

JSACE 4/13

Tradition of Green
Architecture in
Lithuania. Is it
Possible to Continue
it?

Received
2015/10/01

Accepted after
revision
2015/12/01

Tradition of Green Architecture in Lithuania. Is it Possible to Continue it?

Gražina Janulytė-Bernotienė

Kaunas University of Technology, Faculty of Civil Engineering and Architecture
Studentu st. 48, LT-51367 Kaunas, Lithuania

Corresponding author: grazina@janulyte.lt



<http://dx.doi.org/10.5755/j01.sace.13.4.13609>

Lithuanian tradition of *green architecture* – it is not only a perception of landscape identity, but also a perception of human-nature coexistence. Problems of *ECO architecture* are analyzed through narrower green architecture concept, as a field of cultural human activity, historical tradition of space. It is not only work field of urban planners, architects or landscape architects. It is a tradition of spontaneous relationship with the natural environment of every nation. Circle of investigated questions is urban expression of *green architecture* in Lithuanian cities. Two branches with different genesis roots are defined: from *urban agriculture* to *city landscape*. All possible development configurations of *green architecture* in future city should be associated with concept of *self-sufficient city*, that is to say, planned, regulated, balanced change, ensuring not only renewal of artificial structures but also renewal of natural structures. The subject is urgent because mistakes in this process only lead to collapse of the cities and destruction of nature.

Lithuanian *cities development*: peculiarities and changes are inseparable from human effort to communicate with flora: practical use (food preparation), beautification of personal everyday life. In Lithuanian cities, manors and monasteries architects planned unique ensembles of *green architecture*. Urban planner of 20th century included surrounding valuable natural landscape elements into urban fabric, they created systemic 'Green structures of the city'. Emphasizing that Lithuanian cities identity is related to preserved structures of *urban agriculture* and *green architecture* (always vibrant and changing), thus formed objectives are to recognize, preserve and develop these structures.

Discussing global trends of *green architecture*, we see that main of them are associated with intense urban growth and need to adapt natural talents, primarily in the sense of energy and natural environment.

It is understandable that Lithuanian cities will not stay in eternal stagnation, however, their development suppose to immediately balance between two objectives: cities urban intensity should grow parallelly to intensity of green structures; proposals of cities development, their forms and objectives should be presupposed on political, juristical and educational basis – this is obligation of raising public ecological consciousness.

KEYWORDS: Green Architecture, Identity of city, Self-sufficient city, Urban Agriculture.

Introduction



Journal of Sustainable
Architecture and Civil Engineering
Vol. 4 / No. 13 / 2015
pp. 18-27
DOI 10.5755/j01.sace.13.4.13609
© Kaunas University of Technology

This article aims to define the links between the branch of contemporary eco architecture - Green Architecture - international contemporary progressive architectural-urban movement and the architecture evolution of Lithuanian cities. Lithuanian Green Architecture (which we understand as coexistence of live nature and artificially-made environment) has deep roots and traditions. We can realise the universality of these traditions, as well as the essential characteristics of identity, by analysing the spatial development of our cities and towns, the relationship with the natural landscape, spread of the forms by using nature.

Civilization of mankind nowadays is described as urban civilization. The city is a man-made product, which transformed the spatial relationship between man and nature. Every nation - large or

small - has identifiable characteristics as cultural, religious, political, economic tradition of using natural resources. Curbing nature, making it serve the vital human needs have always been the most important objectives:

- _ mountains are taken down, tunnels are dug out, rivers are dammed;
- _ new isles are made to build cities;
- _ various types of land resources are used for energy;
- _ buildings of unlimited sizes with a variety of technological structures are constructed.

Thus is created the artificial mega world, the existence of which in most cases is contrary to the well-being of nature, and sometimes leads to its irretrievable death:

- _ droughts occur and they turn forests, fertile lands and cities into deserts;
- _ huge floods wash down towns and cultivated fields; abandoned cities turn into forests.

