parallel parking option. There are also arterial roads, with wide medians in the middle, which were intended to accommodate a subway line.
Image 128. Street structure of Pļavnieki

Image 129. Street structure of Pļavnieki-2
1 The wastelands are part of the profiles of major roads. Each part — arterial road with two lanes, sidewalk, and local street are separated with the grass surfaces or medians.

2 Wastelands also separate local streets and kindergartens.

3 Wastelands separate squares intended for the outdoor stay from the local streets.

In this area, there is a shortage of parking, because it was not provided in the original masterplan. Residents park their cars on the major road, but avoid streets which are not seen from the windows. Hence we can call this segments wastelands as well.
Local shops, built as a part of the original master-plan, have their own pedestrian streets and are again separated from the local street with the wasteland. It is a slightly elevated green area.

The area between street profile and back of residential building, with the back entrance, is acclaimed by the residents — they put benches there (5a).

Within the streets with the perpendicular parking, there is a wide green area-wasteland in the middle, where residents plant trees extensively. The perpendicular parking solution makes this place inaccessible from the road side.
Jāņa Grestes street

7 Spaces on the opposite side of the houses on the narrow streets, were intended as play areas and recreational places in the original masterplans, However now they are seldom used.

8 Within narrow streets, residents claim the wastelands. They either create their own parking places using self-made asphalt solution, or plant the trees to prevent it.

9 Sometimes encroachments have more spontaneous character. Edges of large green areas officially are parking-free and residents are fined for parking there are traces of cars. Also, due to the width of the carriageways on the narrow streets larger vehicles like garbage trucks brake in onto the cornerstones and damage it.
The narrow stretches of wastelands along fences of kindergartens are very cautiously claimed as parking places by few residents.

There are some very wide wastelands—medians between firewalls and carriageways. These are the dark places with few trees on them.

Likewise the wastelands between streets and fences, there are those in between sport grounds and streets. These are filled with dense greenery and accommodate loiters, small groups of residents enjoying beverages or people just having conversation. Elderly or kids avoid such places.
The profiles of major roads are fifty meters wide, but the streetscape can be up to seventy-five meters wide. These are gutters (see De Jong (2012) p. 30) which are separating microrayons. There are limited crosswalks at the regular intervals. The profile consists of two separated lanes and sidewalks. The wastelands-medians in between carriageways are intended for bus lanes and bus stop pockets, but recent additions — commercial facilities, gas tanks and accidental residential buildings make their access lanes (13a).
14 There are many large parking lots at the major arterial roads. They fill the space between the road and houses (14a). The residents block car access to these areas form the inside of the neighbourhood.
Pedestrian realms

Much more subtle variations in user control can be identified in pedestrian realms — identified as a “commons” on the level of microrayon and courtyards on the level of building ensemble in the “5 Understanding what was built” on page 64. There are two extremes in quality of control — the wastelands similar to those at the streets which has a “vacancy” subcategory. On this level, we can distinguish another variable — defensible space. There are clearly spaces with stigmatizing character, and those which are enhancing defensible space characteristics. The map of these values show distributions of two user control variables in Pļavnieki. As it may be noted, first, free standing buildings “radiate” wastelands and backs of residential buildings accumulate stigmatizing defensible space values. There are two kinds of vacancies in the wastelands. First is actual vacancy waiting for the new program. Second is a space if restructured can be used more efficiently.
Southern border

1 Southern border of Pļavnieki 2 microrayon is shaped by building ensemble of Jukuma Vācieša street on the Northern side and Lubānas street on the Southern. It is an arterial road and Jukuma Vācieša street is a looped road which is connected to the arterial road at the both ends.

There are spaces with clearly stigmatizing defensible space characteristics — between back of residential building and fence of the kindergarten (1c) and parking garages (1a). These spaces are hidden from the streets, there are no street lamps and presence of people there is occasional.

However, there is an improvised playground on the wedge shaped by two firewalls. This space is visually connected to Jukuma Vācieša street (1b).

There are wastelands in between free-standing residential building and parking lot.

There are two spaces which can be identified as a vacant. These vacant spaces have one thing in common — there is an object in the middle of this space such as free standing technical building or roundabout. It is possible to relate these spaces to the adjoining ensembles or spaces. Thus these and similar spaces can be identified as vacant in case they are restructured.
2 In the middle of the microrayon, there are two large courtyards approx. half-hectare large. However, these show different user control variables. First (marked by outlined 1 on the drawing on this page) is a lively place with three playground facilities, improvised sitting area and small parking lots. One of the edges of this courtyard is fronted by residential building facing entrances. This place has relatively dense network of outdoor activities.

Second courtyard (marked by outlined 2 on the drawing on this page) has different control variables. Unlike previous courtyard, it is not fronted with entrances of residential buildings on the Eastern side. There is a playground in the middle of the space, the edges are wastelands where residents planted trees.

There are also spaces with stigmatizing defensible space characteristics as in the Southern border.
3 School site is the largest open space in the microrayon intended in the initial masterplan. Originally, it was intended to place two schools around one common open space. Swimming pool building was intended in front of the school building, which was not implemented. The edge of the open space is shaped by school building in the North facing the site with the entrance, group of council housing on the Eastern side, Tīnužu street on the southern side and with a vacant lot where the free-standing residential building was intended on the Western side. School site has a stadium with the running track which is covered with the asphalt and two rectangular asphalt surfaces. There are small tribunes on both sides of the running track.

The stadium and this part of the school site is neglected — the benches are vandalized, the surfaces are eroded and retaining walls sunken. It is surrounded by wastelands which are covered with bushes and trees.

Nevertheless, residents visit the place quite often as the area can be regarded as a meeting place.

4 The back of the school site is shaped by the school building and residential buildings which face the site with entrances on the East, backs on the North and entrances on the South and West. There are wastelands shaped by free-standing building.
5. On the edge of the microrayon, there are groups of free-standing buildings. These structures literally “radiate” the wastelands. There are two twelve storey residential buildings and nine-story health centre. Two local streets on Southern and Eastern side and two major roads define the “block” of this ensemble. There are public functions in these buildings, but they are hardly distinguishable in the vast wastelands. This accumulation of control quality variables makes edge of microrayon a one big wasteland. This indicates the difficulty of successful planning of the open spaces around free standing buildings.

6. The edges of large spaces are formed by building ensembles arranged as lined residential buildings, positioned perpendicularly or 120 degrees to each other. This makes the definition of open spaces hardly visible on the eye level.
If one asks what is the urgency of microrayon (the problem which should be solved right now) the most likely the answer would be “parking”. There is a simple explanation: car ownership has grown tremendously, and hence we need to give more space for cars. Here, it will be argued that the space should not be sacrificed for cars, but there is a need to rethink how use of the residential environment is structured. Nevertheless, it is the most likely that the first main improvement will be motivated and programmatically targeted to the resolution of the parking problem.

What is the parking problem? Is it also the case for Pļavnieki2?

First, it is important to note that the situation in the study area is not the worst from the perspective of parking provision.

There are 11119 residents in Pļavneki2 and there are 4632 households in the area. Let's assume that residents use for parking primary the area which is defined by three urban highways and forest (see image rt). It is also assumed, that every household owns a car, which is hard to believe however. It would mean, that it is necessary to have 11,582.2 sqm of parking according to humble standard from total 53,239.1 sqm area calculated in between major roads and forest according to land use survey objects falling into the area. It is estimated, that necessary parking should occupy at least 21.7 percent of total area. Paved areas constitute 34 percent. Roads estimate 18, and sidewalks 16 percent.

First, land use balance was calculated. 41 percent of the area is green — including the lawns in between roads which is previously described »wastelands«. Buildings occupy only 17 percent — it is common that in microrayons density is not higher than 22 percent.

Next, existing amount of parking was calculated. It was not so easy task, because the parking habits are different from place to place and are guided by informal rules of thumb. See inquiry for details in section “4 Understanding of the user” on page 58.

Another important aspect is that vast majority of parking is located on fenced parking lots and in garages on the edge of the microrayon.

There are approximately 3,425 parking places in Pļavnieki-2. It means, that there are 0.73 parking places per person and there is shortage of 1,207 parking places. However, the average car ownership in Riga is 294 per 1000 residents (PAD 2010), and it means, that the area satisfy the needs of the residents.

However, there are other reasons why parking can be a problem in the residential environment of Pļavnieki2.

First, as already noted, many of parking places are located on the edge of the area. Such accumulation of parking is unique in Pļavnieki, and facilities are used by residents of much larger area than Pļavnieki2. It is also unclear who has the access to these facilities.

Second, the provision of street parking is highly unequal. Some areas are clearly deprived from parking opportunities, some are quite satisfactory. In yet other areas, residents are able to encroach to the green area to extend parking area, in some they clearly cannot.
And third, the most important question, what could be the appropriate strategy for solving the parking problem? First thing which seems relevant, is that parking problem should be solved on the block level. Thus, parking should be provided in the areas which are deprived from parking (see “Image134.” on page 105). Second problem is more subtle one. In some areas, parked cars dominate the streetscape, while the other areas are unused. It is clear, that car owners has their own rules of thumb (see Inquiry part), but anyway — is it possible to restructure some parking patterns in order to get better land-use and more congruent, certain and responsible user control?

Another concern is about large parking facilities on the edge of Pļavnieki 2. On the one hand, the land along urban highways may rise, and the pressure form new development is expected. It is important to consider the importance of the parking reserve these areas contain. On the other, the impact of large parking facilities on the residential environment is negative. The fenced perimeters of parking lots make territories of weak control. Large non-permeable areas have also negative impact on micro-climate and storm-water drainage. Thus another programmatic aspect of the project is how to transform the relationship of parking facilities with the residential environment.
Divided ownership problem

If one asks what is the cause of many physical and spatial problems, the answer would be “dual ownership”. It prevents investment, renewal of the residential environment of microrayons and conditions many additions which are well-related to the built environment of the microrayon.

