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FLEXIBLE PLANNING STRATEGIES OF SUSTAINABLE CITY DEVELOPMENT

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Abstract. *Recognizing the uncertainty of future city development is the basic starting point of sustainable urban planning. Flexibility in design enables the development of "age-friendly cities", reducing the risks of functional failures caused by changing living circumstances. Planning strategies that enable adaptation of the system to changing environmental, functional, social and technological conditions are essential to the long service life and the resilience of buildings and hence to sustainable city development. This paper considers the implementation of flexible design strategies within the concept of sustainability, defined as a key tool of urban renewal and resilient city development. Value-enhancing flexibility in urban and architectural design is an essential resource for all participants of integrative city development: designers, managers, financial analysts, investors, regulators and academics. Considering this, it is essential to support the flexibility in both conceptual and legislative framework of sustainable urban strategies.*

Key words: sustainability, flexibility, adaptability, urban resilience

1. INTRODUCTION

Progressive social, economic and technological transformations of the contemporary world, whose development cannot be identified by long-term predictions, lead to the unpredictability of user's adaptation to dynamic and transformable living environment. "The world is on the move. We communicate and travel faster, further, and migrate more times in our lives. This desires access. Access requires physical improvement that has dramatic implications on architecture. It also demands political and societal flexibility –in planning, real estate, urbanism and architecture. It requires changeable buildings, changeable urbanism and changeable real estate. Such a package can turn the world into an exhilarating, accelerating space" (Maas, 2002).

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One of the main characteristics of conventional urban planning is the tendency of ultimate and unchanging design where "the burden of adjustment" is transferred as much as possible to the space content and the occupants (Knežević, 1980). Sudden industrialization and urbanization of cities violently change traditional values, leaving no time for new values crystallization, i.e. old values are eliminated, but are not superseded by new ones. According to previous research of social science, user's adaptation to newly created spatial conditions takes the period of 5 to 10 years. This can be considered as an oversight of dynamic global changes so the obsolescence of seemingly innovative ideas in the phase of materialization and exploitation is almost inevitable.

Only the urban policy that is not dogmatic and does not overvalue the role of the moment, can give the space of the future. This requires substantial shifts from static and closed spatial planning to a higher level of strategic and open "process" oriented planning. The need for a "future-proof" planning strategy adaptable to the changing external and internal conditions is one of the key tasks of urban planners and architects of the modern era. Architecture that is designed for adaptation recognizes that the future is not finite, that change is inevitable, but that a framework is an important element in allowing that change to happen (Kronenburg, 2007). Flexibility in spatial organization is only possible within the respective urban policy based on full system openness. The basic observation of the contemporary concept of planning is that it is impossible to fully predict the development trends and it is therefore necessary to provide a lower level of interdependence of decision-making levels.

2. FLEXIBLE APPROACH WITHIN THE CONCEPT OF SUSTAINABILITY

Urban areas are in a constant process of internal and external changes: they decline or expand, developing a new form and function, dealing with various difficulties such as segregation, changing demographics and spatial patterns, economic crisis and global competition (Marcuse & van Kempen, 2000). Global environmental changes trigger evolutionary shifts in human processes and form and function of urban systems. Such shifts require radical, systematic shifts in values, patterns of social behavior, and multilevel governance and management system. Contemporary urban planning moves from the closed and static actions to strategic and open process-oriented decisions.

Promoting the adaptability of structure to various social, technological and economic changes should be one of the main goals of sustainable planning strategies. "Future-proof" strategies that enable the system adaptation to changing living conditions are essential to the long service life and the resilience of buildings and hence to sustainable city development. The flexible approach to urban planning should enable variability in the totality and particulars of urban functions because it is the only way to adapt to the changes that are difficult to predict (Knežević, 1980).

