

Design principles of hybrid spaces in terms of urban planning regeneration

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Abstract

Urban planning regeneration is a viable mechanism contributing to the further development of the urban tissue in terms of complex reconstruction of the existing city space-planning structure. Modern urban planning theory and practice are characterized by an integral approach to city development in terms of an intensification of globalization processes amid the global economic crisis. Ellin [1] and Zanni [2] highlighted the relevance, urgency and social and economic importance of the development of hybrid spaces in the urban tissue of modern cities. It can be explained by the fact that hybrid spaces are multifunctional architectural and landscape complexes, designed by applying the landscape urbanism approach and having a spatial connectivity with adjacent areas. Hybrid spaces are very important for the economy of a city, as they are development drivers to the cutting edge of spatial, social and public changes. This research is aimed at defining modern academic and research design principles of hybrid spaces in terms of urban planning regeneration. The article focuses on the principles of hybrid urban space design in the context of landscape urbanism such as the integration of dwelling areas and public spaces through green infrastructure. *Keywords: urban hybridization, integral urbanism, landscape urbanism, hybrid spaces.*



1 Introduction

The establishment of hybrid spaces in the modern city structure is directly connected with the social and economic conditions of the city development and the current intensification of globalization processes (Figure 1). Territorial competition is growing due to world globalization and technological development. People tend to choose the most comfortable areas for their residence, recreation and shopping.

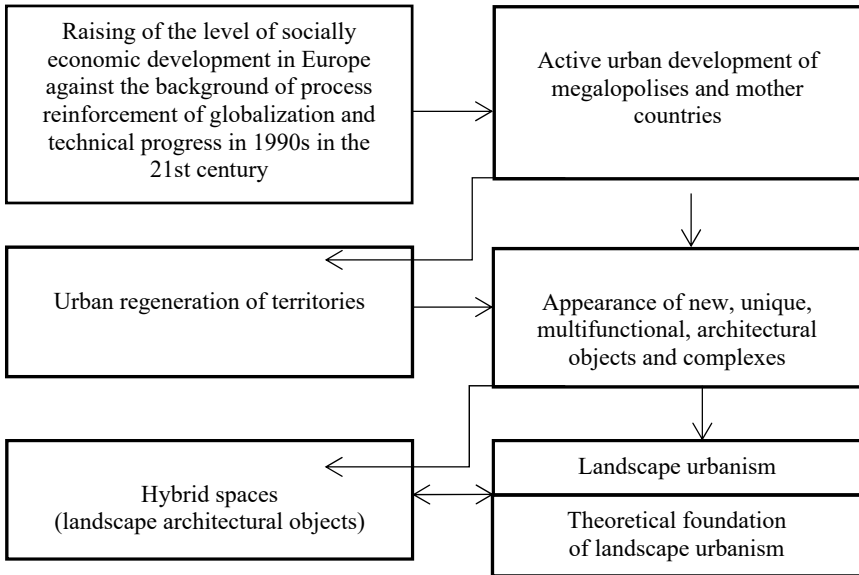


Figure 1: Background of hybrid spaces.

The environmental quality of the hybrid spaces is defined by comfort, multifunctionality and services which would be interesting for tourists, investors and authorities.

In city life and development, hybrid spaces are rapidly growing city areas with self-organizing qualities in a wide urban planning context, comprising social and economic, planning, recreation, landscape, as well as environmental aspects. Hybridization of the spaces is based on the multifunctional connection with the internal city structure and the suburban areas.

Today, we can see a gradual transformation of hybrid spaces into dominant central spaces in the city structure. The functional saturation of hybrid spaces depends on the urban planning context and their location. Today, the most popular are the hybrid spaces with a mixed structure of a spatial interaction between residential, social and recreational functions.