The dual ownership system emerged as a consequence of de-nationalization policy which was stated in 1990s. Land divisions were re-established as they were before the Soviet occupation in 1941, and land was returned to the owners or their siblings.

Microrayons were planned disregarding any land ownership divisions. The large land units which are not congruent with the actual land-use of Pļavnieki stems to the period before the development had taken place — here was a marshland and few farmhouses. This area was added to the municipality in 1970ies as a part of the extension plan.

Legally the land units which constitute open spaces of the microrayon either belong to the land owner which is not related to the surrounding buildings, or the land is shredded between surrounding buildings. Legal owner of the land is not interested in the maintenance of his property — the rent payments are granted by the law, however, due to easements — existing residential buildings, roads and other infrastructure built for the uses of microaryon, he cannot develop new buildings on his land property. In case where land is divided among surrounding residential buildings, the area is formally attached to the buildings, but residents cannot make use of this land for their needs.

Civil law regulates land ownership and states clearly that land ownership is one and not separable. However, it is augmented with countless easements and rules in order to implement the reform. These rules have “lasting permanent character”.

There is a hierarchical order in the land-use survey. It defines land property object as a main, building survey objects and space group survey objects are nested in main survey object.

Three problematic situations can be distinguished.

1 Several land lots constitute land survey object for one building. It means, that residents are paying taxes to several land owners. The latter however cannot make use and develop on their property. This situation complicates the renewal process — according to the law, the municipality cannot invest in the properties which do not its property. For example, roads cannot be reconstructed, playgrounds placed there unless the land is extracted or easement established.

2 Land lot is bigger than functionally necessary for the building and includes the portion of open space. Very often this part of the lot is not related to the building through activities: is located on the backyard, or separated by road easement. It is possible to develop on unrelated land unit residential buildings. However, recently such plans met sever protests of residents, when developer proposed new residential building in the courtyard. Nine storey structure was proposed in the middle of the courtyard of nine-story residential block. The solution could be to allow low-rise residential building construction in the courtyards.

3 Very large land lot is occupied by arbitrary positioned buildings, both residen-
This is a very complicated situation, because land lots are very large — up to ten hectares and area is full of easements — roads, buildings, pipes and cables. This for example prevents municipality to invest in the renewal of the school outdoor facilities, which are currently neglected.

There were only legal and regulatory solutions proposed to solve the externalities of dual ownership problem — to reduce taxes and grant to the residents purchase rights as they pay taxes.

However, it is argued here, there is a need for spatial solutions to the problem — how it is possible to restructure land ownership in relation to the structure of the existing built environment and also establish meaningful relationships among old and new.
7 Pattern language

Pattern languages is the best way to use research data in the design. One of the most obvious descriptions of what patterns are is to compare them with the idea of the behaviour settings — “consists of the space, its surroundings and contents, and the people and their activities.” (Lawson, 2001 p. 23)

It is an exploration of both the existing qualities and design possibilities at the same time. This is the beauty of the patterns. Each pattern unlike in the “Understanding what was built” part is a crucial invariant defining the quality of the user control. It is a positively defined misfit of context, forces and configuration. An interlocking set of patterns is the final product of the analysis, resulting in a pattern language. It can be regarded as a detail program for the regeneration of the residential environment, taking user control as a requirement.

A pattern is an exact set of environmental variables. It links context, problems, and configuration. Patterns collect all research data and reference it to the context (Alexander, 1979 p. 253). Patterns’ internal structure is a double statement, consisting of context statement, conflicting forces and configuration linked by the two predicates. Each pattern makes reference to site data, reflects on theory, or show precedents for the solutions.

A Patterns language consists of interlocking sets. These are the topics of user control identified in theory, inquiry and research to be relevant for design — defensible space, social space, circulation realms, urban context, secondary territories, shape of the open space, and governance. Their shared properties are spatial or social context, configuration involved, or they are part of the same phenomena, covered by two different sources of theory or data. For example, pattern wastelands contain explicit presence, which is a subset of the defensible space, but also pattern 3+ activities in one place, which is a subset of social space set.

There are three sets of patterns, linked with the conditional relationship. However, the process of distinguishing them was implicit till the last minute. The way how it could be formalised is provided in the caption of the image 183.

First is a set of diagnostic patterns. The relevant theory of user-environment interaction fits very well here. And some less scientifically based theories or simple observations can be proposed and put into discussion. Diagnosis patterns are resultant properties of the built form. In long sight-lines pattern, compositional approach is affording visual cues for pedestrians, which results in a short-cuts through open spaces.

Second is a set of social patterns. These are hypothetical patterns about the performance of the residential environment. For example, pedestrian network is unequal in terms of use, because of distribution of goals or landmarks.

Third is a set of design patterns. In compositional approach, territoriality is not facilitated because of the arbitrary placed buildings. Hence the solution is to provide edge and the hearth for the building ensembles.

Patterns make conjectures about the design and they are completed by the design-process itself. Thus it is likely that diagnostic patterns suggest what should be repaired in the residential environment — because the pattern internal structure has many causal links distinguished in the theory. Social patterns are one the one hand conjunctures which can be influenced or sustained by the design.
Theory of pattern languages

Sixteen patterns-variables
The aim of this chapter is to explicitly state the relationship between control performance (problem), the context it occurs and the configuration involved. The patterns here define crucial invariants of the residential environment of the large scale estates which can be altered in order to enhance user control.

Criticism
Pattern language is well reflected subject in the design theory. Many stress the limited applicability of the tool.

Kevin Lynch is one of the proponents of the pattern languages. In »Site planning« he note three aspects which are beneficial when using pattern languages (1984). First, the patterns are exact configurations which match human needs. Although Lynch points out and doubts the assumed universal validity of the patterns stated by Alexander and colleagues, he notes that the creation and validation of the patterns is a worthy exercise. Second, the patterns as a method could be preferred by the designers who believe in the virtue of familiarity, and that the truly great environments are the products of the “accumulated understanding.” And third, the use of patterns can be especially powerful method while working in the field — when modifications are made to environment in use, the results observed, and another round of adjustments carried out. However, he notes that the method as described in the »Pattern Language« is limited to the places with decentralized management and small settings (p. 130).

In his last book, »The Theory of Good city Form« (1981), Lynch mentions the Pattern Language as a part of the utopian system of thought, where form is matched with behaviour and some stable human relations to the form are distinguished (p.67). On the other hand, he uses the example of Pattern Language as a useful example of the planning and design guidelines which is based on the context, problem and solution (p.279).

Lawson identifies patterns as descriptions of behavioural settings (2001). He notes that patterns contain very good common sense by making explicit and formalizing Knowledge, which we otherwise normally hold implicitly and unself-conscious. According to Lawson, patterns are useful because of their emphasis on human relations rather than form itself. However, he notes the inherent flaw which he identifies asking whether the concentration on the solutions rather than problems makes it difficult to use in the rapidly changing world (p. 227).

Westrik calls pattern languages a typological approach (2002). He notes that patterns does not lead to design — patterns are »hypothetical« and gives an exact number of possible essential properties.

De Jong sees patterns as small designs—the legends to be used in the maps of the bigger scale (2012). Each pattern, he notes, combines many variables and present one combination with one value each. The patterns can be used as a legends for the drawings. This, according to de Jong, allow designers to tell many stories in different directions (p.151).
Pattern internal structure

Pattern in this project is a double statement, which relates with two predicates context statement, conflicting forces and spatial configuration which is involved. Each pattern consists of following statements and references “Image141.” on page 110:

- Pattern name
- Essential pattern type and secondary types (primary type, made by means and/or related to secondary and indirectly to tertiary)
- How it is related to the concept of ownership and user control (which spatial right is made certain or created)
- Problem:
  - Context statement (predicate1) conflicting forces (predicate2) configuration.
- Solution:
  - Context statement (predicate1) conflicting forces (predicate2) configuration.
- Reference to the primary data (about site)
- Reference to the theory and precedents and why they are relevant (similarity or analogy).

Using such a structure for a pattern, it becomes shared, i.e., it is possible to discuss and ascertain each element of the description.

Structure of the Pattern language

Patterns are grouped in interlocking sets — “Image142.” on page 110. These sets are the broader phenomena or environmental process which are occurring in microrayons, identified in theory and inquiry to be relevant for user control in the microrayons. There are seven sets, each containing two or more patterns.

Alexander stresses the importance of the global structure of patterns both in »Timeless way« and in »Oregon Experiment«. Thus, in »Timeless way« Alexander writes: “Each pattern ... depends both on the smaller patterns it contains, and on the larger patterns within which it is contained.”(p.312) In »Oregon Experiment« Alexander stresses the reference of each pattern to the larger one.

There are many uses of structure of pattern language. Here, it establishes connectivity of patterns. The exact links are ascertained in the “8 Design diagrams” on page 144 of this thesis.
This is a territorial pattern, because it gives clues for use of street scape for different users within physical structure of the road network. It also helps to find right solution for the each street in relation to the context

Problem:
Within local streets, drivers, pedestrians, parking are using the same space. Parking on both sides makes streets a barriers for pedestrians. Sidewalks on one side is limiting the use of the space on both sides of the road.

There are two type of the streets from the initial masterplan (see diagnosis page 52-55). Their spatial logic is defined by its compositional approach (see note in BUILDING ENSEMBLE). Designers did not take into the account the impact of parked cars on the streetscape.