1 Dating back to the turn of the XIX – XX centuries, the urban planners stood out in defense of the two opposite poles: is human civilization development possible only by promoting and increasing urbanization level or on the contrary, the human race urgently needs to save itself by limiting the intensive urbanization areas (Wright, 2008). The issue of natural degradation becomes acute in early XXth century – during this period of intense urbanization process there is no coherence between methods of ecological and economic urban development (philosophies). In order to maximize profits, urban developers intensify urban area development, without taking into consideration the aesthetic and hygienic needs to integrate Green Architecture in the broad sense. During this period the Lithuanian Green Architecture has traditionally developed as a periphery of urban and rural civilizations. The XXth century Lithuanians as the nation transforms from villagers to the citizens, overtaking longtime habits of rural life to urban life.

2 In this historically favorable context, today the most pressing question is - whether in our country it is possible a peaceful path man–nature? In what way man, as a developer is looking for it?

Worldwide there are progressive political, social movements that promote these issues. Do architects, urban planners manage to be in time to ground the ideas that could prevent ecological disasters? Which ideas are utopian, and which are based on cognition of techno-environmental renewal. It is in this aspect that the memory protecting the identity of a Lithuanian (citizen - a villager) can be useful to evoke the ability to live together, to coexist with nature.

3 Objectives of the article are to discuss the following issues:

- _ To survey the historical development of Green Architecture. What kind of aesthetic and economic characteristics of this evolution have influenced the tradition and specifics of towns and villages of these two different origins - *urban agriculture* and *green city* (eco-systems, including forest parks, parks, gardens, avenues, etc.); assess possible connections with contemporary global eco architecture trends of *self sufficient city*.
- _ to review whether in the process of fluent city-development the requirement to coordinate objectives - increasing urban intensity and expanding green urban fabric should ensure *re-cycling of bio structures*.

The comparative method was selected for analysis. The character and authenticity of the specimen in Lithuanian Green Architecture (historical analysis) are studied. Discussed is the relevant international eco-movement approach to new cities (New-look Green City, Self-Sufficient Cities, Urban Agriculture) projects which have already been implemented in the cities: Malmo, Stockholm, New York, Madrid - and in theories, such as Instant Eco-cities and projects Active Nature. Lithuanian pioneer projects (Kaunas Vytautas Magnus University project “Thinking Green”) are compared.

Methods

In this article term Green Architecture includes systematically wide standpoints that cover further levels of urban planning and architectural design:

Level I – is Green Architecture, understood as an integral part of urban city structure planning (greenery system of country, city or suburbs).

Level II – is Green Architecture, understood as an independent recreational or other type green areas planning complex (parks, city gardens, public squares, boulevards).

Level III – is Green Architecture, understood as separate green areas, design of their composition in relation to separate buildings or plots (single patch of greenery).

Design and development of all levels of Green Architecture is understood as an improvement of our environment where “artificial” built city structures are aligned with “naturally” grown natural structures. The goal of article is to present that certain Green Architecture systems, not important of their level, can be used and developed as *urban agriculture* structures.

Here *urban agriculture* is understood as a model for sustainable city planning, where agriculture is intertwined with city’s urban framework. In other words – an urban environment, that is directly linked to its food supply (Cappelli, IAAC, 2010). The same theoretical model applies to *self-sufficient city* – which is described as sustainable and self-dependent urban model. It is distinguished by city’s ability to recover, without destroying specific urban features and natural values.

Discussion

Fig. 1

The location and surrounding nature as opposed to one another: for defensive reasons the city wall fencing the city and the surrounding natural environment are separated, sometimes contrasting.

View of Vilnius defensive wall XVI and XVII centuries. Barousse, Ch. (After 1858)



Lithograph. Engraving facsimile from the album of John Casimir Vilchinsky, published by Vilnius Archaeology Museum. A. Pilinsky printing house in Paris. Retrieved from URL (lnm.lt/parodos/archyvas?id=2670).

Fig. 2

Pažaislis Monastery, bird eye view. Pažaislis Camaldolese Monastery over the centuries has carried its own aesthetic, historical, social, cultural and ecological value (Unknown photographer, year, S.Sajauskas archive). Retrieved from URL (kvb.lt/prie-nemuno/kaunas.php)



I. Historical specifics of Lithuanian Green Architecture. Traditional historic concept of Urban Green Architecture.

We can define the spatial development specifics of historic Lithuanian old towns in Kaunas, Vilnius, Klaipėda. The pattern of their urban development is no different from other Central European cities born in Middle Ages. City distances itself from nature: the tightly built-up area is guarded by the city walls (Fig. 1).