Hybrid spaces allow four city development stages to be implemented to make a city successful: 1) the territorial educational services and the infrastructure start



to satisfy the citizens, companies and visitors; 2) new places of interest appear and are developed to maintain the current business and public support; 3) hybrid spaces start to speak about their peculiarities and advantages through an active and bright image or communication program; 4) hybrid spaces start to gain the support of citizens, public leaders and governmental agencies and thus to attract new companies, investments and tourists.

It should be noted that the practice of modern urban planning outruns the theoretical basis and concepts of hybrid space development and design (for example, the project on the Sofia Embankment in Moscow [3, 4]). The hybrid space design of the embankment is based on landscape urbanism theory, allowing for flexible transformation from an urban space into a natural one. So, we can conclude that the design of city hybrid spaces may be based on a multidisciplinary approach, accumulating modern planning principles, defined by the current urban planning context.

2 The role and significance of hybrid spaces for city development during the postmodernism period

2.1 Background of hybrid spaces

The period of postmodern urbanism [5] is characterized by the predominance of the Anglo-American branch in theoretical concepts of urban planning development. One of these branches is landscape urbanism [6–9]. Focusing on landscape urbanism theory is connected with its flexible, humane, creative, environmental and socially oriented approach through regeneration and modern city development. The approach aims at the active inclusion of nature into the city structure by maintaining its natural biodiversity to develop an identical and aesthetically attractive urban space. A symbiosis of landscape and urban approaches defines a multidisciplinary trend in landscape urbanism and the focus on hybrid spaces development (Figure 1). The application of landscape urbanism principles in terms of the city space-planning structure transformation allows an urban socio-natural system to be formed. The complex approach allows for difficult tasks to be tackled concerning urban space development at every urban planning level to create a comfortable urban environment.

By applying the main principle of the co-evolutionary approach [10–12] within hybrid space development, especially the principle of nature and society cooperative development to define the main transformation directions of the existing urban planning structure, we can mitigate any negative effect of urban processes to create a sustainable and comfortable urban environment [13]. It is confirmed by the ideas of [14]. In his article “Architecture in the Age of Globalization”, Frampton concludes that the landscape cultural status has been changed in the age of postmodernism. Jencks [15] supposes that the postmodernist science of complexity, such as nonlinear dynamics, synergy, self-organisation theory, chaos theory, dissipative structures theory and fractal geometry have influenced and still are influencing the development of modern architectural thinking. It can be explained by the appearance of new types of multifunctional



spaces – hybrid urban spaces. Zanni [2] highlights that urban hybridization is determined by the multi-layered and multi-scaled urban tissue. In his view, it allows one to create spaces (objects) in the city structure that connect different cultural, historical and social parts of the city.

The interest in hybrid urban spaces has intensified over the last decades due to the appearance of new types of hybrid buildings. A detailed analysis of functional and social interactions in the structure of hybrid buildings was carried out by Fernández [16], but they do not research the development of hybrid buildings in the context of landscape urbanism – from the point of green infrastructure integration and building structural arrangement.

Development of hybrid spaces in city structures began in the late 1980s. The example of the hybrid space is the Parc de la Villette, a multifunctional architectural and landscape complex based on the urban planning regeneration of post-industrial abandoned areas and its surrounding working class areas in the 19th Paris district. The hybrid space development of the Parc de la Villette in the Parisian structure has influenced the significant urban planning, social and economic changes of its surroundings and has become a vector in urban transformations and changes carried out in this district of Paris (Figure 1).

In the 1990s, Paris, Barcelona and Canberra provided the first hybrid public recreational spaces, such as Promenade Plantée in Paris (architect P. Mathieux and landscape architect J. Vergely, 1993), Nus de la Trinitat Cloverleaf park, architects E. Batlle, J. Roig, 1992–1993), the National Museum of Australia, Canberra, architect R. Weller, 1997–2001). Hybridization of the space-planning structure in these areas became the result of the design and creation of new public recreational space types, based on the integration of the landscape and the urban planning approaches towards recreational objects planning in the city structure that differed from the common methods and techniques of urban and landscape planning.