The urban and architectural flexibility provides spatial and functional sustainability of the system and can be considered in the context of planned as well as the already built environment. Contemporary practice of design and planning should target the flexibility and transformability as significant drivers of reuse and recycling, otherwise the disproportion between the degradation of the environment and sustainable development will become insurmountable (Durmišević, 2006). The further research deals with the possibilities of

adaptive reuse of built heritage in already defined urban patterns as well as the development of new structures with the characteristics of urban resistance. In an intensive and flexible use of space in the settlements, careful process should be applied in order to avoid the further destruction of socially and historically valuable structures, air pollution, reduction of public green spaces, disruption of living comfort etc.

2.1. Adaptive methodology of Urban Renewal and Heritage Conservation

Today's Cities are products of changes and transformations that have occurred in the past, specific historical events and culture of previous generations. The process of globalization in contemporary society had the negative impact on the inherited urban spaces, changing their traditional morphology and typology. Traditional urban and architectural plans are usually designed as completed spatial and functional systems, without the flexibility predicted to deal with the complexity and change that characterize contemporary urban societies. An attempt to control development can make the further investments unreasonable and would be therefore counterproductive. On the other hand, the present architectural trends of heritage replacement by the uniform structures with no specific spirit and characteristics, influence the disappearance of the local identity of the settlements. Emphasizing the importance of historical values of the settlements which themselves preserve traces of past times and the specificity of its traditional architecture is one of the goals of integrative urban renewal. The fact that the historic towns in contemporary conditions are increasingly losing their identity, requires redefining of the planning strategy to ensure its preservation and sustainability. The concepts of sustainability and conservation deal with the same principle, maintaining the existing, protecting the heritage for future generations and therefore must be the part of the same strategy (Radoslav et al., 2013).

Changes in the existing urban structures that result in obsolescence and abandonment of buildings, open up the opportunities for an alternative use of the existing building stock, which would be in line with the current needs and aspirations. Contemporary approach to architectural heritage conservation should pay more attention to the historical parts of the city in terms of its continuous usage through time, i.e. to continuity of functions and relations that individual buildings define as part of dynamic urban context. Additionally, it is preferable to consider those buildings of some cultural values as well as those buildings without important architectural and cultural contributions. Urban conservation and urban renewal within contemporary conceptual framework should be linked processes. Integration of these processes would enable prolonged usage of existing urban structures, in the spirit of the present and future trends. Integrative approach to city renewal observes the treatment of cultural and historical entities as a holistic procedure that enables a new existence to the old urban areas, in accordance with the modern requirements, standards and quality of life (Blagojević and Nikolić, 2008).

Contemporary approaches to urban transformation focus on integrated urban renewal and conservation within a new conceptual framework, both on organizational and spatial level. Heritage regeneration through its reuse presents an opportunity to encourage the improvement and protection of existing building heritage. Part of that protection will include renovation and renewal in order to accept new and current uses, which in turn should enhance the longevity of the structures concerned (Deenihan, 2012).

Adaptive reuse as a method of sustainable design and development primarily provides:

- protection of historical and architectural integrity of the building;
- revitalization of urban areas through the adoption of new functions;
- the social linkage between past and present while encouraging diversity achieved through adaptive re-use that layer new and old meanings onto each other;
- minimization of the negative impact on the environment by saving material, human and energy resources.

2.1.1. Key principles of adaptive urban reuse

Adaptable design strategies of urban renewal and heritage conservation require a specific contextual response to each proposal and, consequently, careful consideration of each proposed insertion is needed.

Initial principles which might be considered as the basic tools of adaptive urban planning, are the following:

- recognizing and understanding the existing environment which makes up the cities, while responding to the actual context with appropriate planning strategies at the macro level and detailed development elaboration;
- using the urban design principles to create an interrelationship between the open spaces that comprise the public realm and the buildings that occupy and shape these spaces by way of urban design strategies;
- development of sustainable urban places does not only refer to the buildings: it also considers the quality of the streets, squares, parks and other open spaces that comprise the public realm and responding to this by way of qualitative public realm strategies;
- the continued commitment to the "highest standards in the protection, conservation, and maintenance of the historic built environment", by way of the sympathetic conservation, adaptation and reuse of historic buildings (Deenihan, 2012).

