

LANDSCAPE, ENVIRONMENT AND LAND MANAGEMENT

LANDSCAPE SPATIAL STRUCTURE OF THE LARGE-SCALE RESIDENTIAL AREAS

Una Ile

Latvia University of Agriculture, Department of Architecture and Construction

E-mail: una.ile@llu.lv

ABSTRACT

The research is based on the authors' previously performed researches on the landscape space quality in the large-scale residential areas in the Baltic Sea region and also on the researches about solutions for residential outdoor territory planning for the 21st century residential areas and their courtyards. Applying the comparative method in the research, several residential outdoor spaces were analysed according to their compositional planning solutions and their elements in Scandinavian countries. Consequently, the research studies the relation between landscape spatial structure and modern development tendencies of the large-scale residential areas in scale of Scandinavian countries.

Key words: landscape spatial structure, large-scale residential environment, development tendencies.

INTRODUCTION

Free landscaped spatial structures in Europe started to develop in the end of 19th century and in the beginning of the 20th century. They were planned and built as opposite to the sharply developing industrial cities, where exaggerated and unarranged planning structure created unfavorable social, working and recreation conditions. The slogan "Closer to nature!" got its embodiment in structural solutions of the differentiated nature building harmonious linking, mainly in suburb natural environment geographic ranges (Briņķis, Buka, 2008). Seeing from the point of view of modern urban planning theory, one of the large-scale residential environment development possibilities is functional differentiation of the courtyard space, which resulting main task is a perception and exponentiation of its recreativity potential. As Danish urban planner Jan Gehl pointed, there can be pointed three main directions in the functional and aesthetic spectrum of the public outdoor territory: necessary activities, possible activities and social activities. Recreation function by this division corresponds with the second category, where the processes of included functions are directly dependent on adequate outdoor territory conditions – „if there is a wish ... and if one has time and place allows” (Treija, Bratuškins, 2003). How do they do in other cities? Referring to the north states, which are in our climate zone and in similar maritime conditions (Ilgspējīgas lietusdeņu apsaimniekošanas ..., 2006). North states have already been working for a long time in the politics for creating successful dialog with society in the urban planning process. It can be noted here the experience of not only the large cities

(Helsinki, Oslo, Stockholm), but also of the small cities (Tampere, Tapiola, Malmö), where urban planners emphasize the importance of society implication in planning processes (Liepa-Zemeša, 2008). From practical researches for objective determination of the situation it is necessary to get objective information about experience of other European states in planning, maintenance, to research and to reconstruct successfully the large-scale residential area territory. Therefore, its importance, role and expected consequences must be understood (Mansbach, 2006). In the research rationally planned and improved courtyards were established in the city of Finland – Tapiola and in Sweden in the new large-scale residential area of Hammarby Sjöstad. Such courtyards were created on the basis of progressive functional, economic and aesthetic factors, whose solve the matters of inhabitants' living space quality in the widest urban building aspect (Mansbach, 2006; Rotzler Krebs Partner, 2005; Hammarby Sjöstad – Stockholm ..., 2009). Consequently, the aim of this research is to obtain new findings from the analysed territories in this research.

MATERIALS AND METHODS

The methodological and informative basis of the paper is composed of modern analytical overview of the large-scale residential areas in the Scandinavian countries. In order to reach the set goal, the following scientific research literature was studied – publications, documents and electronic resource analyses. The literature sources used comprise material on the large-scale residential areas and their development tendencies. The inductive

method was applied in the research process that was based on the analysis of the large-scale residential areas in the Scandinavian countries. For successful interpretation and establishing results, a monographic (descriptive) method was applied, which is based on the scientific findings, theory gained during the research and author research “The Landscape Quality of the Residential Area Courtyards in the Cities of Latvia”, what has been developed from September 2008 till August 2011.

RESULTS AND DISCUSSION

In the context of balanced development ideas the whole world is increasingly thinking about the intensive use of existing resources. Therefore, increasing attention in urban planning is focused on the restoration of the degraded territories (Treija, 2001; Western Docks ..., 2001). The new structure plan of Stockholm, where sustainability is a central purpose, in addition draws the attention to the recurrent exploitation of the land for not creating new urban green zones (Beatley, 2000), visually illustrated in the Figures 1 and 2. Planning system in Sweden is marked as “community planning”, which is a system focused on society production and consumption processes changing and improving, which otherwise is left to the market competence. Planning means strategy formulation, which would improve the quality of Swedish life and natural environment, visually illustrated in Figures 3 and 4. Planning and environmental policy focuses on this dual purpose model of urban development and green zone preservation-creation guide lines, whose provide possibilities for people to be closer to nature and that natural theories save their ecological functions (Nelson ...). Large-scale urban reconstruction project is implemented in the other city of Sweden – Malmö.



