

Urban Acupuncture in Historic Environment: Research of Analogues

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 <http://dx.doi.org/10.5755/j01.sace.23.2.21434>

Today's cities face a variety of development, rehabilitation and preservation challenges. Historical built environment deserves particular attention in this regard. Urban regeneration projects are particularly complex here because of the dense urban fabric and the risk of damage to the heritage values. In order to understand how to overcome these challenges, we explore the concept of urban acupuncture in this research. The urban acupuncture focuses on small, precisely targeted, rapid and usually low-cost changes that positively affect social, ecological, and even economical and physical dimensions of the surrounding environment. The aim of this research was to identify the recent interventions in historic urban environment of Kaunas city (Lithuania) that can be seen as the analogues of urban acupuncture and to evaluate them using the designed set of criteria integrating the characteristics of urban acupuncture, the patterns of socially and ecologically responsible biophilic design and the requirements for preservation and development of historic built environment.

Keywords: urban acupuncture, urban intervention, historic urban environment, Kaunas.

This article deals with the concept of *urban acupuncture* that has emerged as a part of knowledge transfer trend in urban studies. It involves applying holistic Eastern medicine concepts in urban design and management (Marciano, 2016) and is based on the precisely localized interventions in the urban fabric in order to regulate so-called "energy flows" (ecological, sociocultural, socio-economic, and information flows) in the city, so that it can function successfully. The movement and activities of people, the ecological flows, the information flows and exchange can be considered as "energy" in urban acupuncture; meanwhile elements of urban structure, including streets, squares, green areas, buildings etc. can be metaphorically considered as the "organs" of the city (Casagrande, 2010; Khaerani, 2014; Lerner, 2014). As the experience demonstrates, urban acupuncture can be applied locally and systematically (Tortosa et al., 2010). The "needles" of urban acupuncture can be various types of interventions and events ranging from the building or park to street festival or any other positive happening in public spaces (Lerner, 2014).

Urban intervention in this this research is considered as the art objects or design solutions in the urban environment, creating a public space or integrated in the existing space and giving it a new expression. Most often, the urban interventions are aimed at addressing social, ecological, local identity and similar problems and creating the new quality in the environment. *Urban acupuncture intervention* here is considered as the intervention or the system of interventions in the selected points of urban fabric with social, economic, ecological or other potential in order to activate their "energy" and affect the surrounding territories.

JSACE 2/23

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Received
2018/07/11
Accepted after
revision
2018/09/15

Introduction



Urban acupuncture is more efficient in densely built and densely populated urban fabric (Walker, 2015), usually characteristic to historic urban environment. This research is concentrated on the interventions having the character of urban acupuncture in historic urban environment; historic urban environment, according to Vienna Memorandum (2005), here „refers to ensembles of any group of buildings, structures and open spaces, in their natural and ecological context, including archaeological and palaeontological sites, constituting human settlements in an urban environment over a relevant period of time, the cohesion and value of which are recognized from the archaeological, architectural, prehistoric, historic, scientific, aesthetic, socio-cultural or ecological point of view.“ Based on the potential benefits of urban acupuncture in historic urban environment, seven hypothetical statements of the research were formulated:

1. Urban acupuncture interventions in historic urban environment can be beneficial for the actualization of heritage, for highlighting of its' valuable features, and attracting attention of the society.
2. Applying the principles of urban acupuncture allows developing, improving or adding new features to the system of public spaces of a historical part of the city.
3. Successful urban interventions correspond to the basic principles of biophilic design (Browning et al., 2014) and urban acupuncture (Lerner, 2014).
4. The architectural-urban context determines the type of urban acupuncture interventions.
5. Interventions of urban acupuncture can influence the ecological system, can restore or create biodiversity, ecological balance and the links between humans and nature.
6. Urban acupuncture interventions in the historic environment can create or re-create social viability.
7. Urban acupuncture interventions can positively affect the urban landscape.