"Adaptive re-use gives new life to a site, rather than seeking to freeze it at a particular moment in time, it explores the options that lie between the extremes of demolition or turning a site into a museum. Adding a new layer without erasing earlier layers, an adaptive reuse project becomes part of the long history of the site" (ODASA, 2014). The process and decisions involved in creating adaptive re-use projects need to be carefully considered and managed. An engaged and creative design team should thoroughly examine the potential of re-purposing buildings, structures, and spaces. Adaptive reuse projects should integrate five principles into the design:

- performing the functions for which the object of conversion is redesigned in a quality manner,
- long lasting and adaptable performance in the context of new uses implementation,
- establishing the adequate connection to the immediate and broader surrounding while enhancing their context,
- providing the visual coherence for users and passers-by and aesthetic contribution to city development,
- creation of sustainable environment – non polluting, energy efficient, easily accessible with a minimal environmental impact (Loures and Panagopoulos, 2007).

2.1.2. Case study in adaptive reuse- Reuse of industrial heritage of Milan

Industrial areas are very often treated as the object of urban transformations. With the rapid growth and expansion of urban centers in the latter half of the 20th century, industrial sites, formerly located on the periphery, are now surrounded by expanding urban fabric of the city. With the global technological changes, the former industrial giants and main economic drivers transform into unsuitable parts of the city.

Bovisa, a former industrial area in the outskirt of the city of Milan, has gone through various transformations since the 1950s, when the most factories were dismantled to be moved farther from the expanding city center. The area of Bovisa is positioned in the northeast region of the city, close to the new Milano Fiera and future Expo areas. The area is well connected through the inter-regional railway system, inside an urban sector known for the presence of mixed urban functions. At the beginning of 1900, many of cultural activities were located in Bovisa, making it an important industrial center of Milan. Its industrial district had large and small companies, among which the gasometer settlements were the most important (Fig. 1).

Fig. 1 Former industrial district of Bovisa[1]

A key period for the district started in the 1970s, when the strategic plan of industrial conversion has been processed. During this process, the large manufacturing area of the gasometer became an unused space due to the re-location of the factories farther from the expanding city center. Furthermore, the land became an asset in the urban transformation of this area, which led to several project proposals. Bovisa was considered as a strategic target due to its accessibility and the large free space available.

During the second half of the 80's, the new university campus of "Politecnico di Milano" started to develop within the Bovisa quarter. This project was considered as a new catalyzer for the urban development of the area, creating a new city of science and youth. Development program included the conversion of numerous disused industrial buildings as well as the construction of new ones. The interventions were conducted with the respect to the value of historical buildings and the original morphology of the production area (Fig. 2).

[1] http://www.globalsiteplans.com/environmental-design/university-as-an-engine-of-urban-transformation-in-milan-italy/ (Retrieved October 2014)

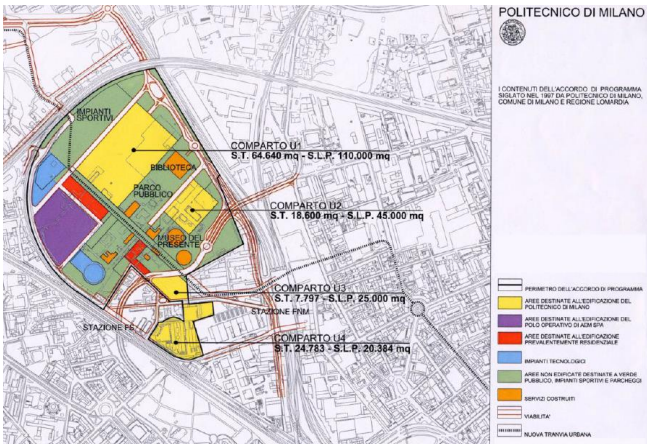

Fig. 2 „Politecnico di Milano", site plan (Brusezze and Cognetti, 2013)

In 2008 Rem Koolhaas' OMA company which specializes in urban planning of large area, was engaged to design the first concept of the Bovisa master plan. A new master plan by Rem Koolhaas called Nuova Bovisa is currently under construction. This project was aimed to ensure better connection of Bovisa with the city, concerning the whole metropolitan area as well as its connections (viability and public transport) and infrastructures useful to the public. The international studio was involved to offer a new vision in the gasometer area by interpolation of new functions: Technology and Science Park, university, students' campus, Palazzo dell'Innovazione (Innovation Centre), public service and function. The new technology park would have mixed functions: 170,000 square meters for university and 330,000 for private housing. The rest of the area was planned for commercial use and leisure activities.