It can be explained by the fact that the hybrid spaces are multifunctional architectural and landscape complexes or landscape and urban planning complexes, designed by applying the landscape urbanism approach and having the spatial connectivity with adjacent areas. The spatial connectivity of hybrid spaces with the urban tissue through the greenway public pedestrian space system has an influence on the urban development of adjacent areas and the future city structure by becoming accessible urban space markers for all city residents.

In 1992, the Spanish architect Manuel de Solà-Morales revealed the trend of the social and functional interaction of modern cities, involving the understanding of the modern use of private and public spaces. Public spaces can be used for both private events and collective use, because they include the maximal number of various functions. Hence, hybrid spaces appear in the urban tissue structure with definite typological and morphological variety [17].

The philosophy and practice of the hybrid space development in Western Europe and the USA is institutionally reflected in the economic development departments. For example, Ohio has established seven regional economic development agencies; each of them covers a group of districts. The agencies work with the districts and local authorities on the establishment of hybrid spaces to improve the local business climate and meet certain needs of their territorial

enterprises. Such a scheme is applied in different countries such as Ireland, Bulgaria and New Zealand.

So, we can conclude that hybrid space development is controlled by specific institutions to support and develop the city infrastructure.

2.2 Hybridization of space-planning structure as an urban planning regeneration branch

The evolution of hybrid spaces in the 21st century is based on the expansion of their functional saturation and the variation of their functional interaction. Therefore, new types of hybrid spaces appeared in the early 21st century with both public recreational and residential functions.

Generally, such hybrid spaces appear in the structure of coastal areas; the best known examples of hybrid space establishment with a developed residential function are the Hamburg centre development project, based in the Hafen City district; regeneration of harbour areas by the River Liffey in Dublin (Dublin Docklands); the Embankment in the district Diagonal Mar i el Front Marítim del Poblenou in Barcelona; the surroundings of the Park of the Nations in Lisbon; the Western Harbour district in Malmö; the Havneholmen district in Copenhagen. These examples are characterized by the context approach towards hybrid space formation, based on maintaining and recovery of the natural environment that contributed to their image and identity and influenced the development of their surroundings and the city as a whole [18].

Therefore, today the hybridization of the space-planning structure of post-industrial, damaged, ravaged or ineffectively used urban areas is a relevant branch of urban regeneration (Figure 2).

The functional heterogeneity of these areas allows one to forecast their future development according to changes in social and economic conditions and cultural preferences. The structural multifunctionality of hybrid spaces produces a synergistic effect that afterwards contributes to the creation of new functional interactions within the hybrid space structure. For example, integration (mix-use) of both residential and social and business functions in the space structure generates the need for the shopping and recreational functions, this shows how the functional saturation of hybrid space is formed. It is worth noting that the synergistic effect can appear only after the emergence of hybrid spaces in the central or rapidly developing city quarters. Territories adjacent to hybrid spaces become actively developed because of the influence of close neighbouring of hybrid spaces. Impulse to the development of adjacent territories, particularly of residential quarters (Barcelona is a typical example [19, 20]) is given by a public pedestrian spaces system and green infrastructure based on the penetrability principle. Example of such urban planning interaction is the urban planning regeneration of residential quarters adjacent to the embankment in the Diagonal Mar i el Front Marítim del Poblenou district, Barcelona and the project of a new hybrid quarter La Sagrera, Barcelona formed on the basis of an inter-modal transport hub [21].