Figure 1. Residential area of Hammarby Sjöstad in Sweden (1996)

(Source: <http://www.hammarbysjostad.se/glashusett/>)

Former industrial territory created close to the straits in connection of new Sweden and Denmark – Øresund near the bridge, has been rebuilt into new

residential and bargain area. In the basis of area development there are clearly defined principles of balanced development, in such way pointing at the full readiness of responsibility to undertake the main role in materialization of balanced development principles into (Treija, 2001).



Figure 2. Residential area of Hammarby Sjöstad in Sweden (2009)

(Source: <http://www.hammarbysjostad.se/glashusett/>)

Linking with the other part of Malmö is affected by existing industrialized landscape with unequal urban development. The development of the other West port, which part has to be Bo01, still is only in the beginning stage, though, today more active building works have been started in the northern part of the area. It will be about 10 years required for Bo01 to become a part of greater interest to the city and to get wide local social and commercial service exposure, which usually also is expected from the new city. Only then the development of the new city can be precisely evaluated. But it is possible today already to make some conclusions (Gronlund, 2005). One of the basic ideas of Sweden European housing exhibition at the turn of the millennium was the idea that had to touch the theme of ecology, ecocycle and resources preservation. When Malmö was chosen as the place for exhibition process and after West port was chosen as a development place, the processes of ideas specification for ecological urban area had began.



Figure 3. Natural environment in residential area of Hammarby Sjöstad in Sweden

(Source: photo from author private archive, 2012)



Figure 4. Natural environment in residential area of Hammarby Sjöstad in Sweden (Source: photo from author private archive, 2012)



Figure 7. Designed shallow pond with rocky bed in Malmö, Sweden (Source: from project LV2003/005-876/VAPF/0029 materials)



Figure 5. Example of the residential area in Malmö, Sweden (Source: <http://www.bing.com/maps>)



Figure 8. Example of rainwater design in Malmö, Sweden (Source: photo from K. Siļķe private archive)



Figure 6. Examples of planning designs of residential courtyards of Malmö, Sweden (Source: <http://www.bing.com/maps>)

Purposes were high and main idea the result to be applicable in the whole world, for it to be able to inspire the global urban environment initiative in the largest cities. Not all purposes were achieved, but Bo01 proved itself, and it still is a remarkable example (Nilsson, 2005), visually illustrated in the Figures 5, 6. Some of Malmö municipality officials, who helped to plan new region, were skeptical about conscious environmental perception of incoming population.

But this preconceived conception, that affluent people are not interested in environmental procedures, can be contravene. There are people, who, on the contrary, believe that conscious environment perception and prevention correspond with the higher class level. This point of view that most frequently occurs in environmental research proves that people, who are wealthy, try to be more educated and, thereby, try to take more interest about environmental problems (Ost, 2005). Malmö came to the solutions for soil pollution purification, ecocycle, and green structure and traffic problems. Developers prepared individual designs for the building. Bo01 plan attracted the attention of planners and architects; it became a good example of the long-term urban development. Created plan hoped to optimize constructing perspectives of compact and vivacious region; the region, which would protect from drafts and would give possibility for ecological, social, economic and human sustainability. For creating human sustainability, in order to reach high life quality in sustainable society, there was a new dimension of sustainable development concept. Bo01 green initiatives results showed wide interest in many courtyards, they were widely used also in other new projects, both in Malmö, and in Europe

(Nilsson et al., 2005; Nilsson, 2005). The upkeep of rainwater in Malmö is closely connected with the planning process. Rainwater was one of the most important Bo01 external environment themes. Important environment matter was that, how appropriately to get rid of this water. In the same time rainwater was often used purposely to create different pleasant effects and different courtyards, streets spaces and park environment (Persson, 2005), visually illustrated in the Figures 7 and 8.