In the city there are only artificially created “natural forms”: parks, gardens. They are associated with high luxury – to possess parks and gardens is the privilege only within powerful social strata. This type of Green Architecture (level I), with an emphasis on the aesthetic value, is created in monasteries, manors of the nobility, palaces (Fig. 2 and Fig. 3).

Across Europe, monastery ensembles were constructed by combining the Green Architecture of courtyards, orchards, gardens, and alleys with buildings. Noticeable are changes in value – formerly privately owned (the

monastery orchards and gardens) and used for utilitarian needs, now they are orderly managed, monastery gardens replanted and exist as a public space (city park) used for aesthetic, historical, cognitive and ecological purposes (Sereikiškių Park - Bernardinų Garden).

In Lithuania, public parks for the residents appear only later in the middle of the 19th century, after having accomplished planning works of the New Towns. They represent level II objects. The expanding cities include the suburban forests, natural banks of rivers. Green Architecture becomes a field widely used and analysed by architects, urban planners, theoreticians and gives birth to the new planning theories and urban plans during the turn of 19–20th centuries.

Lithuanian national state was established in 1918 and has such a peculiarity that its ethnic residents Lithuanians mostly lived in rural areas. Lithuania started its history as a sufficiently strong agricultural country. Lithuanian social - cultural identity should be defined more as that of a peasant rather than citizen. Of course, in minor Lithuanian towns residents also have gardens outside the city walls, or primitive backyard garden beds. *Urban agriculture* in Lithuania is born as spontaneous phenomenon when nation of villagers was moving to the cities.

II. Traditional historical concept of rural culture - Green Architecture in the countryside.

Any farmers' community uses the natural resources and talents by reproducing them. During historic development, the community learns to know the rules of natural recovery. Lithuanian countryside is characterized not only by economical approach of a user to the living environment, but also by the aesthetic concept of embellishing the green environment in the village streets, houses, cemeteries. See Fig. 4. The greenery looks as a uniform carpet, made from trees, shrubs, flowers, vegetables, crop diversity – represented as level III objects. All these things have their own rules, are united, and give the opportunity to settle here for different species of the living world: birds, insects, and animals.

After Second World War city planners in Lithuania followed a tradition of attempt to preserve valuable elements of natural environment of small towns and villages: e.g Kazlų Rūda, Grigiškės and Laukuva. This included not only elements like small rivers, woods or parks, but also a very important main

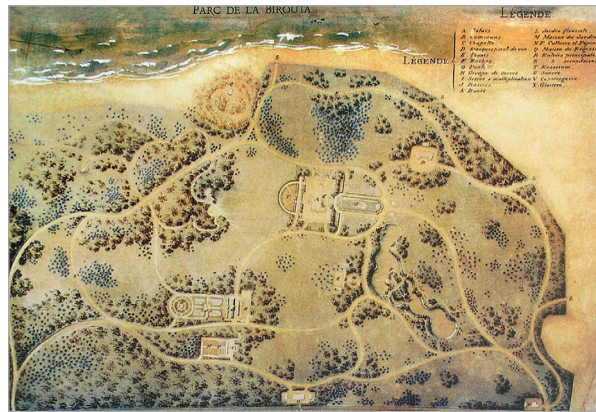


Fig. 3

Palanga Park project plan. Architect Edouard Francois Andre. Park around Tiškevičiai Palace in Palanga is one of the most prestigious public parks in Lithuania (Andre, 1899). Illustration from magazine "Kelionės ir pramogos", 1999, Nr. 5 (10). Retrieved from URL (pgm.lt/parkas/parkas.htm)



Fig. 4

Scattered homestead in Žemaitija (West Lithuanian region). Lithuanian farmhouse is surely planted with favorite forest trees: oak, maple, linden-trees; women plant flowers next to vegetables (Šešelgis, Baršauskas, Čerbulėnas, Kleinas 1965)

Fig. 5

Kražiai town Raseiniai district planning project - employs green architecture tools within level II scheme (architect P. Janulis, 1947)



Fig. 6

Plan for Kaunas development. In the plan of the New Town is marked the compositional axis – Laisvės alėja (Liberty Avenue), planted with linden-trees. “Living under the Lindens”. Three Squares - where the Green architecture is very important (Frandsen M., Jokimas A. 1923). Retrieved from URL (e-tar.lt/portal/lt/legalAct/TAR.888ACF2A7B9D)



square of town, usually situated in front of the church. See Fig. 5 for representative project of Kražiai by urban planner and architect P. Janulis.