The typical example of the problem is provided in image on this page — Jāņa Grestes street. It starts as symmetrical street from the urban highway (Sakharov street) and continues as the access road with narrow sidewalk on the one side and green area on the other. Parked cars on both sides makes sidewalk congested for pedestrians and inaccessible for waste trucks and ERs. The green area is underused, partially because it is blocked from the streetscape by parked cars. Dense lines of parked cars makes use of the streets for children not safe. It is interesting to note that parallel parking solution makes the sidewalks impermeable for pedestrians in comparison to perpendicular. This can be explained that drivers have more space for manuevre and there are barriers which prevent parking in pedestrian access areas.

Solution:
Make sidewalks on both sides of the road, where the space is usable on both sides; limit parking on one of the sides or make it permeable for pedestrians according to PATHS BETWEEN GOALS.

Parking is a common problem in microrayons (see diagnosis on page 62). Besides the lack of parking, there are insufficient clues for drivers how to park. On the other hand, from observation and primary diagnosis, lack of pavement and its discontinuity cause unusable spaces along the streets within the microrayon. On the other hand, there are plenty of WASTELANDS which can be used for parking.

Regardless the context of each street, provide parking in
Small Parking Lots.

Theoretical reflection

Lawson described importance of visual clues for drivers. The proper clues on parking lots and streets, can facilitate more efficient use of space for parking. He describes the parking lot of his workplace — a parking lot in the inner city university campus between the building and the major road. Being an early bird, he always managed to find a free spot to park in the morning. Although in the evening all aisles on the parking lot were usually blocked and arrangement of the cars was rather chaotic. The field use for parking was flat without any cues how to park. People just used the previously parked cars as a cues for themselves.

This observation is in line with what was found out in the interviews with the users in the microrayons asking how do they park cars in their residential environment. The answer was, I first look at how others have already parked. Second, I try to leave the aisle for movement, but caring more on own future manuevre and the way it could be done in most comfortable and easy way. And third, some noted, that they try not to occupy WASTELANDS and block the building entrances, because Municipality police can fine them for parking there.

Thus one possible solution to the parking problem is not the quantitative increase area for parking use, but considering visual cues and moderate exploitation of the WASTELANDS.

Traffic calming and street layouts

In the Netherlands and also in the UK, there is a long history of dealing with traffic in the residential environment.

Symmetrical street means first and foremost the streetscape in the residential environments, where many different participants — drivers, pedestrians of different kind — can use the space for movement in comfortable way, and which allows certain degree of diversity in use for pedestrians.

In the Netherlands, the first awareness of the diminishing quality of the residential environment as a result of growing car ownership became widespread in the 1960s. The streets in residential environments, especially in dense areas were claimed as property of the local residents in the same way as the land around farmhouse. The cities of Rotterdam, Utrecht and Delft were the first to experiment with the application of street control humps. The initiatives started in 1960s were expanded and continued by the few enthusiasts. The city of Delft introduced the “woonerf” for the first time which is design concept for residential areas aimed at keeping traffic speeds low in set areas, and offering the possibility of safe play areas for children on the streets. In 1976, it became a Royal Decree with fourteen main requirements for an area to become woonerf. The main features are that the road should not be split in a carriage way and a footpath; the parking places should be clearly indicated, the entrance to the woonerf should be legible (Wit and Talens, 200?; Kraay 1986).

In the UK, the interest in improvement of the quality of the residential environment rised quite recently, and in 2001 Home zone challenge fund was established. The aim of the home zone is to achieve a safer street environment through physical measures that ensure low vehicle speeds, in order to allow other “soft” modes of travel equal status with motorized users (Clayden et. al. 2006).
This is an interface pattern, it regulates how territories are entered by drivers and pedestrians. It works with territorial processes rather than physical structure.

**Problem:**
On the local streets, T junctions are made primary for convenient local car traffic, however, they cause confusion for the pedestrians.

**Solution:**
In the place of T junctions, make continuous surface with distinct material from the roads and sidewalks, on the level of sidewalks with visual clues for drivers to reduce speed and mark its edge to alert pedestrians and restrict parking.

Therefore, in the analysis, mark all T junctions and access the degree of use of the space around it. Than, check the position of T junction in the network of paths between goals.

**Site data**
In Pļavnieki, T junctions which are often places used by tens of thousand of residents, are dangerous and confusing places. The direct effect of this problem is that first, some spaces are inaccessible at the T junction, and are not comfortable for both drivers and pedestrians.

There are several types of star nodes in the microrayon. First is above mentioned T junctions. Second is roundabouts which serve the same function as T junctions. Third is type is made by the residential buildings on the columns (467. Series block in the Building Ensemble).

The star nodes, especially in the third instance as a gateways, are secondary goals in the network of paths between goals and thus are important elements of the resident's image of the environment.
Theoretical reflection
In his Pattern language, Alexander described the vitality of coexistence of cars and pedestrians in the residential environment. In pattern 51 Paths and Cars he notes that “cars are dangerous for pedestrians, yet activities occur just where cars and pedestrians meet”; and “children play on the parking lots, because they sense that this is the point of arrival and departure”. He proposes two orthogonal networks, which are intersecting at frequent intervals.

In another pattern, 120 Paths and Goals the process of movement is examined in relation to final and intermediate destinations. The actual movement is structured according to the visible goals in between the main destinations.

Lawson explains behavior of pedestrians in a way similar like Alexander. Pedestrians tend to overcome major obstacle first on a way to their goals. For example, if one is walking to the shop which is on the other end of the street and also on the other side, one is likely to cross the street first at the first sensible possibility. However the rule can be easily changed — for example one could prefer the sunny side of the street. He notes that designers simply forget that people always take shortcuts instead follow the geometrical pattern designers have in their repertoire.
Stroll trajectories
Pets, Walking

This is a physical structure pattern in relation to the territory. It identifies the sidewalks and pedestrian paths of secondary importance, which are not used intensively.

Problem:
In pedestrian realms of microrayon, paths form geometric patterns which are not congruent with territoriality of the residential buildings.

Solution:
Differentiate sidewalks in pedestrian realms and make visual signs for the pedestrians.

Site data
One of the major concerns expressed by the residents is careless attitude of residents with pets to the environment. Many residents are not satisfied with the pollution and encroachments residents make to their residential environments. This is partially due to the extensiveness of the pedestrian networks. This network also was designed regardless the possible privacy zoning which residents could establish over time. On the other hand, some pedestrian connections are missing and are occurring in »wrong places« — e.g. in the middle of the stadiums and other open areas. The pedestrian network of microrays are supplieid with street lights only on the vehicular streets. This makes pedestrian realms not safe in the evenings.

Therefore, Identify conflicting zones in relation to BUILDING ENSEMBLES, check the overlap of network and EXPLICIT PRES- ENCE.

In some places, residents are parking cars on STROLL TRAJECTORIES. In general, this is perceived negativelly. However, taking into the account that half of the apartments are oriented towards stroll trajectories, it is natural desire to control their arked property and maintain its visual surveil- lance.

One possible solution would be to define parts of the pedestrian realms as secondary territories of residential buildings and BUILDING ENSEMBLES.
This is essentially physical structure pattern which is related to territory as a mental construct and interfaces. It helps to identify how territory is mastered by the users in Pļavnieki 2. It also helps to ascertain the routes through public space which are more intensively used and interfere with other uses.

Problem:
Pedestrian network of the microrayon, is unequal in terms of use, therefore some paths are useless, some are intensively used and some are missing which is evident in the phenomena of the elephant paths (see inquiry on page GT).

Solution:
Update pedestrian network in relation to the STAR NODES, SYMMETRICAL STREET profile. When consider parking upgrade, take paths between goals into the account in order to make the street available for passers-by, residents and drivers.

Therefore, in the analysis, distinguish paths connecting goals, and more stroll trajectories and disconnected segments.

Site data:
In the interviews, residents described their primary goals as shopping facilities, schools, kindergartens, bus stops, and parks.

However, there are some outstanding objects — like houses on the columns, objects like sheds and even graffiti were mentioned in the interviews as important secondary goals. People appoint meetings at them, describe way using these landmarks, and so on.

Theory about the problem:
How certain segment becomes a path between goals?

See also notes on walking in STAR NODES.

Environment offers its users semantic and pragmatic information (Portugali 2011). Semantic information conveyed by a certain object is what the object is; pragmatic information means what it is possible to do with the object. Pragmatic information is according to Gibson, an affordance.

Path, the second element of Lynch’s image of the city, is an object which affords walking or moving along. However,
only few are affording to move between focal points of the city and much less through the city. Thus, the relatively short paths afford less pragmatic information then the paths connecting focal points.

To find out elements in the environment, it is necessary to find out the relative level of pragmatic information. Thus, in microrayons, not only unique buildings like schools and shopping facilities are of high value, but also areas around them and paths towards. There is a process circular causality: the users are exposed to the objects of high pragmatic value, and consequently remember them better.
Small parking lots
Land-use parking

This is a territorial pattern.

**Problem:**
In the microrayons, in later stages of development and recently, due to the growing car ownership, parking areas are provided which makes inhumane open space.

Indeed, the parking problem is the most visible: everyone feels the lack of parking. This is likely to be the most tackled problem in the forthcoming regeneration of the residential environment in microrayons.

**Solution:**
Treat land use parking as a territory in its own right with the edge and a hearth. In identified building ensembles, define allowed parking share of the territory.

Land use parking constitute important share of land in the neighbourhood transition. In masterplan, parking was emphasized in the design of streets, however, the provision is questionable in terms of equality. See diagnosis of the streets (page CB).

Consider zoning such as nine percent parking and small parking lots in the Alexander’s pattern language. Make drawing of all existing parking, add green along the streets and wastelands into the calculation. Taking into the account the high density of the microrayon, how much land is necessary for the parking in the area? There are roughly 3000 dwellings in Pļavnieki 2. If one is willing to solve parking problem for every dwelling, it would mean that it is necessary to have at least 7,5 ha of land use parking. It is almost twenty percent of the area!