Rainwater is an important aspect in urban planning process; therefore, in places, where it is impossible to solve rainwater upkeep matter or where the territories are very sensitive, building is not permitted. On working out detailed plannings as an obligatory the requirements are included: for rainwater accumulation and/or purification, on planning territory open rainwater system arrangement, to create topography of the area, the location of buildings and the greenery, taking into consideration rainwater drainage (Cilinskis, Zaloksnis, 1996.; Ilgtspējīgas lietusūdeņu apsaimniekošanas ..., 2006). If accurately created, then open rainwater systems take important place and progressively affect urban environment. Detailed design and type, as equipment are integrated in the urban landscape, are of great importance in this respect. Even such renewables as water has to be exploited rationally to provide enough stocks for future generations (Bolund, Hunhamma, 1999; Stahre, 2006; Ilgtspējīgas lietusūdeņu apsaimniekošanas ..., 2006; A lively and liveable ..., 2009).

One of the biggest Bo01 problems was a creation of modern, resources effective and densely developed urban area that would remain close to nature. To achieve that the system design for wide urban area was created. Therefore, system design was created for local rainwater upkeep either that prescribed to invest resources in overground channel creation, as well as in introduction with water saving system, which would be used as a convenience in compact urban structure (Nilsson et al., 2005). Qualitative courtyards evaluation was made in the summer of 2002 and it was made by the landscape architect Sabina Jallow. Sabina Jallow described the plannings, vegetation and ecology of all residential courtyards. In total there were evaluated 18 features by three-point evaluation scale. The most characteristic and higher evaluated features refer to the feeling for the place – it is well-tended and looks fresh, and it has development potential and sustainability, as well as it can give shelter. Such features as possibility to play, recreation places for sitting, impression of green zones, were evaluated a little higher of average level. In turn, the variety of plant materials, cultivated biological variety, insects amount, experience diversity, possibilities for inhabitants to develop and to create residential outdoor territory, evaluation was lower than the standard (Persson, 2005). Therefore, it was established in the

research that there are some failures in so far accepted harmoniously created and rationally planned courtyards.

In the last decades the system of housing development, when municipality implements considerable apartment building and is the largest housing fund builder in the state, is one of the reasons, why Helsinki today is one of the sharply growing cities in Europe. As the tendency of population number increase has still going on, in new development plan provision with qualitative housing is among main priorities. 65 % of urban territory is municipal property; therefore, Helsinki is not restricted to plan new residential areas both in the central part of the city, and in the suburbs (Treija, 2000), visually illustrated in the Figures 9 and 10.



Figure 9. The design of the outdoor territory in the residential area of Helsinki (Source: photo from V. Nefedov private archive, 2014)



Figure 10. The design of children playground, example of Helsinki (Source: photo from V. Nefedov private archive, 2012)

Helsinki determined strong policy to develop residential function in already existing urban territory. It has more reasons – working places are concentrated in the central part of the city, inner city has developed infrastructure.



Figure 11. Bird's-eye view of residential areas of Helsinki (Source: <http://www.bing.com/maps>)

Helsinki is a port city and ports are located straight close to the center of the city. In the middle of the 80's the municipality of Helsinki took a decision to change the exploitation of land in wide territories of ports and storages to the residential territories with mixed character. West port is about 200 ha large area, created in the west edge of Helsinki peninsula in pedestrian walk apart from urban business center. According to the development plan of Helsinki West port was planned as urban part with more than 22 000 inhabitants. Planned area consists of three regions – RuoKolahti, Jatkasaari and Munkkisaari (Treija, 2001), visually illustrated in the Figures 11 and 12.



Figure 12. Residential area of Jatkasari, Helsinki (Source: <http://www.bing.com/maps>)

Helsinki is also a very green city, because 35 % of the urban land territory is an open green space, moreover, green territories bind the whole urban structure. Therefore Helsinki used to call itself as garden city (Rīgas pilsētas attīstības ..., 2004). Helsinki, as well as many other Scandinavian cities, has compact urban form and large greening areas, whose line through the center of the city. Therefore, the compact urban form gives possibility for the existence of the pedestrian life style (Beatley, 2000). In Helsinki in the beginning of the 20th century there had already marked the transfer from the structural amorphous building to the purposeful its decentralization. This tendency was

corroborated by worked out in the middle of the century the general layout/plan of Helsinki. Therefore, in consequence of started at the turn of the century decentralization new, wide residential complexes were developed both in north, and in west directions. They are architectonically structurally tightly connected to the landscaped environment and embody progressive garden cities building principles. One of the more known Finnish garden cities is Tapiola, in development of which harmonious interaction of the building and nature environment has been achieved. One of the main priorities there is an effective, comprehensive structure of landscaped spatial environment (Briņķis, Buka, 2006). Values of Tapiola, to maintain environmental quality and to find the future success guide lines of Tapiola – not forgetting about the structural, social, economic and visual sustainability (Tapiola projects review, 2009), visually illustrated in the Figures 13 and 14.