The aim of the research is to identify the recent interventions (in a timeframe of 5 years) in the historic urban fabric of the second largest Lithuanian city Kaunas that can be seen as the analogues of urban acupuncture and to evaluate them using the designed set of criteria in order to test the above-presented hypothetical statements. *The methods of research* include the analysis of literature, the classification of urban acupuncture interventions and the design of the set of criteria for their evaluation, the identification of interventions, that can be seen as the analogues of urban acupuncture in Kaunas historic urban fabric and their evaluation using the designed set of criteria, generalization and formulation of conclusions.

Framework and methods of research

The research was aimed at finding and evaluating the analogues of urban acupuncture in the historic environment of Kaunas; thus the classification of urban acupuncture interventions and a set of criteria for their evaluation were necessary. After the analysis of examples and literature (Lerner, 2014; Network..., 2018), it was noticed that some interventions have a temporal impact and the impact in a very limited space, some interventions have a wider (for example, district level) impact, there can be individual and systematic interventions (Tortosa et al., 2010). Consequently, four types of possible urban acupuncture interventions were distinguished in this research:

- _ non-physical intervention (does not have a permanent physical form, but has a significant impact on the viability of the site, for example, the iconic music piece, tradition, street artists);
- _ intervention of local impact (affecting only the surrounding environment, for example, the square, where it is located);
- _ intervention of wide impact (localized in one place, although affecting the viability of a wider area, for example, the district);
- _ systemic intervention (forms a certain network of spaces in order to influence the whole city).

The urban acupuncture concept integrates social, ecological and spatial aspects, thus the system of criteria for evaluation of urban acupuncture interventions should encompass these dimensions as

well. The previous experience of assessment of public spaces was applied; the set of criteria for the assessment of urban acupuncture interventions was created integrating the public space assessment questionnaires from the Project for Public Spaces (Project..., 2018), characteristics of urban acupuncture (Casagrande, 2010; Khaerani, 2014; Lerner, 2014), the 14 the patterns of socially and ecologically responsible biophilic design formulated by Terrapin Bright Green (Browning et al., 2014), the principles of sustainability and the requirements for preservation of historic built environment. The possibility to give scores to some of the indicators and to calculate an overall assessment in order to compare the interventions was envisioned as well. The set of criteria was structured into five sections:

1. *General data*. General data includes the description of the intervention: its' location, the date of implementation, the area in sq. m, the period of implementation, envisioned time of existence, functions, the cost in Euros, financing source, author(s) and the client (initiator(s)) of the project.
2. *Assessment of social and psychological aspects*. This section integrates the characteristics and the questions for their evaluation targeted at sociability, activities, and functions with reference to the Project for Public Spaces. The **Project for Public Spaces** is a non-profit organization that analyses more and less socially successful public spaces and had distinguished a system of criteria for their assessment. The system includes such sets of characteristics as access and linkages, comfort and image, uses and activities, and sociability and presents the array of observation and public space assessment questions, part of which is integrated in this research (Table 1).

“Energy” in the space of the intervention – community aspect, sociability	
Evaluation scores: yes – 5; partially – 2.5; no – 0	
Development of new attraction point	Do people usually stay longer in the space and do something in it?
	Do people use this space for meetings?
	Do the groups of people come together in the space? Do they interact with each other?
	Do people choose this space intentionally?
Community ties	Do people in this area feel belonging to the community?
	Do people know their neighbors most often?
	Do people smile?
People's attachment to the territory	Do people support eye contact with each other?
	Are people collecting litter?
	Do people invite their friends or relatives to visit this space?
Activities, functions and participation	
Dominant functions	What is the official function of the space?
	How many different types of activities can be found in the space? Evaluation scores: 1 function – 1; 2 functions – 2 etc. 5 functions or more – 5
	What are the missing functions?
	Which parts of the space are used and which are not? Evaluation scores: almost unused – 0; the area of the main pedestrian flows – 1.5; the most of the territory is used – 2.5; the entire territory is used – 5
Diversity of users	What is the balance between men and women in the space? Evaluation scores: balanced – 5; only one group prevails – 2.5
	What age groups use the space? Evaluation scores: diverse – 5; 1-2 groups – 2.5; only 1 specific group – 1
	How is the space used during the day? Evaluation scores: round the clock – 5; during the day and in the evening – 2.5; only in one specific time during the day – 1
	Is it possible to use the space in cold season? Evaluation scores: yes – 5; partially – 2.5; no – 0