Therefore, place small parking lots breaking them in accordance with **STAR NODES** and **PATHS BETWEEN GOALS**. Use building ensemble principles to allocate parking as a "hearth" of the territory.

**Site data**
Therefore, identify in the analysis land-use parking and its size and status (fenced, open, organized, encroaching ...) in relation to **BUILDING ENSEMBLE**, **SYMMETRICAL STREET profile**, **PATHS BETWEEN GOALS**. On the other hand, consider reuse of the **WASTELANDS** for parking purpose.
Theory of the problem

In communities, like neighbourhoods and towns, Alexander suggests two patterns which regulate the limits of parking in the area in order to maintain human scale: 22 Nine Percent Parking and 102 Small Parking Lots.

Alexander makes a statement in his pattern 22 Nine Percent Parking, that in communities where parking exceeds nine percent of total land use, it is impossible to ensure human scale — seamless and natural pedestrian movement, good orientation, and pedestrian safety, including child safety. He comes up with percentage of allowed parking use. This however is not empirically proven quantity: the main message here, is that it is possible to make an inquiry in each community on the threshold of the presence of cars in the area when people still feel right. It also means, that the discussion should start not with the satisfying the demand, but psychological need for the user control of the land people use for social activities. The method he suggests is to define nine percent parking equally throughout the area, escaping the chance to compensate lack of parking on other areas within the community. However, he also notes, that many land uses, like large scale commercial development, should be excluded from the communities. This poses another challenge, which should be solved on the bigger scale than the residential environment under investigation.

“Vast parking lots wreck the land for people” — writes Alexander in his pattern 102 Small parking lots. It is suggested to make parking lots small, up to seven cars. Considering the number of cars in a parking lots, he writes:

A collection of less than five to seven objects can be grasped as one thing, and the objects in it can be grasped as individuals. A collection of more than five to seven things is perceived as “many things.” (See G. Miller, “The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information,” in D. Beardslee and M. Wertheimer, eds., Readings in Perception, New York, 1958, esp. p. 102.) It may be true that the impression of a “sea of cars” first comes into being with about seven cars.

He suggests to arrange the small parking lots so they are not visible, or rather, not intrude pedestrian movement. Hence their position should be guided by patterns defining pedestrian movement on the one hand, and territorial organization of building groups and ensembles.
Common interest shared problems
Problem as the »hearth«

This is essentially a territorial pattern, a potential for emergence of bottom-up governance and direct democracy.

Problem:
Within microrayons, problems tend to accumulate due to compositional approach in urban design, which is nowadays one of the most evident causes of stigma.

Solution:
Give independent budget to the direct owners of the problem and facilitate local improvement — physical, economic and social.

In Pļavnieki, places of extreme deprivation in relation to the other places have been identified in relation to free standing building, building ensemble and building type.

Importance of the hearth is numerously stressed by Alexander. It is essential component of Defensible space by Newman. ... In Marzahn, in some cases, funds were allocated to the groups of residents sharing the common problem. It facilitate the true »street neighbourhoods« in terms of Jacobs.

Therefore, in the analysis, identify pockets of existing and potential deprivations — accumulation of wastelands, for example, and relate it to the problem owners on the one hand and explicit pretense, building ensemble, free standing building.
One of the major obstacles for urban renewal of large scale estates is dual ownership issue (see page 63). The other is that the residents are not familiar with each other.

In the issue of energy retrofitting of residential buildings, it is evident, tat residents are able to negotiate about shared costs of retrofit measures if the block size is small. The size of the units which were able to establish self-management community usually are not larger than 36 flats.
Free standing building as the block
Point blocks on their own domain

This is a territorial pattern which is resolved by physical structure and interfaces. It defines the territorial definition of free standing buildings.

Problem:
Due to the compositional approach (see description in Building Ensemble) and later by the uncoordinated market-driven development, some buildings are placed freely which makes places of weak control and wastelands.

The space which is surrounded by firewalls without windows, cannot be controlled from the apartments. The problem is experienced from the interiors: see note on problems of the estates built according to Radburn principle on page DD.

Solution:
Identify the outdoor activities related to the free-standing building as a hearth of the territory. Make symbolic and linear boundary thus creating convex field around it. In case of point blocks, make hearth from building-related outdoor activities such as parking, waste storage, terrace and shops and entrance zones. In case of slabs, extend the territory of the backyard or frontyard to include storages and workshops. Do the same with the space at the firewalls. In case of the technical building and sheds, relate them to land-use parking and related activities. These facilities however are detached from the rest of the environment. The other extreme is the gated community: free standing building is in the middle of the garden, which is a shared facility of the residents.

Therefore, identify the position of the free standing building in the context of the microrayon. Identify the transition from the road and potential shared activities of the free-standing buildings and the ways how access can be controlled to the hearth of the territory.

Reference to Site data
In Pļavnieki, there are both freestanding point blocks and corridor slabs and some technical buildings positioned in the middle of courtyards.

Some free standing buildings which are built after 1990, have no fence around them. This is not the best solution, because their facilities are not surveys from the interiors of the project and vandalized as a result.
Design approaches

Free standing buildings have many advantages. For planners, it is a possibility to house people in higher densities. For the residents, the advantages are views, privacy, and comfort. However, residents still share some facilities: staircase, elevator, parking. Palmbout Urban Landscapes performed a typological study on different approaches in possible building-ground relationships of free-standing buildings.

First is the block with low-rise transition — »the wall« type. The street front is occupied by lowrise row housing with front gardens, and there are parking and storages for the free-standing building at the back (image xc). Second is »the residence« — the free standing building in the garden surrounded by the hedges. The entrance transition is facilitated by the access road, which lies within the garden territory. This is a kind of monumental country house which has distinct qualities from the surrounding areas. Third is »the ensemble« — it contains two or more building types, which share a garden and controlled entrance through one of the buildings. Fourth is »the field« — the common courtyard is a transition shared by the residents which connects parking facilities, apartment entrances and the street or public space.
Building ensemble

This is a territorial pattern related to the physical structure. It defines on the one hand, possible ways to solve problems conditioned by physical structure of the microrayon, and the design guidelines for the new buildings inside the microrayon.

Problem:
In compositional approach, residential buildings are placed in arbitrary combinations, which are not facilitating territoriality (see definition on page EE).

In the ongoing development of the microrayon, initial masterplan is seldom taken into the account. Even when it is taken into the account, new additions do not contribute to the resolution of the territoriality problem (image xz).

Solution:
Facilitate building ensembles according to the principles described in this pattern.

Taking into the account compositional approach, try to resolve territoriality problem by restructuring and facilitating communal activities. Break down the big ensemble of the microrayon to the smaller parts, which are defined by the common activities.

Therefore, identify distinct building ensembles. Look for solutions how to harmonize building ensembles with surroundings regarding location in the paths between goals, long sight lines. Look for missing communal activities within building ensemble in relation to the common interest shared problems. Are there any 3+activities in one place? Retain them. Look for accordance to the small parking lots.

In case of adding new buildings inside the microrayon, use the following principles:

- orient the entrances of the new buildings towards the entrances of the existing building blocks

- by placing new buildings, try to shape an building ensemble with the existing buildings. This means, that buildings should have a common secondary territory: a parking lot, playground, waste storage.

- retain sunny place, and avoid creating place hidden from windows. Retain these patterns as shared secondary territories of the building ensembles.
Therefore, check the potential of the wastelands to accommodate new buildings. Their solutions in relation to the existing buildings are elaborated in FREE STANDING BUILDING.

Site data and inquiry
In fact, microrayons were built as a large building ensembles. The order was defined by the architectural concept, which is however is not solving the needs of its parts (see criticism of masterplan on page TT). On the scale of the building block, the relationships are chaotic: courtyards are not shared secondary territories of the buildings which are surrounding them (image 34 on page 37). These ensembles can only be perceived looking at the microrayon from the airplane perspective. On the human level, ensembles are not identifiable.

In Pļavnieki, besides emphasized street ensembles, there are numerous smaller building groups which can be identified as ensembles: groups of point blocks, courtyard structures, couples of corridor-access buildings (see image 44 on page 41).

Theory of the problem
Oscar Newman, in the description of the problem of the territoriality in »Defensible Space« contrasts compositional versus organic approach to laying out residential buildings in the complex. Compositional approach is illustrated by infamous Pruitt-Igoe project in St. Louis (image xy).

“The architect was concerned with each building as a complete, separate, and formal entity, exclusive of any consideration of the functional use of grounds or the relationship of a building to the ground area it might share with other buildings. It is almost as if the architect assumed the role of a sculptor and saw the grounds of the project as nothing more than a surface on which he was endeavoring to arrange a series of vertical elements into a compositionally pleasing whole. Little effort was expended in developing relationships between buildings and ground activities; in fact, separation was most desired. Success in building disposition was thought to be achieved through strict adherence to compositional dictates; therefore concern with function on the part of the designer would only serve to muddy this design approach. Only when the composition of buildings was completed were access paths, play equipment, and seating areas located to serve the buildings.

This compositional approach to the form and positioning of buildings has serious repercussions when one confronts the problem of apartment unit design and location within the building proper. In this approach, the primary concern in the disposition of individual apartment units within the building is the effect the individual unit will have in giving form to the building as seen from the outside. The relationship of individual unit to one another and the provision of functionally useful and shared space at each level become secondary considerations.”

He contrasts the compositional approach of Pruitt-Igoe with less famous project, Breukelen Houses, where organic approach can be distinguished:

“The design approach which produces a territorially intact project by viewing buildings and grounds as an organically interrelated whole. In this approach, a major design concern is the way in which buildings themselves serve to define and break up the grounds on which they sit. The relationship of building entrances to territorially defined grounds, and of vertical access systems to entry areas, also receive primary consideration in the site plan. The disposition of the apartment units follows organically the results of the initial site plan and is directed at framing relationships between units and creating areas of shared entry, much as the building itself defines the use of the ground on which it sits.”