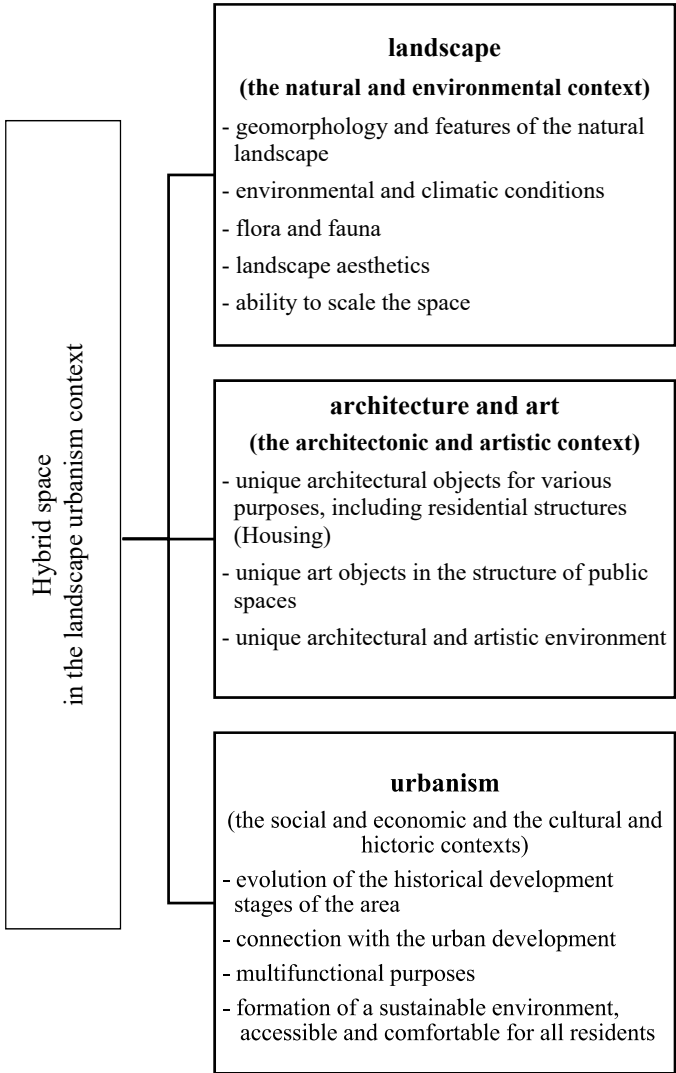


Figure 2: Hybrid spaces in the landscape urbanism context. The symbiosis of landscape, architecture, art and urbanism [13].

Hybrid spaces give impetus to the infrastructure development. Thus, the more the territory infrastructure is developed, the more opportunities for attracting various resources there can be.

3 Priority design principles of hybrid spaces in terms of urban planning regeneration

Usually, modern hybrid spaces in the structure of big cities have expressed social recreational purpose with a developed residential or social function.

Functional saturation of hybrid spaces with residential function is vertical: space is cleared to the fullest degree; the space is organized based on the multi-functional principle, multi-layered inter-cultural public pedestrian promenade, for instance – the hybrid spaces' structure of the Sofia Embankment in Moscow is organized this way [3, 4]. This is why the modern understanding of the hybrid spaces context should be reasonably considered as a symbiosis of urbanized space and natural environment.

Urban planning regeneration methods and techniques are widely variable depending on specific features of the certain place and urban planning potential of such territory in terms of city development. For example, the hybrid space formation of ex-post-industrial territories within the city structure is connected to their new functional saturation.

Hybrid space formation principles also depend on the urban planning context of the territory and specifics of the social-economical and investment conditions of the urban planning regeneration [22].

Hybrid space formation enables the creation of an economical environment which is an economy growth point for the external environment. This capacity is determined by the emerging “concentration” effect in trade. The “concentration” effect is emerging with the “hybridization” of social, business, residential, retail functions in the regenerated city territory.

The hybrid space with a vast variety of intermediate functions enables the creation of conditions for new sectors: the incubation process development facilitates information exchange and innovations distribution process, transfer of knowledge improves the business communication process.

Hybrid space formation within the regenerated territory is one of the urban planning mechanisms of social-economical, investment, cultural, business city development.

From our point of view, it is worth identifying the priority design principles of hybrid spaces in terms of urban planning regeneration.