Table 1

Criteria for evaluation of social and psychological aspects of the interventions (Project..., 2018)

3. *Assessment of urban-architectural aspects.* The criteria for the assessment of the urban quality of the interventions integrate some of the criteria developed by Project for Public Spaces (Project..., 2018) and the criteria for the assessment of the contextuality and image of the intervention (Table 2).

Table 2

Criteria for evaluation urban-architectural aspects of the interventions (Project..., 2018)

Links with the context	
Evaluation scores: yes – 5; partially – 2.5; no – 0	
Significance in the cityscape	Has the intervention changed the image of the area?
	Does the intervention affect the city's panoramas, visual axes, etc.?
Significance to the spatial quality of the city	Does the intervention complement, improve, or shape the public space system in the city?
	Does the intervention reveal the valuable features of heritage and other valuable objects, actualize them and attract public attention?
	Does the intervention create new links, for example, between city and nature, humans and the city?
	Does the intervention create visual links with other urban spaces?
	Is the intervention a landmark?
	Is the intervention one of the accents of the city?
Links with natural environment	Does the intervention create visual links with natural elements?
	Does the intervention create physical connections with natural elements?
Accessibility	
Evaluation scores: yes – 5; partially – 2.5; no – 0	
Visual accessibility	Is the space visible from the distance?
	Can the space be recognized from the distance?
Physical accessibility	Can people easily get into the space?
	Do the sidewalks lead to the space from adjacent territories?
	Is the space adapted to the people with special needs?
	Are the paths in the space leading people where they really want to go?
Accessibility by transport	Is it possible to reach the space in public transport?
	Is it possible to reach the space by bicycle?
Comfort and image	
Safety Evaluation scores: yes – 5; partially – 2.5; no – 0	Is the first impression about the space positive?
	Does the space create the feeling of safety?
Comfort Evaluation scores: yes – 5; partially – 2.5; no – 0	Are there enough sitting places?
	Are the sitting places comfortably located?
	Is there a possibility to choose where to sit: in the sun or in the shade?
	Is the space designed for people (is it not occupied by cars)?
Image	Is the space clean, not littered? Evaluation scores: yes – 5; partially – 2.5; no – 0
	Who is responsible for the maintenance of the space?
	Are people taking photos in the space? Evaluation scores: yes – 5; some – 2.5; no – 0
	How many photo opportunities are there? Evaluation scores: a lot of – 5; several (3 or 4) – 2.5; just 1 or 2 – 1
	Has the intervention been created by professionals or community? Evaluation scores: involvement of community representatives + 5 points
	What is the stylistic character of the intervention (natural, ecological, urban, street art, etc.)?
	What materials are predominant?

Table 3. Criteria for evaluation of ecological aspects of the interventions (Browning et al., 2014; Biophilic, 2017)