Thus the initial design principles and underlying compositional approach is an important condition for territoriality problems in the microrayons.

Precedents
Improving security of the residential environments is one of the possible starting points in identifying building ensembles. This approach however may lead to the emergence of the gated communities. Examples of such measures appear in Newman's Defensible space (see image BB). In xx project, which constitute two blocks, free standing buildings were goupied around existing play facilities and parking.
**Long sightliness**

Visual field Properties of the isovist field

This is a physical structure pattern. It allows to too at the design in inverted way.

Problem:
Due to the compositional approach, visual field is interconnected with long diagonal sightliness, which makes non-convex open space.

This is one of the emergent properties of the from: long sightliness which envelopes non-convex visual fields, are the clues for the residents taking shortcuts through the middle of very large open spaces.

Solution:
In school sites, building ensembles and around freestanding buildings, create convex spaces to restrict visual connections or long sight lines.

Therefore, first, identify long sightliness using isovist field of occlusivity. Second, identify the position of the sightliness in the network of path between goals. Then identify owners of the problem and inform the projects like in **COMMON INTEREST SHARED PROBLEMS**.

In Pļavnieki, largest and most important open spaces are intersected by long sightliness, destroying possibilities for **THREE ACTIVITIES IN ONE PLACE**. On the other hand, long sightliness are shaping the **PATHS BETWEEN GOALS** — an evidence of »elephant paths« (see inquiry on page df). It is recommended though to eliminate the diagonal sightliness and create finer network of goals to channel the movement along the edges of large open spaces like stadiums and courtyards (see example of Zolitūde microrayon, image rg).

To look for the diagonal sightliness, it useful to look first for the map of »elephant paths« — these are the signs of the processes described in **STAR NODE**.

Site data
Theory of the problem
In »Oregon experiment« one of the basic diagnostic patterns to inform site repair pattern Positive open space was used. Positive open space is a synonym for the convex open space — its shape should form positive polygon, i.e., each two points could be connected within the polygon without crossing the boundary. In case of urban square, it would mean that sightliness of the streets are not crossing the area of the square.

Precedents
However, diagonal sightliness are the feature of modernist housing estates which gives them a spacious character. Sometimes, it is regarded as a positive property. For example, in regeneration concept for Poptanhof in Delft, Palmbout Urban Landscapes proposed to retain diagonal sightliness, but to eliminate them on the pedestrian level in order to visually define semi-public spaces as visually enclosed »rooms« opened to the public space through one opening, which is elevated thus putting the means of visual control in the hands of inhabitants.

Another example of manipulation comes from Marzahn, large scale housing estate located in Berlin (see Urban Regeneration section on page th). Two approaches were used: elimination and legitimization of long sightliness. In the first case, long sightliness were eliminated in school stadium sites introducing hedges and fences (image gk). Legitimization took place in the courtyards which are crossed with long diagonal sightliness and elephant paths consequently emerged. During the renewal projects, these paths were paved and lighting was provided (image tk).
This is a territorial pattern in relation to physical structure.

Problem:
CIAM ideas which were followed partially in the design of microrayons like good insolation, were not followed consequently in relation to outdoor activities.

Solution:
Locate connected activities to the sunny places and protect them.

The fact that some playgrounds and recreational facilities are not used in Pļavnieki are because they are not placed in sunny places. On the other hand, residents choose sunny places for their outdoor activities.

Therefore, locate in the diagnosis planned and actual activity spots like playgrounds and seats in the public space and determine the degree of their insolation.
This is a territorial pattern.

Problem:
Some activities to occur need presence of other two, primary and secondary activities. Playgrounds, seat areas, and local or global centralities need movement, reason to stay, and surveillance to happen.

Solution:
Maintain and facilitate relationships between primary secondary and resultant activities when considering an activity area in public space within microrayon.

Some local centres suffer from lack of primary activities. Some, like shopping malls, are altering and exploiting the potential of the area to create their resultant activities.

Theoretical reflection
Jan Gehl in his book «life between buildings» refer to primary, secondary and resultant activities. Primary or necessary are those activities which are happening anyway: daily commuting for example. Secondary or optional activities are more intentional and happen if there are necessary conditions to do that — strolling, jogging, sitting outdoors, talking to the neighbour on the street etc. Resultant activities or social activities are all activities that depend on the presence of others in public spaces. Social activities include children at play, greetings and conversations, communal activities of various kinds, and passive contacts — seeing and hearing other people.

This pattern connects STROLL TRAJECTORIES, SUNNY PLACES, PATHS BETWEEN GOALS and NEIGHBOURHOOD TRANSITION.
This is an interface pattern in relation to physical structure and territory.

**Problem:**
In the city-region, market driven development and traffic flow jointly create concentrations of economic activity at local places and are seldom well-connected with them.

**Solution:**
Make global-local places within local communities not at their edges.

Land along major streets (which are also ring roads) are attractive for the large-scale commercial development — like A. Sakharov street in Plavnieki, which is now becoming a place related increasingly more to the city region and not to the locality (see diagnosis on page 54).

**Site data**
In Riga, the major development model was de-centralization and suburbanization. It was partially conditioned by planning policy partially by the going developmental processes. Riga is very centralized city: it is a capital and its centre accumulates all major economic, governmental, cultural activities. However, trends of last decade showed the process of de-centralization.

It can be visible in the spatial distribution of large shopping facilities in the city. They tend to accumulate in the areas which have three conditions. First, the road should be well-connected to highways or arterial roads. Second, there should be a sufficient amount of vacant land available. And third, commercial facilities are seldom placed on the fringes which are far from densely populated urban areas — the only partial exception which does not satisfy this requirement is the strip along the highway to Riga International Airport.

Thus large estates often accommodate new commercial facilities like hypermarkets and supermarkets.

These new facilities are oriented towards global scale and turn their backs to microrayon. Although large parking lots and some degree of oppressive control which these facilities create, the overall impact on the residential environment is negative in long term.

Refer to responsive environments — how to place malls in the community.
Therefore identify vacant land and accessibility and find converging local and global scales.
This is essentially an interface pattern

**Problem:**
At the edge of a microrayon and between them, transition from global to local scale is defined less by changing of mode from public transportation to foot or by continuity of pedestrian realm but by vehicular roads.

It means, that in case where the carriage way exist, the axis connecting bus stops and the residential environment are provided. Where the carriage way was not provided in the initial mastplan (conceived according to the compositional approach, see note in the **building ensemble**) the transition is vague, which causes many inconveniences for the pedestrians.

There is another problem statement possible. The edge of the microrayon, is a place without congruent and responsible control (in other words, large-scale wasteland), is not safe because it offers escape way for the criminals.

**Solution:**
Make transition inwards of the microrayon, for example, by allowing some through traffic along neighbourhood boundary.

Neighbourhood transitions are dominated by cars. Shopping malls and car-related activities are deteriorating pedestrian space in neighbourhood transition.

Therefore, in the analysis, locate places where change of mode occurs and map them together with the paths between goals. Emphasize missing links between goals.

Eliminate uncontrolled outward and inward ways, and make neighbourhood boundary as a large-scale territory of the microrayon.

**Site data**
One interesting moment was uncovered during the focused interviews with the residents. The aim was to find out, how well residents control the area and how existing control quality kames them feel. Nearly everyone in Pļavnieki, who lived there for two decades, expressed the feelings of unsafety. When asked about the events which cause such a feeling, interesting finding came out. Residents experienced assaults occurring in collective space and in public space in the buildings and areas close to the neighbourhood boundary. Thus residents, analyzing their shortcomings, told strikingly the same story. Criminals were guiding them through
the residential environment unnoticed. When they reached the neighbourhood boundary was reached, the assault took place: hand bag burglarised, or person pushed to the gorund. Another, even more worrying story was by the elderly lady, whose sister was assaulted in her staircase in the building which is just at the neighbourhood boundary at the Southern side. The criminals were able to escape unnoticed due to lack of any conditions for control — surveillance, presence of other people, lighting and so on.

There are another arguments to consider restructuring the neighbourhood transition from its current state to more integrated one. The bad luck of large scale estates is also the case for Pļavnieki 2 microrayon. It is common in professional environment, in Latvia, they are mostly architects who were working several decades during times of Soviet Union, to blame the system for the current shortcomings evident in the areas. According to the architects, large scale estates are good and were planned thoroughly to satisfy the needs of their (initial?) residents. The problem is, according to professionals, that microrayons were not fully implemented: service facilities were not fully implemented (neighbourhood centres, cinemas, swimming pools), employment base (factories and production enterprises were not created in integrated way with estate creation, and finally, the initial concept of building ensembles was only partially built. In Pļavnieki 2, the neighbourhood boundary should have accomodated many more program when it does right now (image rt). On the Eastern side, parking garages should have been built together with some residential building ensembles thus accomplishing Sakharov street ensemble. On Southern side thougth, only two free standing buildings are lacking from the initial masterplan: the area was not thoroughly planned anyway. It is doubtful however whether even initial masterplan is beyond reproach — there is a need for thorough reconsideration of landuses from user control perspective.

Theory about the problem
The area of neighbourhood transition is quite large in Pļavnieki–2. It is hard to understand its role for the user control quality and as a part of residential environment under control of its users.

One possible idea can come from the theory of the territoriality. The territory as it was shown in the Thoery of User control part, is a not simple entity, it is a rather nested system (see page DF). The territory, thus, it may be assumed, moved towards higher level of complexity (containing larger number of nested territories — primary and secondary, and secondary of the lower level secondary). What if neighbourhood transition could become a secondary territory for eleven thousand of the residents of Pļavnieki–2 and adjoining areas? How the quality of control would change if it becomes a territory on even larger scale, say, the whole Latgales district or even city?
Half-closed corners

This is an interface pattern in relation to physical structure and territory. Its purpose is mainly for diagnostical reasons. However, design proposals can be effectively evaluated according to principles and insights provided here.