3.1 Contextual innovation principle

The contextual innovation principle is based on a human-scaled and natural environment-scaled hybrid space of friendliness, communicability and contextuality. Such hybrid space should reflect regional and landscape peculiarities of the territory. Historical continuance (*genius loci*) – namely, conservation and reconsideration of history traces – keeps the past in memory, preserves the identity of the area during formation of the new space-planning territory structure. The concept of the Sofia Embankment in Moscow is based on the contextual innovation principle (Figure 3(a) and (b)). Adaptation of the project to its monumental environment is formed through an upgrading of pedestrian



arteries and historical routes that cross the adjacent city quarters, as well as through the adaptation of new housing developments to the neighbouring buildings and green spaces.



Figure 3: (a) Example of hybrid space (competition project – concept of multifunctional complex on the Sofia Embankment, Moscow, 2015; and (b) The territory of the Sofia Embankment in Moscow, 3D-model.

3.2 Urban planning variability principle

The urban planning variability principle defines the urban planning capacities of the hybrid space under creation. This principle is based on the social-economical approach that enables the forecast of possible functional interaction options which in perspective should define the significance of the hybrid space for the development of its adjacent territories (quarters) and city planning structure. A prevailing dominant function (residential, commercial, entertaining and recreational) within the hybrid space structure defines its significance for the urban planning development. Based on the fact that changes to the socio-economic conditions affect the functional saturation and functional use of architectural planning and landscaping elements forming the hybrid space structure, it is necessary to forecast several options of the urban planning scenario of hybrid space development depending on functional interactions of its architectural planning and landscaping elements.

The urban planning variability principle enables the singling out of three types of communication with hybrid space, that forms the territory impression. The type of communication consists of infrastructure, organisation and leisure area. It means that a person first assesses the architecture, city landscape, but then his attention shifts to the city's conveniences: how the transport, communication, commercial services systems are developed. Further, the person assesses the administration work: how influential the local authorities are and what kind of efforts there are for maintaining and developing the territory. The next factor is associated with the rendering of leisure services: how comfortable the place for the tourist is, what benefits and rewards for visitors are available, what events and entertainment are available for visiting. This criterion includes the estimate of the local authorities' efforts for investments' attraction.

The hybrid space allows people to form an opinion on this territory, how competitive it is compared to other territories, what impressions people have formed of this area.

Thus, it seems that the hybrid space takes into consideration a wide range of factors affecting the image of the territory and enables an active interference in the territory development process creating favourable conditions for attracting investment.

3.3 Functional planning flexibility principle

The functional planning flexibility principle in hybrid space formation is based on the extension of their functional saturation “palette”, which not only affects but also defines the capacities of the variability extension as to the architectural typology of buildings and constructions that form the hybrid space. This principle enables flexible introduction of hybrid spaces into the existing urban planning tissue for the creation of a comfortable, environmentally friendly, socially oriented and identical urban environment. The urban planning regeneration of the residential quarters of the North Fringe district, Dublin [13, 23] and the development of quarters Bo01, Bo02, Bo03, and Bo04 in the Western Harbour district [24] are the example; this is a symbiosis of urban flexible housing planning structure with a vast variability of typological solutions, saturation of the quarters with the sites of various functional purposes, the application of an effective engineering infrastructure and modern environmentally sustainable technologies in the landscape organisation of adjacent territories on the basis of preservation of their environmental potential. Flexibility of the planning solution increases capacities of the identical architectural space creation through the formation of individual architectural environment of residential and public architectural and landscaping complexes that form a hybrid space and are characterized by the functional diversity of the space use that affects the identity and aesthetics of style solutions.

3.4 Cross programming principle

The cross-programming principle involves the functional saturation of the local elements of hybrid space infrastructure with certain functions based on the programming of the interaction and interrelation effect of these functions crossing. For instance, hybridization in the formation of contact areas of hub dominant public spaces consists of a functional interrelation of the linear public pedestrian promenade, local public spaces and residential complexes. Hybrid spaces formed within the embankments’ structure on the basis of urban planning regeneration and non-functioning railway tracks and trestles and deserted post-industrial territories can serve as an example [3, 13, 18, 25].