Fig. 3 Master plan of Bovisa by OMA[2]

[2] http://www.euromilano.net/projectDetails-en-6.html (Retrieved October 2014)

This first phase of the conceptual master plan shows the tendency to redesign the territory starting from its history, its surrounding urban background, enhancing its quality potentials. The purpose is to create an ecosystem based on knowledge, creativity and innovation, able to grow and develop over the time. "Nuova Bovisa" is conceived as a key point in the town, with respect to a mix of different functions (residential, services and research facilities) planned within the district.

2.2. Flexible strategies of urban resilience

Scientists concerned about the future of the planet have for more than a decade pointed to the urgent need for redefining the concept of sustainability (Clark 2001, Raskin et al. 2002, Weinstein et al. 2013, Olsson et al. 2014). A number of promising conceptual frameworks have emerged for studying sustainability transformations, including transition management and resilience theory (Olsson et al., 2014). Because of a rapid change of the economy and society, the decrease of governmental power and financial resources and increased attention to the quality of life, it is extremely important to adapt the urban planning system to market and social dynamism.

Many aspects of contemporary living contribute to the environmental stresses, but the most influential are a current pattern of use of natural resources, the energy use and emissions of waste products. Besides environmental and economic issues, there are also social issues such as quality of life, quality of housing, and livability that influence the building industry (Durmišević, 2006). The "changing patterns of choice", which might seem minor in comparison to the other transitional forces mentioned above, but still have great impacts upon society. These patterns differ from the traditional work, family and dwelling standards of the past, and are characterized by flexibility, individuality and increased freedom (Marcuse & Kempen, 2000).

Since the cities are the cultural and social product, the human aspect and values, lifestyles and opinions of their citizen's must be incorporated into urban planning in order to create resilient and livable cities. The ability to absorb disturbances, to be changed and reorganized while preserving the initial identity (retain the same basic structure and the manner of functioning) is defined as the phenomenon of resilience. It includes the ability to learn from the disturbance by recovering the internal and external caused shocks. Resilience shifts attention from purely growth and efficiency to needed recovery and flexibility (Wikström, 2013).

As a starting point for sustainable system design, Joseph Fiksel in his work entitled "Designing resilient, sustainable systems", identifies four major characteristics that contribute to the phenomenon of resilience. These characteristics are the following:

- diversity- existence of multiple forms and behaviors;
- efficiency- performance with modest resource consumption;
- adaptability- flexibility to change in response to new pressures;
- cohesion- existence of unifying forces or linkages (Fiksel, 2003).

Adaptability is considered as one of the important parts of resilience. It presents the capacity to adjust to changing external drivers and internal processes and thereby allow development along the current trajectory (Folke et al., 2010). While most adaptive efforts are made to create compact and dense cities with „smart growth" and recycling as main outputs, the importance of "space" within cities is usually ignored (Kärrholm, Nylund & de la Fuente, 2014). Adaptability should be viewed similar to the concept of flexibility.

This includes the possibility of changing both built and spatial structures over time simultaneously with the dynamically changing conditions. For example, the economic recession could threaten the existence of some commercial facilities, or changes in lifestyles and demographics cause a need to re-design the existing housing patterns. Spatial resilience indicates the system openness to different usages, adaptations, affordances and even changes without changing the identity by advanced planning perceptions.