Other traditional forms of Green Architecture practiced in Lithuanian countryside are:

- orchard–garden culture next to homes and farmsteads; facade-decorating with ornamental plants (mentality expression of a Lithuanian peasant – citizen, moving from rural to urban areas).
- Green Architecture in cemeteries (traditional old village and town cemeteries used to be in groves, traditional symbolic embellishment is characteristic).

III. The development of Green Architecture in Lithuanian cities.

During the period of the 19-20th centuries, when the districts of the New Towns (current historical urban centers) were planned and built up, the main significance was given to squares, parks, alleys (as in Kaunas case: Liberty Avenue, Vydūnas Alley, Kaukas Stairs, The City Garden).

Architect's Frandsen plan of 1923 (level I project) was not realized to its full extent, but is valuable for its originality (Fig. 6). For preserving the original implemented parts of the city, there are set heritage requirements for the sustainable use (extensive use) of that urban part of the city. One of Žaliakalnis' plan peculiarities is that Urban agriculture is transferred into a new period of 21st century. Planning the work is carried out in the Sustainable Development manner that ensures natural and man-made environmental coexistence and balance. According to Frandsen's plan, The Oak Park (Ažuolynas) integrated in the city structure is not just an important compositional axis (by the way, not implemented), but also the result of eco-thinking test in time. Protection regulations worked out by Dr. N. Lukšonytė for Kaunas historic part of the city called Žaliakalnis emphasize the values of historical Green Architecture and urban agriculture attributes (Lukšonytė, 2002). The Regula-

tion is intended to establish the direction of identity analysis, which is regularly updated in state program “State and Nation: Heritage and Identity”.

Kaunas Liberty Avenue is a street turned into a city center (level II object). This alley is a legend created with centenarian linden-trees. It is characterized by a variety of functions and permanent changes. The importance of the alley’s parterre is difficult to exaggerate – it is a theatre of live activities, played by actors who are the passers-by under the linden-trees. Surrounding buildings are only a stage coulisse. Liberty Avenue’s Green Architecture overcomes variations in periods of life: 1920 is a standard Russian marginal province street (Fig. 7); 1939 is the high street of an independent and economically capable small European state capital; 1980 is a viable socialist city center conversion into a pedestrian street (Fig. 8). Year 2015 should be the beginning of a new project with a new attitude towards the alley tradition.

While reviewing and assessing urban greenery system, one has to wonder the variety of its types, new species –

their permanent birth, life, death. The aesthetic, social and ecological values of such created Green Architecture are protected and must be integrated into the development of new period and a new philosophy of urban development schemes. In Kaunas case, level I to II of Green Architecture design was well implemented in XX century urban planning and realisations.

The modern urban structures created during the fifties - eighties of the 20c., integrated Green Architecture into city’s residential areas, town squares, public housing complexes, suburban collective gardens (Lukšionytė, Kulvietytė-Slavinskienė, 2007). Green architecture is a term used in Soviet urbanism terminology – ‘zielonoye gradostroitelstvo’. In the urban plans made in those times, one can notice the systematic approach of city planners. While studying the Kaunas General Plan of the sixties of the 20th century, we see how green spaces are created as combined systems - Kaunas inner green ring, an outer green ring of Kaunas (both – level I projects).

In the fifties – seventies of the twentieth century residential quarters, university campuses and parks were intensively built up. Characteristic for the time is Kaunas Polytechnic Institute (Kaunas University of Technology) campus project realized during the fifties to seventies. The feeling of space between the buildings is prevailing, the green zones are laid out according to “natural environment” principle by incorporating them into ancient Oak Park. Relief (gullies of Gričiupis, Girstupis streams) is preserved. The path of Tzarist fortress and several land buildings that have survived are integrated into the urban solutions (Fig. 9 and Fig. 10).