Natural character of space	
Valuable features Evaluation scores: yes – 5; partially – 2.5; no – 0	Has the intervention preserved, highlighted the existing landscape values (terrain, water bodies, greenery, etc.)? Has the intervention provided additional natural features to the environment?
Built-up areas and other impermeable surfaces	Ratio, percent
Green areas 20 percent of green area – 1; 90 percent of green area – 5	Ratio, percent
Quality of green areas: Types according to the diversity of plants Evaluation scores: none – 0; lawn – 2; meadow – 3; scrubs – 4; trees and scrubs – 5	Lawn / meadow / scrubs / trees and scrubs
Pollution Evaluation scores: yes – 5; partially – 2.5; no – 0	Has the intervention reduced pollution of the environment?
Installation resources Evaluation scores: yes – 5; partially – 2.5; no – 0	Are the sustainable (recycled or locally available) materials used for the intervention?
Patterns of biophilic design	
Evaluation scores: very good – 5; good – 4; average – 3; poor – 2; very bad – 1	
<i>Nature in the Space</i>	
Direct contact with nature or natural systems	
Visual links with nature	Views to elements of nature, living systems and natural processes.
Non-visual links with nature	Design features that stimulate other senses of sound, touch, smell, and taste reminding about connection with nature.
Non-rhythmic sensory stimuli	Well known and at the same time unpredictable sensory stimuli of nature, such as the gentle sway of grasses or leaves in a breeze, or ripples on water.
Thermal and airflow variability	The subtle changes in air and surface temperature, humidity and airflow characteristic to natural environments.
Presence of water	Possibility to see, hear or touch water.
Dynamic and diffuse light	The use of light and shadow to mimic the lighting conditions or circadian processes occurring in nature.
Links with natural systems	An awareness or proximity to natural processes, such as seasonal changes.
<i>Natural Analogues</i>	
Representations and abstractions of nature	
Biomorphic forms and patterns	Symbolic representations within the design of the patterns, shapes, textures or arrangements found in nature.
Material connections with nature	Using in design the natural materials, grains, textures and elements etc. that distinctly reflect the environment to create a comprehensive sense of the natural world.
Complexity and order	Spatial hierarchies similar to natural ones.
<i>Nature of the Space</i>	
Spatial conditions derived from nature	
Prospect	Possibility to see beyond the immediate surroundings or over long distances.
Refuge	Possibility to look over the surroundings from the safety of a protected position away from the central areas of activity.
Mystery	Replication of the excitement and unknown elements of the great outdoors in the built environment. The promise of more information, achieved through partially obstructed long-distance views, design revelations, surprising installations or unexpected architectural features drawing in and engaging with the environment.
Risk / peril	The thrill of danger from an identifiable risk, coupled with the sense of a reliable safeguard.

4. *Assessment of ecological aspects.* The assessment of ecological aspects of the interventions is based on the 14 patterns of biophilic design. The 14 patterns were developed by environmental consulting and strategic planning company Terrapin Bright Green, which is committed to improving the human environment through high-performance development, policy, and related research. These patterns are grouped into three categories: Nature in the Space Patterns (visual connection with nature, non-visual connection with nature, non-rhythmic sensory stimuli, thermal and airflow variability, presence of water, dynamic and diffuse light, connection with natural systems), Natural Analogues Patterns (biomorphic forms and patterns, material connection with nature, complexity and order), Nature of the Space Patterns (prospect, refuge, mystery, risk/peril) (Browning et al., 2014; Biophilic, 2017) Three categories of patterns and additional features related with the ratio of greenery in the area, pollution, and the use of sustainable materials in the implementation of the project are included into the assessment of ecological aspects (Table 3).
5. *Assessment according to the principles of urban acupuncture.* The assessment of the intervention according to the principles of urban acupuncture includes such criteria as bringing new life and people to the urban area, highlighting the potential of the place, being stimulus to community life, identity re-creation or development, development of missing features of the urban fabric, stimulation of diversity of activities (Casagrande, 2010; Khaerani, 2014; Lerner, 2014). Each of these criteria can be evaluated in scores: 1 – positive assessment; 2 – partial correspondence to the criterion; 0 – the intervention does not correspond to the criterion.

The analogues of the types of urban acupuncture interventions were identified in the territory of Kaunas (Table 4), except the systemic intervention.