3.5 Scaling principle

The scaling principle in hybrid space formation consists of urban planning typology extension in the case of public and residential spaces depending on the



specific urban planning context and size of the territory. The territorial resource of a certain city area defines the possibility of creation within the hybrid space structure, more scaled to its functional purpose public and residential spaces, which become not only image labels of this territory, but also accelerators for the development of adjacent territories and city in general (see Barcelona and Kaliningrad as an example) [19, 20, 26].

3.6 Landscaping environment adaptation principle

The landscaping environment adaptation principle is the return of priority given to nature to the city spaces. This principle is based on the application of the theoretical concept of landscape urbanism [6, 8, 13]. Through the scenario approach principle [6, 13] a local “green” and “blue-green” framework of public recreational spaces within hybrid space structure is formed [27]. The maximal inclusion of natural landscape components into the “green framework” structure is formed on the basis of biophilic approach application [28]. Structuring of the public recreational spaces is performed through the application of not only one main principle of theoretical landscape urbanism – the use of horizontal surfaces [6, 8, 13], but also in the “green infrastructure” formation [27] all the buildings and constructions forming hybrid spaces are involved regardless of their functional purpose. The formation of the local green infrastructure of hybrid space based on the scenario approach [6, 13] should be integrated with the transport framework of the territory and pedestrian links system. This is how the connection with the adjacent territories is created [29].

4 General conclusions and reflection

The urban planning identity of hybrid spaces and social economical efficacy of functioning are the main and essential approaches to hybrid space formation through the different territorial levels. The priority principles of hybrid space formation described above provide the means for the creation of these spaces as economically effective, investment attractive, unique and memorable city territories.

In order to create the scenarios of hybrid space development it is necessary to stray away from formal models in favour of more open strategic models where the landscape takes an important part in. Currently, the essential aspect of the urban planning regeneration is the use of landscape as the tool to creating new aesthetic effects, new social programs, the tool supporting and initiating an emergence of something new. Sampling analysis of the European and Russian experience presented in this research showed us that this approach is especially actively used in the creation of hybrid spaces with a developed residential function. Another important aspect is the saturation of hybrid spaces with various functions which enables a more effective use of territorial resources, especially in central city parts with a formed historical cultural environment. Thus, the analysed priority principles of hybrid space formation within the context of urban planning regeneration can be supplemented depending on the specific urban planning



context and socio-economic development factors. Therefore, the integration of hybrid spaces into the city's tissue through the measures for activities' efficacy increase is based on a prompt estimate of the territory potential: i.e. defining of its main resources: historical, architectural, landscape, natural, social or industrial ones: it will help during the development of strategy for territory promotion and defining the differentiating feature from other cities; consideration of hybrid space from the point of view of territorial location, i.e. defining the potential perspective development of the city's territory.