Resiliency is an emerging concept in urban design which fosters new thinking about designing less vulnerable and more flexible cities. Within a spatial perspective, resilience and adaptability are connected to the concept of so called „loose space" (Wikström, 2013). "Loose space" offers three qualities:

- possibility, with non-determinacy and limitless functions;
- diversity, attracting a variety of people and activities;
- disorder, which includes flexibility and the lack of control and constraints (Franck & Stevens, 2006).

2.2.1. Key principles of urban resilience planning

The idea of adaptable and resilient cities emerges in response to changes stimulated by the pressures of climate change, population movement and economic volatility. Such changes have a wide impact on urban settlements starting from the stage of more abstract perception and experience of place to concrete urban development. At all scales, the planning paradigm to envisage, design, implement and monitor these urban processes is fundamental to the management of the urban change process (Ganis, 2009). Urban change, whether stimulated by climate change, population movement or economic volatility, may be more sustainably managed in order to identify a new conceptual framework that accommodates changes in urban structure.

Contemporary strategies of urban planning should involve control measures aimed at ensuring interconnectedness and continuity between past and present through predefined development patterns. One of the approaches to resilient form definition is the determination of the optimal pattern of urban network (Fig. 4). Networks are characterized by levels of coherence, adaptability, vulnerability and resilience. Regular networks, typical of western city street grids are characteristically coherent: streets are bounded, complete and distributed. Regular networks may have the advantage of coherence, but its order is vulnerable. If a regular grid is randomly interrupted, the adaptation process would be very slow because changes to the integrity of the grid disrupts the order. Random networks, more typical for eastern cities, tend to be less coherent: streets may be incomplete, unbounded and asymmetrically distributed. Random networks have no fixed pattern, but its vulnerability to random removal of connections creates an incoherent urban network (Ganis, 2009).

"Small world networks" also known as 'real world networks' (Kaiser and Hilgetag, 2004) embody the characteristics of both regular and random networks. Small-world networks, according to Watts and Strogatz, are a class of networks that are "highly clustered, like regular lattices, yet have small characteristic path lengths, like random graphs" (Waats and Strogats, 1998). These results with networks of unique properties of regional specialization with efficient information transfer. The "small world networks" have the coherence of a regular grid and the adaptability of a random grid. "Small world network" combines the speed and efficiency of random grids and the coherence of regular

grids, enabling an adaptable and resilient urban network. It can be concluded that the cluster and connectivity best suit the needs of sustainable urban formation. “Small world networks” model embodies the adaptability that makes places resilient and the coherence that makes places meaningful (Ganis, 2009).

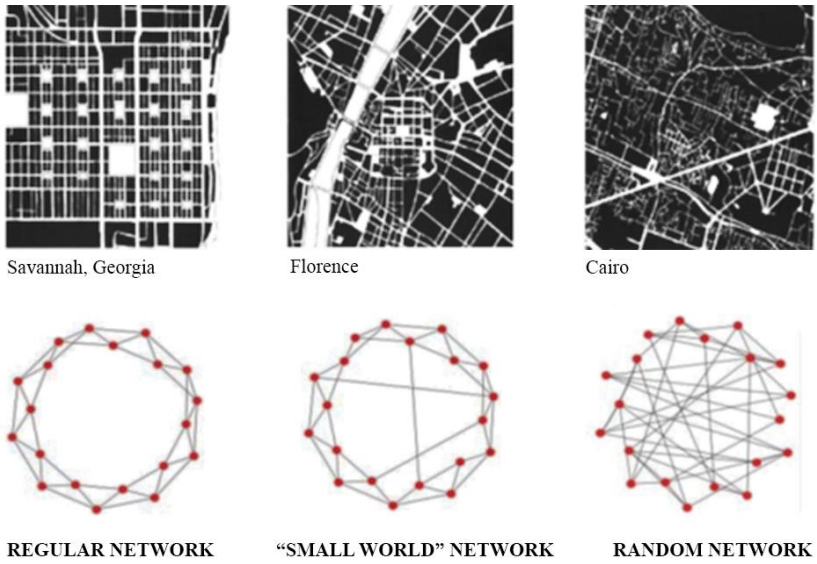

Fig. 4 Typical network patterns of urban settlements (Ganis, 2009)

Understanding the urban resilience and sustainability as two concepts that promote a plurality and diversity of solutions to social-ecological problems implies that urban planning needs to take on-board yet new metaphors and paradigms to further transform cities (Wilkinson, 2012). In addition, resilience can be assessed qualitatively by defining key indicators of system resilience. Such indicators are listed in table 1.