Results and discussion

No.	Intervention	Functions	Life-time
Non-physical intervention			
1.	Cabbage field, Šančiai	Cultural, social events	Since 2014
Intervention of local impact			
1.	Educational garden in Kaunas Botanical Garden of Vytautas Magnus University	Education, community garden	June – November, 2017
2.	Garden in III mansion's courtyard (K. Donelaičio g. 52) of Vytautas Magnus University	Community's garden	Summer, 2013
3.	Street art of Kaunas: Vytenis Jakas - "Unicorn", 2018 m. ; Tadas Vincaitis-Plūgas – fresco "The yard", Vilijampolė, 2017; Tadas Šimkus – underground passage at Savanoriu Prospect and Žemaičių Street Crossing, 2014; Linus Kazulionis "Contemporary ladies", 2015 and other.	Aesthetic, creating meaningfulness of abandoned places	Constantly
4.	Square of J. Mačiūnas	Symbolic	Since 2017
5.	The monument for routine	Symbolic – aspiration to draw attention to the problems of aesthetic, vitality and progress of the city	Since 2014
6.	Street art zone	Creative	Since 2015
Intervention of wide impact			
1.	Former factory of shoes "Lituanica" – former ministry of "Fluxus"	Cultural, events	2012-2013
2.	Courtyard gallery	Cultural, community	Since 2016
3.	Castle's amphitheater	Sitting, events	Since 2017
4.	Cafe „Culture“ of Kaunas Picture Gallery, street art project „Kekto“	Food service, events	Cafe since 2015, „Kekto“ – 2017
Systemic intervention			
	Not found	-	-

Table 4

Types of urban interventions found in historical part of Kaunas city

Three interventions (Cabbage Field area in a historic district Šančiai and Street Art Zone and Courtyard Gallery initiative in Kaunas New Town) were selected for further detailed analysis and evaluation. The criteria for selection of these interventions were the following: the intervention must be implemented in the historic urban fabric, the intervention must provide the space accessible for pedestrians, the intervention should generate public space and gather community, and this must be still existing intervention.

Each of three interventions was evaluated according to the prepared set of criteria in an expert evaluation by the authors of the research. The interventions received score for each point, which had the possibility of evaluation in scores, after that these were calculated into total score. After this the total score was multiplied by 5 and divided by the maximum possible evaluation in scores for each section. The multiplying by 5 was necessary to receive the final evaluation score in the five scores scale. **Table 5** and **table 6** demonstrates the evaluation in scores of social and psychological aspects and the correspondence to urban acupuncture features of selected interventions. In the **table 7** the summary of evaluation is presented.

		Cabbage Field Šančiai	Street Art Zone	Courtyard Gallery
“Energy” in the space of the intervention – community aspect, sociability				
Development of new attraction point	Do people usually stay longer in the space and do something in it?	2.5	0	5
	Do people use this space for meetings?	0	0	0
	Do the groups of people come together in the space? Do they interact with each other?	2.5	0	0
	Do people choose this space intentionally?	5	5	5
Community ties	Do people in this area feel belonging to the community?	5	0	2.5
	Do people know their neighbors most often?	5	0	5
	Do people smile?	5	0	5
	Do people support eye contact with each other?	5	0	5
People's attachment to the territory	Are people collecting litter?	5	0	5
	Do people invite their friends or relatives to visit this space?	5	0	5
Activities, functions and participation				
Dominant functions	How many different types of activities can be found in the space?	1	2	2
	Which parts of the space are used and which are not?	5	1.5	5
Diversity of users	What is the balance between men and women in the space?	5	5	5
	What age groups use the space?	5	2.5	2.5
	How is the space used during the day?	2.5	1	2.5
	Is it possible to use the space in cold season?	5	5	5
	Total scores	63,50 (of 80)	22,0 (of 80)	59,5 (of 80)
	Evaluation of social and psychological aspects in scores 5* total scores / 80	3,97	1,37	3,72

Table 5

The evaluation in scores of social and psychological aspects of selected interventions in Kaunas

Table 6

The evaluation in scores of elected interventions in Kaunas according to the principles of urban acupuncture

	Cabbage Field Šančiai	Street Art Zone	Courtyard Gallery
Brought new life to the space	5	2,5	5
Highlighted the potential of the place	5	2,5	5
Became a stimulus to community life	5	2,5	5
Preserved or re-created local identity	5	2,5	5
Developed missing features of the urban fabric	5	5	0
Stimulates the diversity of activities	0	0	0
Attracts people to the space	5	5	5
Total scores	30 (of 35)	20 (of 35)	25 (of 35)
Evaluation of social and psychological aspects in scores 5* total scores / 35	4.29	2.86	3.57