The proposals by architects–city planners from this period improved the urban aesthetic and ecological quality: clean air, oxygen production, social - psychological climate. Urban green mass



Fig. 7

Liberty Avenue (then Tzar Nicholas Avenue) (unknown photographer, early XX c.). Lithuanian art museum. 12x18 cm. Retrieved from URL (epaveldas.lt/object/recordDescription/LDM/LDM1_1036279)



Fig. 8

Liberty Avenue today (unknown photographer, ca 2014). Retrieved from URL (vdu.lt/en/ivykiai/bohemia-of-laisves-avenue-places-to-remember)

Fig. 9

General Plan of Kaunas University of Technology campus (Špikienė, Kulvietis, Zykus 1964). Retrieved from URL (galerija.ktu.lt/index.php/Kita/Muziejus/Parodos/Universiteto-paveldas-KPI-palikimas/1_gen_planas)

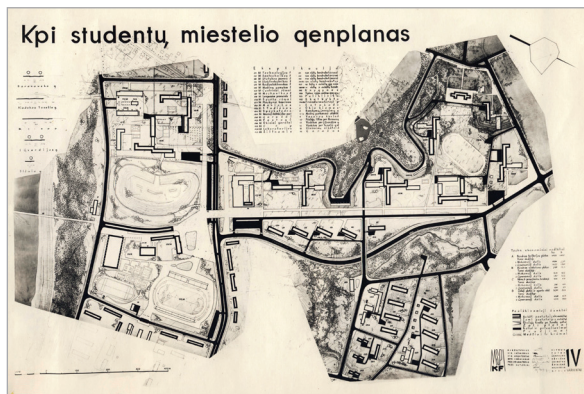


Fig. 10

Kaunas University of Technology campus (unknown photographer, ca 2010). Retrieved from URL (technologijos.lt/upload/image/n/svietimas/S-35423/2-1-sm_a_0501-04.jpg)



Fig. 11

Ecosystem Urbano. Eco boulevard of Vallecas, Spain. Sculptural installations in ecosystem are arranged along the central boulevard area and generate green islands in a dry and cool Madrid air (Jodidio, 2013a) (p.208).



Fig. 12

Malmö City Park, sea embankment near the newly developed residential area Ecocity Augustenborg (City of Malmö, 2011). Taken from URL (buildipedia.com/aec-pros/design-news/ecocity-malmo-sustainable-urban-development)



quantity increased when separate projects were tied up into city's Green Ring. The success of the position was to preserve nature's natural forms and develop intensively new projects in coordinated manner in all three levels of Green Architecture.

IV. Interpretation of the concepts *urban agriculture* and *self sufficient city* in the context of Lithuanian urbanization

The new eco-culture, as a movement began in the fifties and is the urban and rural cultures symbiosis, as a prerequisite to rebuild, restore the natural objects that are in use.

Green architecture is perceived as a complex part of Eco architecture, Eco Urban development. Humanity is beginning to perceive cities as a medium to cultivate their land (Jodidio, 2013b).

In recent decades in America and Europe, the implemented projects (level III) in parts of the city reconstitute the old agricultural habitats (Fig. 11) the aim is not only to increase urban eco-diversity, but to teach the historical, cultural and social lessons, introducing the city man with traditional local flora and fauna (Jodidio, 2013a) to provide the capacity to cherish, enjoy and use it. (Fig. 12). Thus *urban agriculture* system is revived, and often is even created anew.

In Malmö, Stockholm, Amsterdam urban parks are established, gardens - open spaces - are planted with native vegetables and herbs quite often on the quays of the sea or channels. In Paris on the Seine isle, where the Renault factory once stood, after it was demolished, the monastery flower garden, kitchen garden were restored, the island has become inter-town park, changing the industrial logistic part of the city structure (level II projects).

Group of French city planners presented an interesting ecologically sustainable development project. (Fig. 13). Biodiversity of the green zones, surrounding the city, can absorb CO₂ and ensure 34% of the oxygen demand. Forests and farms produce food products for 350,000 inhabitants and becomes a "jardin agricole" - agricultural garden (level I project). A group of cities unite in the territory management; constructing 5,000 dwellings annually is scheduled. Alongside 2000 ha are preserved for land-use. The project aims to provide values for natural resources.