Problem:
In building ensembles, where two buildings are positioned next to each other at certain angle (normally either 90 or 120 degrees) creates a contrast which affects visual field and this is not intentional effect. Two types exist: diagonal and T corners. These half closed corners which form a gate, in certain conditions, makes users feel unsafe in their residential environment.

Solution:
Eliminate diagonal corners.

T corner is half-transparent and is a symbolic gate. Diagonal corner is a flaw of urban design which causes diagonal sightliness.

Identify corner type in the analysis using maps of sightlines and photographs of the area.

Site data
Various corners formed by two buildings positioned at 90° or 120° degrees so they form a gate. Two types of corner situations are distinguished. T corner affords continuous visual field while moving through the gate and gives strong contrast with a good clarity of the situation.

Diagonal corner, on the other hand, has highly alternating visual field, as seen on image ff. It has a place to hide in the middle, and seen from the other direction, does not have a strong contrast and clarity of the situation is low.

Therefore, identify these two types of corner situation in the diagnosis and try to create T corners on the pedestrian level (a real boundary as a hedge is enough).
**Theory of the problem**

Isovists is a groundbreaking design idea, a mere scientific version of Defensible space. The main question here, what if we design isovist fields not surfaces? Isovist is “the set of all points visible from a given vantage point in space and with respect to an environment” (Benedikt 1979). By studying the values of the isovists, it is possible to design directly visual experience of the environment, including sensory-visual control over it.

Newman in Defensible space has found out, that assault crimes occur in places which are satisfying this characteristics:

(1) being inconspicuous, (2) being safe from sudden detection, and (3) having an avenue for escape (Newman 1976 pp. 30-34)

In terms of isovist fields, these three characteristics can be specified for the areas with minimal isovist area and occlusivity. The area of measures how much space (area) can be seen from a point and conversely from how much space x can be seen. The occlusivity, measures the length of the occluding radial boundary of the isovist and indicates, already suggests, the-depth to which environmental surfaces are partially covering each other as seen from the vantage point (Benedikt 1979). In other words, occlusivity is the degree of spatial complexity of the visual field. It is hypothesis here, that occlusivity is a critical measurement of the isovist fields in the microrayons.

In Defensible space, Newman describes the emergent properties of residential environment built according to compositional approach:

The random positioning of high-rise towers on housing sites has produced systems of access paths which are filled with sharp turns and blind corners. Circulous paths of movement through the interior of large projects are a recurring complaint of residents, especially in projects where the main building entries face interior project grounds rather than public streets. ... Regardless of how well-lit these areas are, residents express strong fears about turns in the path system connecting the street to the building lobby.

In contrast, in organic approach:

residents are able to scan the terrain they are about to use; they move in a straight line from the relative safety of the public street to what they can observe to be the relative safety of the well-lit lobby area in front of their building.
Wastelands

This is a territorial pattern. It defiens quality fo control, but its positive and negative value is context dependent.

Problem:
In the residential environment of microrayons, due to compositional apporach, there are place which are not controlled.

Distinguish two types of the watelands: PLACE HIDDEN FROM WINDOWS is a reserve for social activities in a neutral territory; EXPLICIT PRESENCE however should be satisfied at all times.

Solution:
Expand the uses on warelands which resulted due to compositional approach — »medians« (see reflection on Lynch further in text). However, pay attention to the wastelands without proper supervision of any kind and unpredictable, unpleasant contrasts in visual control (see HALF-CLOSED CORNERS).

Site data:
Residential environment is at first glance a wasteland. It was extremelly hard to differentiate the types fo control using terminology suggested by Lynch — the variable be-

tween wasteland (space of relative freedom of performing spatial rights) and oppression (space with high degree of ceratinty of control and low congruence, like supermarket). The wastelands can be identified according to principles described in PLACE HIDDEN FROM WINDOWS and EXPLICIT PRESENCE. The other type of wastelands not covered in these patterns are medians, the land lots where buildings were not implemented according to the initial masterplan (see NEIGHBOURHOOD TRANSITION). More potential wastelands are identified in parking study in the Diagnosis section (see page KL)
Theory of the problem

Much of the theoretical view applied in this project stems from writings of Kevin Lynch. In »Theory of Good city form he turns to the concept of wastelands many times. On the one hand, it denotes no-mans’ land (Lynch 1981 p.216). However, looking closer at these wastelands, one can find many users, the striking diversity of users — plant and animal associations, and different kinds of kids (ibid. 230). These places afford an escape (from adult control). Thus wastelands are best playgrounds. However, even wastelands-playgrounds need control: for example, the existence of adventure playgroun need supervision. Dangerous wrecks of buildings are undesirable in any community. Large wastelands though also can cause the feelings of anxiety and fear (ibid. p.301).

Traditional street is a kind of wasteland: it can become a market, workroom and meeting place. Thus, temporal ownership is characteristic for wastelands. Normally carnivals and fairgrounds are taking place on wastelands. One good example is Heilegengeistfeld in Hamburg — ten hectare site in the middle of the city, which status of the wasteland is legitimate and is sustained by alternating temporal ownership, which is reccuring and repetitious.

The great contrast of use is a great urban design tool: the act of transition is striking and has consequences on a larger whole.

Another useful example of emergence of wastelands are »shoulders« — time period in between seasons in airtraffic and tourism. This phenomena can be applied for parking lots and office buildings.

The closer and the most striking example of spatially defined and permanent wasteland are medians — these middle lanes of the highways which are planned as no-man’s land. In the mental map of the modernist urban designer, these are areas between major roads and buildings.

In »site planning«, one of the most fruitful approaches in site analysis is the identification of these wastelands and creative search for these hidden treasures. “The guiding rule is to extend what exists and works” (Lynch 1984:355).

Wastelands thus can be characterised and identified as a places without certain control. This means, that the territory is accessible, not controlled directly and indirectly through surveillance. It may have legal ownership, but the use is not controlled.
Explicit presence
Territoriality and natural surveillance

Primary this is a territorial pattern in relation to the physical structure. It helps to identify the place which are relatively hidden from the public routes.

Problem:
In pedestrian realm (see diagnosis), residents have feeling of unsafety due to the degree of explicit presence.

Solution:
Make presence explicit equally in the pedestrian realm in relation to HALF-CLOSED CORNERS, PATHS BETWEEN GOALS and BUILDING ENSEMBLES.

Therefore, identify places of lack of explicit presence. Assign specific solutions in relation to the activities and behavior settings at play.

Site data:
Virtually every residents have a story of assault in the microrayon. See Inquiry chapter and site data of NEIGHBOURHOOD TRANSITION. Lack of explicit presence is characteristic also for some interstitial places like paths between backyards of the buildings and fences of kindergarten sites. Control can originate better from kindergarten sites, therefore extend their zone of influence further till the residential buildings.

Theory about the problem:
Identification of the degree of explicit presence is described in a checklist for defensible space in residential areas developed by Voordt and Wegen. Three performances first could be questioned: sense of responsibility, visibility and clarity, and accessibility. Then, activities in relation to these performances can be linked: personal involvement in control, recognition of strangers and locals, visibility of the areas from the interiors, presence and frequency of traffic, car and pedestrian. Then these are ne linked to the presence of physical conditions: scale of the area, presence of lighting, number of access points (Wegen and Voordt 1988).
This is a territorial pattern

Problem:
In microrayons, some activities succeed only if they are not directly surveys from the apartments, like playgrounds and outdoor recreational areas where elderly, teenagers and kind escaping parental controls can meet; this also accounts for active recreation.

Solution:
Place sitting places, playgrounds, outdoor gyms and pitches so they are not directly visible from windows but surveys from the streets and paths between goals.

Therefore, in the analysis, identify all places hidden from the windows and relate them to the paths between goals, explicit presence, and 3+ activities in one place. However avoid places in front of the firewalls for formal and informal playgrounds see note on territoriality in Radburn principle projects in Theory chapter on page RT).

Site data:
As a rule in the microrayons, especially those built in late stage of compositional approach, lasting outdoor activities occur in the places which are hidden from the windows but well connected to the paths between goals. In Pļavnieki in particular, it is hard to find successful place hidden from windows: the composition consisting of long building blocks does not allow many places like that. Those remaining however are not sunny places and do not meet requirements for social place. There are not much places with affordances for informal sittings and other activities. However, some places were identified as places hidden from windows. First is school stadium. It is common in microrayons that these places are popular wastelands in a good sense. Although many benches and lighting poles are vandalized, durable elements like retaining walls are attracting residents for outdoor stay. Another example is a planned playground on Tinužu street: it meets requirements of places hidden from windows, sunny place, and 3+ activities in one place.
Patterns mapped
An attempt to map patterns as a distributions of control performances is a conclusion of the diagnosis part. There are patterns however which cannot be mapped — **common interest shared problems** for example.

It is possible to see the accumulation of wastelands — around major public spaces and free-standing buildings. Explicit presence is related to the orientation of building entrances and urban context of the microrayon. Parking problems are related to the configuration of streets.

Pedestrian circulation and presence of people is certain more in the middle of the microrayon, and is less certain on the edges.

And finally, the urban contexts suggest that the centrality is growing with the outward orientation from the neighbourhood.

This however does not shed light to the possibilities of design to condition user control in Pļavnieki.

Therefore, there is a need for a designs, which would tell the stories of how residential environment could be transformed and developed towards more congruent, responsible and certain control in right combinations.
And design patterns are tested and improved in the design. Therefore the pattern language introduces many design interventions in relation to the problems stated theoretically.