Table 7

Summary table of evaluation of selected interventions

Evaluation criteria	Non-physical intervention in place created by community	Intervention of local impact	Intervention of wide impact
	Cabbage Field Šančiai	Street Art Zone	Courtyard Gallery
Evaluation of social and psychological aspects	3,97	1,37	3,72
Evaluation urban-architectural aspects	2,73	1,96	3,75
Evaluation of ecological aspects	3,65	1,50	3,18
Assessment according to the principles of urban acupuncture	4,29	2,86	3,57
Total score	3,66 (good)	1,92 (poor)	3,56 (good)

Cabbage Field was the best-evaluated site according to the criteria. This place acts as attraction point during events only, however it is the place where strong bonds of the community can be perceived. It plays a role of the meeting place of the community and has a wide variety of functions and attracts the diversity of people during events, however at other times it is totally abandoned. This place supplements the system of public spaces of the area and is probably the largest and the only one space for public events in Šančiai historic district. However, sense of safety, comfort and the image of the place are very poor. Even if the Cabbage Field is characterised by the largest ratio of green space, its quality as a green public space is low. However, it was the place, which satisfied the principles of urban acupuncture the best – it has brought new energy to the liveliness of the area, strengthened bonds of the community and encouraged the development of local identity.

Fig. 1

Cabbage Field in Šančiai (authors' pictures)



Courtyard Gallery took the second place of evaluation according to the criteria. This place has formed a very strong and active attraction point, having visual connections with other spaces. Strong relations between community members are apparent here. The residents seem to be connected to the place as well. As a Cabbage Field, it also enriched Kaunas as one more public space. The space is felt as safe and visually appealing. People here are taking a lot of photographs. Even though it has very few natural features (which is quite complicated in such urbanised area), it gained quite good score in ecological evaluation because it had a lot of biophilic features, such as spatial hierarchy, prospect, refuge, mystery, peril, etc. According to urban acupuncture features, the place received good evaluation because it matched most of the principles.