Their idea is to exploit the maximal natural productive power, to define max capacity of zones to save their resources, to create "ecological corridors" between agricultural areas. Environmental nature protection and the local use of green batteries (pilles vertes), residential and commercial buildings-islands ensure high area density.



Fig. 13

SoA architects (2013). Active Nature project visualisation. This is a great example of a self-sufficient city (Jodidio, 2013b)

What are the challenges of today presented in the projects developed in Lithuania? Even in the sixties, in the middle of Kaunas one could see pasturing cows. Can we create such overlapping green areas in the city now? Social-commercial attempts in Lithuania to rapidly develop suburban residential house groups are ambiguous. Those are quite popular projects that turn agricultural areas into residential on the local site. Is the new suburban rutting not a parody of Urban Agriculture? This process has problems and shortcomings, as the integrity of social life is not guaranteed due to the lack of social infrastructure, there is no engineering infrastructure; arable land is taken up. Benefits: autonomous estate, individual approach and possibilities, neighboring natural environment. What about justifying this process with analogous balanced Eco projects?

We discussed the relationship between latest ECO theories and implemented projects with Lithuanian urban theory and planning practice. The concept of self-sufficient cities - to restore the natural treasures (land, flora, water, energy resources) and improve paralelly urban structure features (intensity, moving, diversity) - should be as indispensable supplement to urban development concept of *sustainable development* in Lithuania.

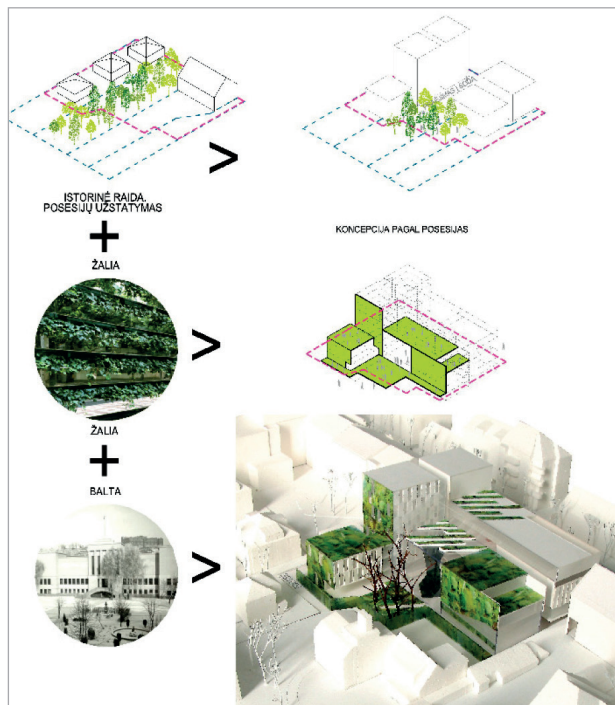
It is necessary to ensure balance in the urban development: the increased intensity of built-up area should be accompanied by increased diversification and integrated Green Building process.

The rising threat of environmental disasters to Lithuania is not high because of the low urbanization scalability. However, the philosophical equivalent of the problem is very relevant. Together with modern science and increasingly intensifying agricultural productivity, farmers' community activities sometimes make equal threat to the survival of the eco system, as urbanization. The article aims to point out that Lithuanian agriculture-forestry despite a few errors in intensive agriculture, still managed to preserve characteristic Lithuanian landscape, eco-balance in quite large Lithuanian areas. Systematic activities of urban planners, geographers, landscape architects contributed to this (for instance Republic of Lithuania General Plan – level I object).

Results

Fig. 14

Studio G. Janulytė - Bernotienė, project visualisation (2012). Project of Vytautas Magnus University in Kaunas "Thinking Green" was built next to the traditional gardens – slopes of architecture in V. Putvinskis street



Studio of G. Janulytė Bernotienė in 2012 presented a competition project for Vytautas Magnus University in Kaunas. In one way this project can be used as a role model for promoted Green Architecture. First, the project preserves street elevation character, respects context and develop high intensity, that is required for a city center area. Second, the greenery of the site – trees – were preserved and even expanded with green roofs and facades. In this project heritage of the historic center of Kaunas – gardens and green ivy-covered walls – were taken as an example. Therefore, the green roof-facade architecture, protecting bio-diversity in the city center, is perceived as a philosophical approach to local urban development.