Table 1 Characteristics of system resilience, (Ganis, 2009)

Characteristic	Description
Diversity	The existence of multiple resources and behaviors within the system.
Adaptability	The capacity of the system to change in response to new pressures.
Cohesion	The strength of unifying forces, linkages, or feedback loops.
Latitude	The maximum amount of change, the system can absorb while still functioning.
Resistance	The capacity of the system to maintain its state in the face of disruptions.

Another urban resilience theory that connects with the discussion of adaptable urban space is Arefi’s (2011) exploration of the resilience concept in relation to “form”, “function” and “flows”. This model offers broader applications for urban design by focusing on these three aspects of the built environment. “Forms” define buildings that make up urban structure. Just as resilient organisms adapt to their habitats, certain building types can increase the urban form’s adaptability to change. “Functions” reflect

purpose in urban form. Urban form facilitates the "flows" of information, movement, services, and people that form separate but interconnected webs of critical relationships in the long-term vitality of the city (Arefi, 2011). These three attributes conceptualize a continuum from fixed or rigid to semi-fixed, flexible, adaptable, or fluid urban form. The author divides the concept into three types of city models, shown in the table 2.

Table 2 Resiliency concept by form, function, flow and defined city types (Arefi, 2011)

Principles	Resiliency type	Main theme	City type	Form	Function	Flow
- interchangeability of forms - modularity - ages of space	opportunity	Infrastructure (vacant and parking lots)	**Fixed city**	- specialized - unspecialized - modules	- urban service district - modules - infrastructure	- people - services - information (long range)
- repair - rights - relatedness - re-enchantment	Solidarity/ flexibility	Public space	**Good city**	- plazas - squares - open spaces	- public space - social interaction - connectivity - forma/ ceremonial	- people - formal - flexible (mid-range)
- multiplicity - multiple temporalities - spontaneity - user experience	spontaneity	Nooks and crannies (loose space)	**Kinetic city**	- freeway off ramps - spaces between buildings - nooks and crannies	- informal relations - temporary - spontaneity	- people - spontaneous/ temporary (short range)

Selected three concepts are identified to capture the three types of resiliency: the "fixed city" concept focuses on infrastructure with specialized, long-range and less flexible forms, with unique design and purpose of individual parts. To explore urban spontaneity and multiple "temporalities", the "kinetic city" concept advocates less specialized and more ephemeral forms, without being conditioned by permanent and single uses. In between these two models stands the "good city" concept which represents semi-specialized forms in public spaces and has the ability to adapt to mid-range type changes. Three types of resiliency emerged along this continuum: "opportunity," "flexibility" and "spontaneity". The "Fixed City", "Kinetic City" and "Good City" capture these three attitudes toward the area's transformation respectively. The 'fixed city' model is characterized by interchangeability and modularity, and has the most permanent state of these three models. It's form and function can adapt to long-range types of change, and includes urban districts and infrastructure such as roads, sewers and electricity lines. The author describes this model to have an opportunity type of resilience since, although it is less flexible in form, every part of it still has a unique design and purpose. The 'kinetic city' model relates to a spontaneous type of resiliency and is focused upon temporalities. It is mainly adaptive to short-range changes, less specialized and more temporal, and has no permanent form or single use. In conclusion, Arefi's resiliency theory can be divided into two extremes: at one end stands a city that is permanent, fixed, defined and purposeful; at the other end is the spontaneous, flexible, temporary and unspecialized city. The 'good city' is the one that stands between these two extremes and creates a balance

between their characteristics. This model has the ability to adapt to mid-range types changes and can be seen as an ideal model to strive for (Arefi, 2011).