Figure 13. Example of the large-scale residential area in Tapiola (Source: <http://www.bing.com/maps>)



Figure 14. Residential area structure in Tapiola (Source: <http://www.bing.com/maps>)

In the practise of Danish territorial planning it is widely used the method of restricting large cities with green planting belts and linearly arranging in their surrounding territory satellite towns. In the planning project of Copenhagen suburbs it is envisaged to locate inhabitants along radial transport main roads, preserving among housing

complexes green planting blocks (Brinķis, Buka, 2006). The main task of the year 1993 in the municipal plan of Copenhagen is to create comprehensive development in integrated city, where different urban activities are joined together, if it is allowed based on the principles of urban planning, environment and transport planning. In 1975–1990 the population number in Copenhagen decreased for 58 000 inhabitants, while in the other part of the state the amount increased. As one of the reasons urban planners of Copenhagen consider unattractive living conditions. In 1993 one of the main tasks of the municipal plan of Copenhagen was to provide high quality development possibilities for the housings. Therefore, on bringing forward as priority attractive territories in the wate quays, accessible with social services and public transport (Treija, 2000). In future it is planned to develop new residential areas in such way to improve the situation in the housing sphere in Copenhagen. Examples of the residential area courtyard are visually illustrated in the Figures 15, 16 and 17.



Figure 15. Example of the residential courtyards in Copenhagen (Source: <http://www.bing.com/maps>)



Figure 16. Landscape space of the courtyard in the example of Copenhagen (Source: <http://www.bing.com/maps>)

The development of new areas is first of all supported along the existing transport corridors to

accordingly provide good possibilities of approachability. Modern urban environmental policy in Europe rather follows the tendencies of urban development, than determines guide lines for urban development. There are big differences between the cities of West Europe and the cities of post-socialism states, which have to get over fast changes processes in many life domains (Rīgas pilsētas attīstības ..., 2004; Treija, 2001). Kevin Lynch asserted that it is possible to project built environment in such way for people to be able to fit fully into the surrounding conditions, to orientate themselves and to keep in mind ways and routes. He wrote that successful environmental sight gives its owner important feeling of emotional safety (Biddulph, 2007). Functionally designed courtyard planning is visually illustrated in the scheme of the Figure 18. The residential outdoor territory is rationally isolated from the parking lots.

Building intensification still can't be implemented at the expense of the limitation or decrease of the public outdoor territory functional diversity. Every outdoor territory users group has typical specific needs, which have to be respected, creating both active, and passive recreation zones, as well as places for entertainment for different age interested individuals, visually illustrated in the Figures 19, 20 and 21.



Figure 17. Landscape space of the courtyard in the example of Copenhagen (Source: photo from V. Nefedov private archive, 2014)

It must be found the possibility to implement other activities connected with residential environment, for example, walking with pets. Important role in the improvement of the public outdoor territory must be turned to the improvement of the surrounding landscaped quality, which was purposefully implemented; it is a vital increasing factor of environment recreativity level (Treija, Bratuškins, 2003). Urban planning is not only a science and art, but also economics and politics. Therefore, for taking into consideration the succession it is necessary to work out strict guide lines for urban spatial structure development.

The development of the theories, which are important in the urban landscape and which are important part of the public outdoor territory, as well as where the large-scale development is planned, has to happened according to the plan accepted by all the interested parties (Liepa-Zemeša, 2008; A lively and liveable ... , 2009). One of the basis matters touching the urban planners today is how to make understandable projects of urban planning to the inhabitants and politicians, showing the city, which does not exist today, creating democratic dialog (Liepa-Zemeša, 2008). Therefore, wide practise and basis about different architectonic and ideological searches has been formed in foreign states over the decades. Once in a while designs occur, whose purpose is to accent principles and tendencies of modern architecture, not only to create comfortable or prestige housings for a definite society group. In Sweden and in a number of other European states

processes of housing architecture and technical organization were protractedly going on differently from processes in Latvia (Anteniške, 2000). Even though building simplicity and comfortable functional organization have been practiced for a long time in Latvian building either.