Conclusions

Urban developers, designers, theorists and urban community have a duty to preserve factors that create identity of the city, to identify and cherish them. In Lithuanian urban structure Green Architecture has distinctive traditions. Long-term customary tradition of *urban agriculture* is still alive at Lithuanian cities and towns. Some examples are positive (Žaliakalnis' special plan), while some of them are negative (detailed plan of Nemunas island). Therefore it is important that I, II and III level projects would be developed in relation, defining strategic aims and ways of implementation. City center intensity is expected to increase parallelly with city's greenery areas.

Together Green Architecture and *urban agriculture* should make symbiosis and be read as a urban structure's neology. New-look Green Architecture is not only a principle of ecological, dendrological or aesthetic principle in urban planning and architecture design, it is also a condition for the preservation of society's identity. This is related to the permanent formation of structures connecting the human and the natural world.

- 1 Educational work in the society, explaining what is beautiful and useful, native and unique; and what is adopted only as fashion or on a commercial trend.
- 2 The laws governing amendments in documents of Green Architecture and Urban Agriculture city planning, related with warranty for the existence of recycling systems.
- 3 Fostering contests and projects, motivated by Green Architecture and Urban Agriculture ideas, attracting public and private investments.
- 4 Perfecting the system for educating landscape and architecture professionals by providing diverse necessary knowledge and skills to design a variety of eco-system objects.

Acknowledgment

I would like to thank Tolema Vabolytė for assistance with the interpretation of the manuscript. Next I wish to thank colleagues at G. Janulytė-Bernotienė studio who provided help and greatly assisted with collection of the research material for the manuscript.

Cappelli, L., Vicente G., Institut d'Arquitectura Avançada de Catalunya, and Advanced Architecture Contest, eds. *Self Sufficient City: Envisioning the Habitat of the Future*; 3rd Advanced Architecture Contest. Barcelona: Actar, 2010.

Curl, J. S.A *Dictionary of Architecture and Landscape Architecture*. 2nd ed. Oxford [England]; New York: Oxford University Press, 2006.

Jodidio, P. *100 Contemporary Green Buildings*. Cologne: Taschen, 2013a.

Jodidio, P. *Green architecture now! 1: [...]*. Köln: Taschen, 2013b.

Lukšionytė, Nijolė, and Aušrinė Kulvietytė-Slavinskienė. *Lietuvos meno ir kultūros paveldo tapatumo tyrimai [Lithuanian Art and Cultural Heritage Identity Research]*. Accessed

by URL: vddb.library.lt/fedora/get/LT-eLABa-0001:J.04~2012-ISSN_2351-5082.V_1.PG_47-60/DS.002.0.01.ARTIC.

Lukšionytė-Tolvaišienė, N. *Kauno Žaliakalnio reglamentas ir tvarios raidos nuostatos [The Regulations of Kaunas Žaliakalnis Distric and Its Sustainable Development]*. Accessed by URL: vddb.library.lt/fedora/get/LT-eLABa-0001:J.04~2005-ISSN_1822-4555.N_1.PG_24-31/DS.002.0.01.ARTIC.

Šešelgis K., Baršauskas J., Čerbulėnas K., Kleinas M. *Lietuvių liaudies architektūra. Kaimo gyvenvietės ir gyvenamieji namai [Lithuanian Folk Architecture. Rural Settlements and Dwelling Houses]*. Vilnius: Mintis; 1965.

Wright, H. *Instant Cities*. London: Black Dog Publishers; 2008.

References

GRAŽINA JANULYTĖ-BERNOTIENĖ

Associated Professor

Kaunas University of Technology, Faculty of Civil Engineering and Architecture
Studentu st. 48, LT-51367 Kaunas, Lithuania

Main research area

Architecture, Urban planning

Address

G. Janulytė-Bernotienė architecture studio
Gedimino g. 48-2, Kaunas
Tel. +370 685 58880
E-mail: grazina@janulyte.lt

About the author