2.1.2. Case study in resilience planning- 3C Competition Winner: Adaptive Urban Habitats

The resilience planning project entitled "Adaptive Urban Habitats" won the 3C competition (3C: Comprehensive Coastal Communities ideas competition) in 2013. After Super-storm Sandy, thousands of homeowners in Long Island and the three-state area face a critical point in determining their future. The competition sought for creative and innovative designs for comprehensive coastal communities along Long Island, New Jersey, NYC and Southern New England. Through the progressive urban strategies embodied in this proposal, Red Hook has the potential to become an archetype for environmentally sustainable urban coastal living. An ecologically and socially responsive development strategy for Red Hook that embraces the inevitability of change was proposed by competition winner. As catastrophic storm events and recurrent flooding increase in frequency, many neighborhoods like Red Hook find their future in question. It became clear that the neighborhood requires a comprehensive solution that can allow future growth while simultaneously planning for a more resilient urban coastline. The buildup of the neighborhood starts with the introduction of "flood-responsive" units on vacant lots within Red Hook. A locally manufactured kit of parts was proposed as an infill positioned vertically above the existing neighborhood (figure 5).

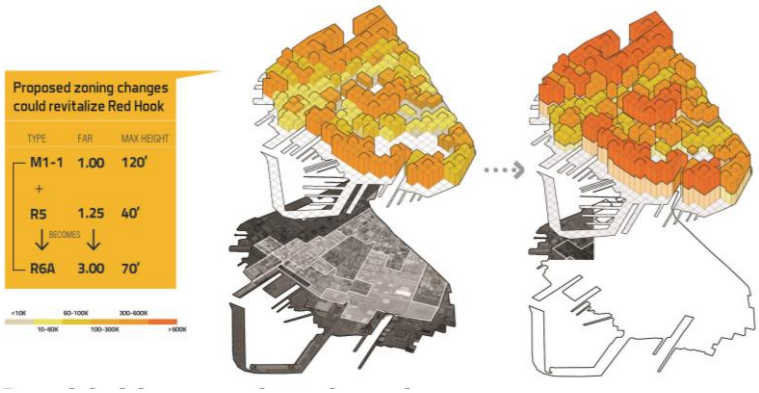

Fig. 5 Proposed planning project of Red Hook revitalization[3]

This strategy increases buildable space and density, protecting future development from rising sea levels and flooding while also being contextually sensitive towards the existing neighborhood and residents. Made primarily of wood, this system allows for dry construction on-site. It is easily assembled, highly flexible, and adaptable, allowing buildings to evolve with their inhabitants. Upgrading the existing context and creating temporary ground-floor infill, slowly evolve the existing neighborhood without immediately abandoning of the ground plane. With the loss of land due to sea level rising and returning wetlands, a new elevated connective infrastructure bridging between the stilted structures will serve as the neighborhood's primary circulation form (Fig. 6).

[3] http://renewcanada.net/2013/3c-competition-winner-adaptive-urban-habitats/ (Retrieved October 2014)

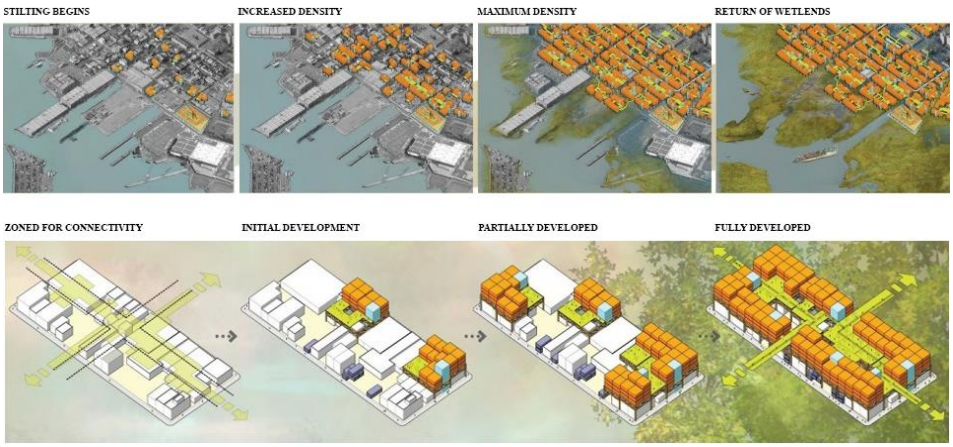

Fig. 6 Stages of the settlement development[4]