The field of problems, defined in the pattern language as interlocking sets, needs many story lines to be resolved. The design diagram should define a principle that uses one of the sets defining problem, and links it to the context. In response to the case of Pļavnieki, it is possible to distinguish three design diagrams, which can cover together whole problem field defined including overlapping and hypothetical patterns. These diagrams dubbed as “thick edge”, “neighbourhood transition” and “connected pedestrian realms”. Thick edge shows possible interventions to facilitate secondary territories. Neighbourhood transition shows necessary planning tools to respond to the urban context of Pļavnieki. Connected pedestrian realms shows possibilities to restructure pedestrian realm to condition more safe and convenient circulation and access to buildings and public spaces.

Each diagram is supported by a set of generic principles. “Thick edge” is intended to repair the shape of the open space to facilitate secondary territories. Therefore the generic principle, which is applied on the residential environment, is that of making the configuration of space congruent with the activity desirable. “Neighbourhood boundary” should be differentiated in relation to the urban context. There are two possible transitions: permeable and not permeable boundary. “Connected pedestrian realms” guides the repair of circulation spaces and establishes balance between different users of circulation realms. Therefore the generic principle applied is to remove misfits resulting from compositional approach — in relation to vehicular and pedestrian circulation.

There are multiple causes of the user control problems, and stakeholders can have different aims. These diverse issues and interests can be elab-
Design diagram 1
Thick edge

Instructions: make edge of the most important open spaces thick, using free standing buildings in a building ensembles in order to eliminate diagonal long sight-lines which cross the area but maintain those along the edge of the open space.

Keep 3+ activities in one place and places hidden from windows respecting explicit presence.

Two possible projects: School site and Jāņa Grestes Court.

Design diagram 2
Neighbourhood transition

Instructions: make Neighbourhood transition depending on urban context. In case of centrality, make use of paths between goals and allocate commercial functions on the ground floors, in case of more “suburban” transition, make sharp border between road related uses but keep the entrances clear and legible, and make inner side of the boundary green and low density.

Where possible, provide path between goals using symmetrical streets.

Possible projects: centrality with two options and Southern border.

Design diagram 3
Connected pedestrian realms

Instructions: connect pedestrian realms with paths between goals making former safe and latter more fit for diverse use. Use symmetrical street principle for paths between goals allowing both vehicular and slow traffic to co-exist. Make sure that paths are permeable and supported by secondary goals: activity spots, sitting areas, or small shops.

Keep sunny places intact and make those accessible; allocate parking according to small parking lots. Consider changing waste refuse scheme. Respect trees planted by residents.

Possible projects: Tīnužu street at the entrance and at the high density ensemble, Jāņa Grestes street.
Three diagrams together generate a vision.
The aim of this diagram is a possibility search to create conditions for more congruent use of open spaces, or in other words, creation of secondary territories. This applies to large open spaces like stadiums and courtyards, as well as backyards of buildings.

Thick edge originates either from the residential building — the extension of private realms of the residents, or an edge which controls access and circulation in public spaces.

In order to establish thick edge, three principles are proposed:

1. The backyard of the residential building is its secondary territory in the same way as the area in front of the entrance: half of the flats in most of the buildings overlook the backyards. Hence allow rights of use, for example parking, on the backyards.

2. The small public spaces, like playgrounds, should have a certain degree of control from interiors and secondary territories, and free public access. Therefore, enclose small public spaces with hedges and low fences, and keep those with public access and surveillance.

3. The wastelands, which are inherent part of the compositional approach used in design of Pļavnieki, should be given a character of the boundary. It is crucial to find new uses for the wastelands in order to manipulate access to and control of secondary and public spaces.

Thus projects alters the shape of open spaces in relation to the long sightliness and half-closed corners. It is done to facilitate secondary territories of free-standing buildings in the building ensembles. The resulting designs condition social spaces and defensible space variables towards enhancing quality.
School site

Which issues addresses
School site together with school building, part of the kindergarten site on Tīnužu street, and some residential buildings are attached to the privately owned land lot. This project resolves this situation — it indicates which areas can be developed, which should be retained open and improved. Thus this project resolves problem of the dual ownership.

Patterns involved
The shape is altered in order to restrict pedestrian movement which follows long sightliness but keeping the visual diagonal connection. Building ensemble is made with the existin buildings using the street segments under control of old and new residential buildings.

Social spaces are maintained in the stadium, but the access is restricted and presence intentional.

Defensible space is enhanced keeping visual connection to the open spaces and by enhancing territoriality of the new street segments.

Stakeholders and their role
Riga City Council requests land according to the needs of the school to «place-making» patterns. Land units which...
constitute thick edge of the site are awarded with development rights which are guided by free standing buildings or building ensemble. School administration decides the best program for the stadium and northern part of the site but taking into the account that area is also claimed by the residents of the microrayon.

**Program for the project**

First, school territory should be defined.

Stadium is retained as open space. The program for school outdoor activities can be placed on the North-western edge of the school site. Hence the stadium can be used for sport activities which are not related to school. The Western edge is flanked by the new development which is explained in the “J. Grestes courtyards” project. In the North-eastern part of the site, new swimming pool building with 25 m pool is envisioned. Second, possibilities how to reuse wastelands studied. Southern edge of the stadium can accommodate twenty new homes. Two rows of houses are envisioned. They share the street and parking with the existing buildings. Tinužu street is blocked and two new ends terminate at the widened segments facing new housing development. The South-western corner accommodate water pond which is connected with two canals separating new development from the stadium.
1 New housing and existing residential buildings share a street segment with the parking in the middle.

2 The row of cars and trees define the streetscape

3 Water edge restrict movement. Such a boundary solution allows diagonal visual connection but restrict movement. Treating edge this way, it is possible to ensure surveillance of the open space from the street.

4 Basketball pitch make the other edge of the school site and activities happening there are connected with the surroundings.
Courts of Jāņa Grestes street

Which issues addresses

Courts which were extensively provided for recreation in the original masterplan, nowadays has neglected image, are abandoned, and are not safe. This project resolves the issue of the wastelands — places with not certain and responsible control.

It also addresses the issue of the land ownership. Some land lots which are attached to the residential buildings are too large and their configuration in relation to building entrances prevents their proper use for the residents. Thus project envisions ways how to restructure legal ownership towards the actual use of the territory.

Patterns involved
The shape of open space is altered in three different ways.

Social space is facilitated by retaining sunny places unbuilt.

Defensible space is enhanced in two ways. Firstly, it is possible to delineate the secondary territories of residential buildings thus establishing zones of limited access by real and symbolic boundaries. Secondly, new additions placed in the wastelands can facilitate territoriality.

Stakeholders and their role
Riga City Council guides the land ownership restructuring process. This involves new parcels for streets and building lots.

Residents decide on the possible extension of parking areas in their backyards.

Residents also may claim the disfuncnt road segment in the middle and claim part of the courtyard for their purposes.

Program for the project
In the courtyard between school and residential buildings, land lot for new housing construction is identified. In the middle courtyard, the edge of the kindergarten is extended. On the Eastern side, the extension of backyard of adjoining residential building shapes new edge.

The typology which fits to the resulting land lots is either
row house or detached houses in the middle court. This requires a new access road for the development.

For the eastern land lot a combination of staircase access and row houses is possible. Two to five storey buildings can be considered.

The project as a whole has close relationship with J. Grestes woonerf project and School site project.
The aim of this diagram is to search for proper responses to the urban context of the microarea.

1 There are two possible uses of the neighbourhood boundary — first, a new centrality can be conditioned by proper planning and structural intervention. Second possibility is a secondary territory for the microrayon — an open space reserve, which can be used to resolve some infrastructural problems, for example the storm water storage.

2 Therefore, channel neighbourhood traffic inside the neighbourhood boundary by introducing the local street as a part of the neighbourhood boundary. This is applicable for the neighbourhood boundary between A. Sakharov street and Western edge of the microrayon.

3 Another solution is more applicable where the transition of this kind — a loped local road — is not desirable, is to delineate microrayon territory and highway-related uses.

This diagram involves top-down planning and should be regarded as a framework for development on the of the microrayon.

Thus projects define response to the urban context of the microrayon by establishing neighbourhood transition. It is done so by altering circulation realms. This helps to define secondary territories on a large scale and new social spaces.
Urban edge. New local centrality

Which issues addresses
Project establishes active boundary, which is related both the scale of the city and to that of the microrayon. It resolves back-to-back orientation of the microrayon and its boundary and establishes conditions for development according to GLOBAL-LOCAL PLACE.

This project has close relationship with Tīnužu street entrance to resolve connected pedestrian realms.

Patterns involved
Pattern this project resolves is NEIGHBOURHOOD TRANSITION. It is guided by PATHS BETWEEN GOALS.

GLOBAL-LOCAL PLACE establishes the context for the project. Under this conditions, which are defined by urban highway on the one hand and pretense of high density residential area and accumulation of vacant land, can produce new commercial and residential programmes, and vast concentrations of parking lots. Therefore, project acts on two levels: the boundary as a whole and the level of the block.

On the scale of the boundary it creates PATHS BETWEEN GOALS. On the block level, it defines principles for the BUILDING ENSEMBLE.

Stakeholders and their role
Riga City Council requests land according to PATHS BETWEEN GOALS. Land units which constitute the boundary are regulated by the BUILDING ENSEMBLE. Riga City Council provides public transport in the new street created — mini-buses which circulate between peripheral centralities or other GLOBAL-LOCAL PLACES.

Program for the project
Large commercial facilities are located on the Southern and Northern sides of the centrality — this establishes two magnets which condition PATHS BETWEEN GOALS. Blocks can accommodate mix-use development, which is guided by the BUILDING ENSEMBLE.
Suburban edge. Open space reserve

Which issues addresses
Project establishes green boundary, which serves as an open space reserve for the microrayon. It resolves back-to-back orientation of the microrayon and its boundary and establishes conditions for development of the secondary territory. This project is an alternative for the centrality option presented in the previous project — a more low-dense and green neighbourhood transition.