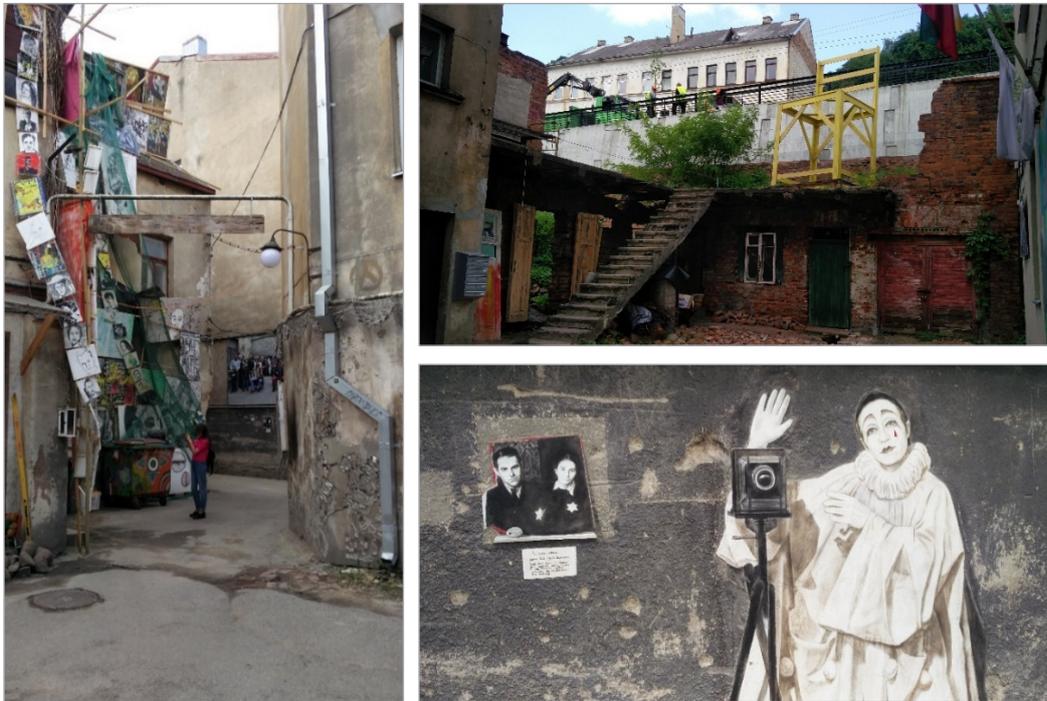


Fig. 2

Courtyard Gallery
(authors' pictures)

Street Art Zone received the poor evaluation according to the criteria. The place did not form active attraction point. It functions more as a passageway rather than a public space. It is not lively at all, which might be influenced by its remote location, lack of visual connections. Developing the site, the opportunity was not taken to make use of the river nearby – the site has no other connections with it except that it runs nearby. The sense of safety is poor and the image is more like abandoned space (even if it is clean) rather than space for creativity. According to urban acupuncture principles, it supposed to act as acupunctural point, however bonds of the community did not emerge in this place and the place might be too much remote to be lively; however, as unexpected feature of environment it is very welcomed.



Fig. 3

Street Art Zone (authors' pictures)

Evaluation of hypothetical statements

1. The research showed that urban acupuncture interventions were beneficial for historic environment because they supplemented its value by new features: new public spaces emerged, attention of the society was attracted to neglected spaces, liveliness was brought to some heritage sites.
2. Urban acupuncture interventions added a lot of new features and improved the system of public spaces in Kaunas historical part.
3. The analysed interventions corresponded to the most of biophilic design and urban acupuncture features.
4. The research did not show that architectural-urban context would determine the type of urban acupuncture intervention – it was very diverse.
5. It was not possible to evaluate in this research if urban acupuncture interventions can influence the ecological system, restore or create biodiversity, ecological balance or the links between humans and nature because there was no such ecology-based intervention in Kaunas.
6. It was found that urban acupuncture interventions can definitely create or re-create social viability in the urban space.
7. Urban acupuncture interventions definitely positively affect urban landscape and bring new values to it.

Conclusions

- 1 The concept of urban acupuncture is based on the precisely localized interventions in the urban fabric in order to regulate the ecological, sociocultural, socioeconomic, and information flows in the city, so that it can function successfully. The research had identified numerous recent interventions in the urban fabric of Kaunas, that can be seen as the analogues of urban acupuncture. Three interventions - Cabbage Field area in a historic district Šančiai and Street Art Zone and Courtyard Gallery initiative in Kaunas New Town – were selected for further evaluation.
- 2 The system of criteria designed for the assessment of urban acupuncture analogues includes sections: general description, assessment of social and psychological aspects, assessment of urban-architectural aspects, assessment of ecological aspects, assessment according to the principles of urban acupuncture.
- 3 The assessment has demonstrated that the majority of recently implemented interventions are of artistic or street art character and usually do not create a usable public space.
- 4 The selected space-creating interventions had successfully enlivened and added some values to the system of public spaces in Kaunas, and helped to direct the attention to abandoned and derelict urban areas. The wide impact intervention Courtyard Gallery attracted visitors from different parts of the city. The analysed cases had revealed the mutual links between communities and interventions: the Cabbage Field was initiated by the community; meanwhile the initiator of the Courtyard Galley has realized his ideas first and then the neighborhood community has emerged.
- 5 However, it can be concluded that analysed interventions lack components that create social and ecological processes. Even if these spaces are viewed positively by the society, their potential is not fully employed.
- 6 No systemic urban acupuncture interventions and interventions making significant impact on cityscape were found in Kaunas currently. The ecologically influential interventions were lacking as well.

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