As surrounding building, which image and architectonic design is an important indicator of the public outdoor territory expression degree, which is mostly depressingly uniform in the large-scale residential area, one of the possible ways for environmental recreativity increase is purposeful building intensification with a purpose to optimize environment spatial space and to widen its functional spectrum. Depending on the relations of the existing in environment determinant elements scales to free courtyard area scale, building intensification could be implemented with the methods of both multi-storey, and low rise building. In current large-scale monofunctional residential areas the processes diversity could considerably increase the quality of the residential outdoor territory, and in this sphere the priority is given to the different inhabitants' services oriented activities (Treija, Bratuškins, 2003). Residential area project should not be isolated from the other land exploitation methods, because many people live close to the schools, recreation possibilities, shops and other local institutions. Unfortunately, often residential areas are built not paying attention to the environment.



Figure 18. Example of the residential area spatial building planning in Copenhagen, where 1-existing large-scale building; 2-large-scale residential courtyards; 3-parking lots in the residential area; 4-traffic zone; 5-low rise building; 6-view point in the courtyard territory (Source: author construction)

It has many reasons. The first and the main reason is the increasing people dependence of the personal transport. Today many people use cars to do the things that just some decades ago were done going by foot, riding a bicycle or using public transport (Biddulph, 2007; Rogers, 1997). Therefore, traffic is the one of our biggest environment problems. To

prevent its negative consequences, urban planning has to propose alternative that would allow people to refrain from driving in many daily situations and encourage using other transports kinds in place of cars. As a result it is necessary to optimize road network planning, to increase its exploitation effectivity (Ryden et al., 2005; Bertaud, 2002).



Figure 19. Recreation area for adults in the courtyard of Helsinki (Source: photo from A. Ermolinskiy private archive, 2014)



Figure 20. Recreation area design in the courtyard of Helsinki, Ruoholahti (Source: photo from V. Nefedov private archive, 2014)



Figure 21. Recreation area design in the courtyard of Copenhagen (Source: photo from V. Nefedov private archive, 2014)

Sustainable city does not mean only problem solutions for energy acquisition, pollution reduction, maintenance of fauna and flora natural environment, green zones and similar matters – even though some decades, beginning with 1960, there was big necessity to focus straight to these points. There are many other important factors for the attention. It is a matter not only of aesthetics and

outdoor territory, it is important for city to be of great economic vitality, and to employ inhabitants and to be democratic in daily working process (Gronlund, 2005). The interaction of nature and arranged environment constantly express bigger pressure in the urban development to the surrounding landscape. Among the most important international factors and development trends affecting the development of population structure is the globalization of the economy. Increase of interrelations and competition, as well as the increase of knowledge-based economic activities. These changes substantially affect the states of the Baltic Sea region either. Main beneficiaries of them are areas of the capitals and other metropolises that have become magnets for the rapidly growing business services, communication industry, investments flow (Vides aizsardzības un reģionālās ..., 2001; Jlyce, 1978), it is necessary to determine equivalent residential area perspective development.

CONCLUSIONS

There were established in the research different spatial spaces for urban environment courtyards in the Baltic Sea region. In the territory of Scandinavian states, where is functional improvement and splendid greenery formed for inhabitants residential outdoor territory, it can provide qualitative courtyard territory. The emphasis in these territories is placed on the raising of the courtyard spatial potential for recreativity development. The large-scale courtyards territories are formed to the green, environment friendly landscaped spaces that are suitable for different types of recreation possibilities. There are no more unreclaimed territories for development in Stockholm, therefore, there is defined the reconstruction of existing territories in the city that promotes the higher potential development of these territories. Scandinavian states think more and more about the intensive use of existing resources, therefore, greater attention is put to the reiterative exploitation and renovation of degraded territories. Consequently, achieving harmonious building with landscaped space, courtyard development in urban environment is balanced. Increase of pedestrian traffic and bikeways network potential by decreasing the transport traffic, prevention of environment pollution, the maximum exploitation of green structure and rainwater potential, implementation of garbage sorting system, flora natural environment maintenance in green plantations blocks provide viable courtyard territory for every inhabitants needs in daily life.

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