References

- [1] Ellin, N., *Integral Urbanism*, Routledge: New York, 2006.
- [2] Zanni, F., *Urban Hybridization*, Politecnica: Milano, 2012.
- [3] Krasilnikova, E. & Klimov, D., Role and value of landscape urbanism in the modern process of city development and reconstruction. *Balkan Architectural Biennale, Conference Proceedings "Capital A"*, BAB, Belgrade, Serbia, pp. 21–40, 2015.
- [4] Concept of multifunctional complex on the Sofia Embankment, Moscow, 2015. The finalist of competition – Miralles Tagliabue EMBT, Burgos & Garrido arquitectos, TSNIP, 2015. <http://archsovet.msk.ru/competitions/sofiyskaya-naberezhnaya>.
- [5] Ellin, N., *Postmodern Urbanism*, Princeton Architectural Press: New York, pp. 60–153, 1999.
- [6] Waldheim, C., *Landscape as Urbanism A General Theory*, Princeton University Press: Princeton, NJ and Oxford, 2016.
- [7] Waldheim, C., *The Landscape Urbanism Reader*, Princeton Architectural Press: New York, 2006.
- [8] Corner, J. & Bick Hirsch, A., *The Landscape Imagination: Collected Essays of James Corner 1990–2010*, Princeton Architectural Press: New York, 2014.
- [9] Mostafavi, M. & Najle, C., *Landscape Urbanism: A Manual for the Mechanic Landscape*, Architectural Association: London, 2003.
- [10] Valeur, H. (ed.), A new future for planning, *The Architectural Magazine B*, 2005.
- [11] Valeur, H., Co-evolution: Danish/Chinese collaboration on sustainable urban development in China, Danish Architecture Centre, 2006. www.aguilar-and-associates.com/la-sagrera-new-intermodal-railway-station/.
- [12] UID, Co-evolution. www.uid.dk/co-evolution-projects.html.
- [13] Krasilnikova, E., Landscape urbanism. *Theory-Practice, Part.1: Scientific and Practical Foundations of Landscape Urbanism, Scientific Monograph*, IAA LTD District News: Volgograd, 2015.
- [14] Frampton, K., Architecture in the age of globalization. *Project International*, **18**, pp. 140–141, 2007.



- [15] Jencks, C., *Architecture of the Jumping Universe: A Polemic – How Complexity Science is Changing Architecture and Culture*, Academic Press: London and New York, 1995.
- [16] Fernández Per, A., Mozas, J. & Arpa, J., *This is Hybrid: An Analysis of Mixed-use Buildings*, A+t Architecture Publishers, 2014.
- [17] Avermaete, T., Hooimeijer, F. & Schrijver, L., *OASE 71: Urban Formation and Collective Spaces*, NAI Publishers, 2006.
www.oasejournal.nl/en/Issues/71.
- [18] Krasilnikova, E. & Antjufeev, A., Creation of coastal and recreation spaces on coastal territories, Strategic decision making in spatial development, peer-reviewed collection of contributions, ROAD and SPECTRA Centre of Excellence EU, STU: Bratislava, pp. 59–87, 2014.
- [19] Barcelona. http://barcelonacatalonia.cat/b/?page_id=3900&lang=en#&panel1-2.
- [20] Barcelona. www.22barcelona.com/.
- [21] La Sagrera new intermodal railway station.
www.aguilar-and-associates.com/la-sagrera-new-intermodal-railway-station/.
- [22] Hadjri, K. *et al.*, A critical analysis of urban regeneration programmes in Europe. *Conference: Housing – A Critical Perspective. Architecture MPS*, Liverpool John Moores University, Liverpool, pp. 1–18, 2015.
- [23] OIKONET. www.oikodomos.org/workspaces/app/webroot/files/references/text/vjoklova_24_prof._E.Krasilnikova_Urban_regeneration_Dublin_30_oct.2014.pdf.
- [24] Krasilnikova, E., Rusanov, V. & Kuzina, L., Resilient and sustainable housing – Contemporary aspects of forming. *Bulletin of Volgograd State University of Architecture and Civil Engineering Series: Civil Engineering and Architecture*, **36**(55), pp. 275–283, 2014.
- [25] Krasilnikova, E., Landscape and urban planning transformation of space-planning structure, The Hybrid Link 03, hybridization between form and energy, pp. 1–26. www.urbanhybridization.net.
- [26] Heart of the City the project of the regeneration of the historical part of Kaliningrad, Korolevskaya Gora and its surroundings.
www.tuwangste.ru/contests/contest_1/20141007_.
- [27] Rouse, D. & Bunster-Ossa, I., *Green Infrastructure: A Landscape Approach*, APA Planning Advisory Service: Chicago, 2013.
- [28] Beatley, T., *Biophilic Cities: Integrating Nature into Urban Design and Planning*, Island Press: Washington, Kindle Edition, pp. 1630–2415, 2010.
- [29] Troshina, M., Milan waiting, Project International 38, Joint projects, pp. 50–61, 2014.