Patterns involved
Pattern this project resolves is NEIGHBOURHOOD TRANSITION. GLOBAL-LOCAL PLACE establishes the context for the project. It is guided by STROLL TRAJECTORIES and BUILDING ENSEMBLES. In this project, the goal is to create neighbourhood transition as a secondary territory for the microrayon — accessible and controlled from the inside of the microrayon.

Stakeholders and their role
Riga City Council requests land for the NEIGHBOURHOOD TRANSITION. Land units which constitute the boundary are regulated by the BUILDING ENSEMBLE. Riga City Council develops stormwater storage solution — six to eight meter wide canal. Access is organized from Jukuma Vācieša street.

Program for the project
The water edge of the Southern boundary is a backbone of the public space. It restricts movement from the southern side but allows circulation along.

Objective of the project is to allow both residential and commercial programs to co-exist in the southern edge and establish meaningful relationships with the microrayon. Possible commercial programs can use the water edge as their fence. Residential programs may incorporate water edge as a definition of their secondary territories.
The aim of this diagram is to restructure circulation realms to achieve better balance between various users of the streetscape in the microrayon.

1. Make better transition of entrance areas. Keep them free of parking. Mark them by surface change.

2. Use traffic humps as a bridges for stroll trajectories. Make them on the level of the sidewalk in the way to have seamsless pedestrian surface.

3. Terminate streets at the secondary goals in the paths between goals. This would help to achieve two objectives. First, local streets are using too many drivers, and they are competing for parking places. This would limit the possible use of streetscape for parking and associate it to the place of residence. Second, the resulting pedestrian squares would be used more for social activities.

This diagram involves both top-down and bottom-up approaches. Project can originate from the building interfaces and initiated by the residents in very bottom-up way to improve the entrance and its zone in relation to parking and entrance transition. Other extreme would be eliminating through traffic — initiated by the traffic authorities or city council. The best way is to improve both small scale settings and partial through traffic eliminating measures — the intermediate project, which needs residents involvement (as a clients and to formualte program) and authority or land owner.
Jāņa Grestes woonerf

**Which issues addresses**
Project changes the circulation realms on two levels.

First, it redefines car access on J. Grestes street. Second, it changes the surface layout in relation to paths between goals, building entrances and nodes on the pedestrian network which are defined in Paths between goals.

**Patterns involved**
Pattern this project resolves is paths between goals. J. Grestes street has a narrow profile (see page 52) but is a connection between two important goals in the microrayon — centre to the west and school to the east.

**Stakeholders and their role**
Riga City Council proposes change of access scheme. Residents are giving
their opinions what kind of entrance area solutions are better for them.

**Program for the project**
The project supports J. Grestes courts project. However, it can be implemented separately.

It involves all three principles proposed in connected pedestrian realms. The parking provision may increase up to 35 percent, in case parking places are clearly marked. This can solve the parking problem in the middle term.

New places for socialization can be facilitated on the Northern side of the street, in relation to J. Grestes courts project.
One of the main objectives for this project is to use whole surface of the street for pedestrian use. Parking should not block the visual and physical connection to the adjoining green areas.

On the images above, J. Grestes street in Plavnieki, Rīga, is referenced to the Camerlingstraat in Delft. Here, the very effective solution has been applied. However, the case should be studied in relation to the density and length of the street to make the solution effective.
Entrance areas may serve as the bridges from pedestrian realms to the green areas and humps at the same time.
Tīnužu courts

Which issues addresses
This projects resolves the diagram of connected pedestrian realms from different perspective. Here, in the building ensemble, the territoriality is not clearly established. Project uses small parking lots principle, to create a thick edge consisting of parking and greenery involving symmetrical streets.

Patterns involved
Pattern this project resolves is paths between goals. The courtyard is crossed by the elephant path which connects school and bus stop.

Building ensemble thus is given an edge and the hearth.

The wateland which is shaped by the road and firewalls of the residential buildings is given a new significalnce.

Stakeholders and their role
Land where this wasteland belongs is a part of the land lot described in the school site project. However, there is no possibility to defien new program — the place is dark and the distance from the windows makes new additions impossible. Therefore, the solution may be to add this wasteland to Tīnužu street.

Program for the project
Parking is the program for this project. It is possible to allocate up to fifty cars. The lot can be used by the adjoining buildings without special reference to the specific address.
Tīnužu street before

Tīnužu street after

Legend
land uses
- living buildings
-Hero
- pedestrian
- garage ways
- green areas
- water

zoning
- public spaces
- limited access public spaces
- new block footpaths
- new buildings
- front yards of new buildings
- back yards of new buildings

N
0 10 50 100
Which issues addresses
This project links the Neighbourhood transition diagram with connected pedestrian realms. It ascertains more urgent issues concerning both diagrams. On the edge of the microaryon, initially intended buildings were not implemented, hence pedestrian networks were not implemented as well. On the other hand, occasionally new buildings are added. This project guides the development in order to implement connected pedestrian realms principle.

Patterns involved
Pattern this project resolves is paths between goals. There is a missing link the pedestrian network which is evident as an elephant path crossing the area. New development is guided by the building ensemble pattern.

Stakeholders and their role
There are five land owners in the project area. There is a need for a right of the way reservation at the end of the Tīnužu street to connect it to the bus stop.

Program for the project
The area can accommodate high-density development on vacant land lots according to zoning ordinances. Extension of the existing shopping facility is envisioned.
Conclusions

orated in projects — specific responses to the multiple problems. The projects also complete the Pattern Language. “Thick edge” thus helps to resolve the problem of divided ownership beyond user control problems. “Neighbourhood transition” is a kind of “thick edge” on a higher level of scale, but the projects of these two diagrams operate on the level of the building ensemble and establish meaningful relationship with the whole — a drawback of the masterplan identified in the Diagnosis. “Connected pedestrian realms” principle can be used when solving parking problems and solves connected issues identified in the problem field.

In order to look for possibilities, three design diagrams represent the response to the problems of user control of large scale housing estates: thick edge, neighbourhood transition and connected pedestrian realms. Thick edge shows possible interventions to facilitate secondary territories.

Neighbourhood transition shows planning tools necessary to respond to the urban context of Pļavnieki.

Connected pedestrian realms shows possibilities to restructure pedestrian realm to condition more safe and convenient circulation and access to buildings and public spaces.

Pattern language defines diversification possibilities for residential environment of microrayons.

To facilitate user control in microrayons, it is important to look at the variables on different levels, which are defined in patterns. Thus, the context for a pattern is another pattern of larger scale.

However, design can be applied on different levels, and hence lower levels are taken into the account in each pattern.

Steps to complete the project

In order to complete pattern language, it is necessary to explicate possible design solutions for five patterns: NEIGHBOURHOOD TRANSITION, HALF-CLOSED CORNERS, SYMMETRICAL STREET, SMALL PARKING LOTS.

These are essential physical structure patterns which can be changed by design.

These patterns will be explicated using at least three types of representation: plan, isometric view or birdseye perspective, section and/or eye-level view.
Reflection

Usually, large scale estates are associated with typical problems: spatial, social, economic, legal and many others. This lead to typical solutions. However, these typical problems make unique combinations.

The fascination which motivated to start this graduation project was to explore what are potentials of urban design in large-scale estates in Riga, Latvia taking these unique combinations into the account.

The problem which was chosen to tackle is user control. It is an environmental variable — which hypothetically could uncover many problems which are existing in large scale housing estates: feelings of safety, neglected image, and conflicts among various users like drivers and pedestrians, and very psychological needs of security, identity and stimulation. User control of the built environment could be defined as the meaningful relationship of the user with the other users, with the built environment, in a way to satisfy psychological needs, feelings of satisfaction, safety,

The design objective is to establish meaningful and clearly identifiable values for user control in large-scale housing estate.

Pattern language originally developed by Christopher Alexander, was chosen to understand the possibilities of design to set conditions for the user control. The process of research and design was iterative and recursive. It means that small versions of problem were solved and process was repeated until satisfactory solutions were reached. The research consisted of literature review, inquiry and analytical studies of the built environment of large-scale housing estates. Direct and direct user observation during two field trips according to methodology proposed by Zeisel (1984) were used for the inquiry. Drawing and mapping was used extensively through the process of the research.

It become clear from the literature review, that we can link the value of user control to components of the built environment such as physical structure (roads and buildings), interfaces (separations and connections) and territory. The relationship however is not causal but rather conditional — physical structure conditions interfaces but never causes their existence, it makes them possible.

The resulting designs propose that by creating interfaces and changing physical structure, it is possible to condition territories and hence user control.

The outcome of the project is a pattern language, which went through three cycles or research and design. First was process of inquiry, which was completed before P2. It was supplemented by the studies of environmental structure of large-scale estates consisting on physical, territorial and interface components. First vision appeared on P2. Pattern language as a place-event combination was used to link inquiry and built environment.

Second was the process of diagnosis. The aim of this stage was to find out what is wrong with the environment in relation to the user control. Pattern language as a double statement linking context, conflicting forces (problem) and physical structure produced. This part was finished after P3.

Third part completes the pattern language. Patterns formulated based on research, inquiry and diagnosis were used to define design interventions — as three design diagrams and seven projects. Design diagrams are generic principles, intended to facilitate territoriality, interface with the urban context and control of circulation and access. Projects are very specific answers to unique combinations of the problems. These are the answers how certain intervention to physical structure can reach the broader objective — facilitating user control on different levels. Designs are presented for the P4. After P4, the pattern language is going to be completed using design results.

Pattern language proved to be a very powerful tool to accumulate many layers of information and data, including design knowledge.
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