Breaking down the barriers between human habitation and local ecologies re-establishes a symbiotic relationship between people and their natural environment currently missing from contemporary practice. This proposal has the potential to shift the paradigm of building in urban coastal areas as well as the general consideration of contemporary urban planning.

3.CONCLUSION

Global environmental changes trigger evolutionary shifts in form and function of urban systems. The need for a "future-proof" planning strategy adaptable to the changing external and internal conditions is one of the key tasks of urban planners and architects of the modern era. The urban planning needs to move beyond established approaches and instead be uncertainty oriented and adaptive. Urban form and structure have to be as undetermined as today's urban society, for which individual needs are considered as more important than collective values. Since the cities are the cultural and social product, the human aspect and values, lifestyles and opinions of their citizen's must be incorporated into urban planning in order to create resilient and livable cities. Considering this, cities and city components need to increase their "capacity to change" in order to accommodate future demands. Change and uncertainty review the city planning approaches, which often consider the past trends and generally known problems instead of dealing with uncertainties of living conditions. Advanced research of sustainability presume that the needs of present and future generations will be met mostly within existing underutilized building areas, with the development of "multi-functional" and flexible urban structure in the settlement. The contemporary practice of design and planning should target the flexibility and transformability as significant drivers of reuse and recycling of built heritage in already defined urban patterns as well as the development of new structures with the characteristics of urban resistance. Resiliency is one of the emerging concepts in urban design which fosters new thinking about designing less vulnerable and more

[4] http://renewcanada.net/2013/3c-competition-winner-adaptive-urban-habitats/ (Retrieve 2014)

flexible cities, adaptable to changing demands of contemporary societies and negative environmental impacts. Adaptable design strategies of urban renewal and resilience requires a specific contextual response to each proposal and with that careful consideration is needed of each proposed contemporary insertion. The detailed research process should be applied in order to avoid the further destruction of socially and historically valuable structures, environmental pollution and disruption of living comfort.

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STRATEGIJE FLEKSIBILNOG PLANIRANJA U KONTEKSTU ODRŽIVOG RAZVOJA GRADA

Sagledavanje urbanog planiranja kroz neizvesnost budućeg razvoja grada predstavlja osnovo polazište održivosti. Fleksibilnost u projektovanju jedna je od metoda održivog razvoja grada koju u određenom vremenskom kontinuumu umanjuje rizik od "funkcionalnim ispada" prouzrokovanih promenljivim životnim okolnostima. Strategije planiranja koje čine prostorni sistem prilagodljivim dinamičnim ekološkim, funkcionalnim, socijalnim, tehnološkim uslovima, od suštinskog su značaja za funkcionalnu dugotrajnost i otpornost objekata, a samim tim i za održivi razvoj grada. U radu se razmatra primena strategije fleksibilnog planiranja u okviru koncepta održivog razvoja, koja je definisana kao ključno sredstvo urbane obnove i razvoja "otpornih" gradova. Fleksibilnost kao sredstvo unapređenja kvaliteta urbanističkog i arhitektonskog planiranja bitan je za sve učesnike u integrativne strategije razvoja: planere, menadžere, finansijske analitičare, investitore, zakonodavne organe i istraživače. S tim u vezi, neophodno je promovisati i podržati fleksibilnost u konceptualnim i zakonodavnim okvirima održivog planiranja.

Ključne reči: *održivost, fleksibilnost, adaptabilnost, otpornost grada*