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FLEXIBILITY AND SUSTAINABILITY FACTOR IN UNORGANIZED AND ORGANIZED TYPES OF URBAN ENVIRONMENT

ФАКТОР ГИБКОСТИ И УСТОЙЧИВОСТИ В НЕОРГАНИЗОВАННЫХ И ОРГАНИЗОВАННЫХ ТИПАХ ГОРОДСКОЙ СРЕДЫ

The paper analyzes the flexibility factor of architectural objects to adapt to the ongoing natural changes: the transformation of property, social conditions, kinship, cultural and functional programs. Two diametrically opposed types of buildings act as an object of analysis and potential transformation based on the application of the principle of flexibility. The first type refers to the informal urban formations, developed in the process of extensive growth of the urban peripheral areas, the second – to the extra organized construction: high-rise residential construction, defines the conditions for sustainable development of building, examines examples of experiments, hypothesizes the creation of an effective model of flexible architectural and planning approach to the two types of urban environment.

Keywords: two types of urban environment, unorganized building, super organized building, flexibility factor, sustainable environment, sustainability indicators, finding a balance of the two typologies, the role of an integrated approach

Introduction. The problem of sustainable urban development in two types of environment: unorganized and organized areas of the city

Urbanization is defined as the process of growth or increase in the number of people in areas classified as urban, or it can be seen as an increase in the concentration of population and activities in urban areas. With the rapid growth of cities naturally due to birthrates or to increased rural-to-urban migration, the facilities in many urban areas become inadequate. Today, according to UN statistics, more than half of the world's population lives in urban areas, and by 2050 this number will rise to 6.5 billion (nearly two-thirds of humanity) [1] (Fig. 1). Meanwhile, the overall economic situation has proved disproportionate to such rapid

Анализируется фактор гибкости архитектурных объектов, позволяющий адаптировать застройку к происходящим естественным изменениям: трансформации собственности, социальных условий, родственных связей, культурных и функциональных программ. Два кардинально противоположных типа застройки выступают как объект анализа и потенциального преобразования на основе применения принципа гибкости. Первый тип относится к неформальным городским образованиям, сложившимся в процессе экстенсивного роста городских периферийных районов, второй – к сверхорганизованной застройке – многоэтажному высотному строительству жилья. Определяются условия устойчивого развития застройки, исследуются примеры экспериментов, выдвигается гипотеза создания эффективной модели гибкого архитектурно-планировочного подхода к двум типам городской среды.

Ключевые слова: два типа городской среды, неорганизованная застройка, сверхорганизованная застройка, фактор гибкости, устойчивая среда, показатели устойчивости, поиск баланса двух типов, роль комплексного подхода

population growth, resulting in a large number of amateur peripheral housing developments of poor quality. Such development is commonly referred to as informal, or unorganized. About 28% of all urban residents live in poor, unorganized neighborhoods, such as those in the Arab countries. The life of these areas is accompanied by many complex social and economic problems, including serious environmental consequences [2, 3].

At the same time, unorganized neighborhoods form a specific atmosphere characterized by special cultural rituals, mutual adaptation of residents within neighborhoods, and partial freedom in aspects of self-government and self-development. In different types of unorganized neighborhoods, the established rituals of self-government, despite the organic nature of the relationships, are not

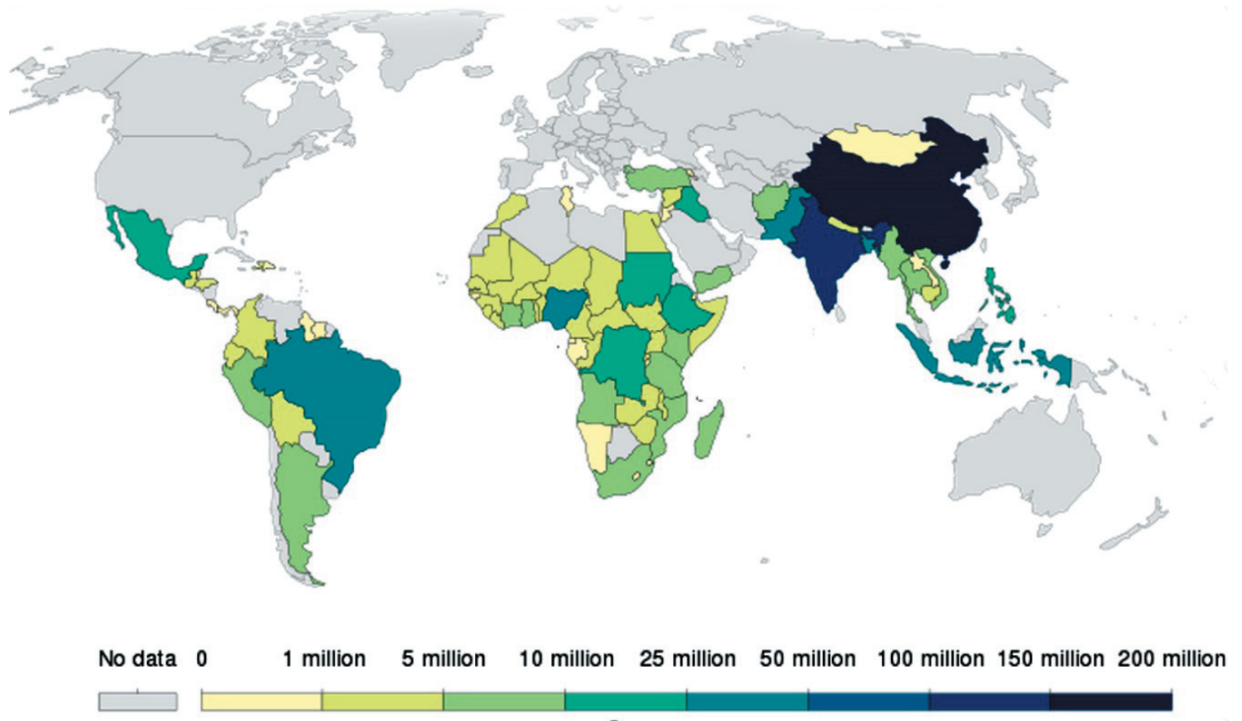


Fig. 1. Urban population living in slums, 2014

always legitimate and free from criminal influence. These are, for example, the famous Brazilian favelas in Rio de Janeiro and São Paulo [4] (Fig. 2).

The unorganized development of large cities and megalopolises around the world ranges from ultra-dense slums (Mumbai, Rio de Janeiro) (Fig. 3) to relatively prosperous “private sector” areas (Anapa, Rostov) (Fig. 4) and historic urban areas with courtyard-type development (Tabriz,

Samara, Odessa, Venice). Common features of this type of neighborhoods are a high level of autonomy from state and design control, various forms of self-government, established communities, spontaneous development of private development as the functional needs of families and neighborhoods change. The most common problems of these areas are insecurity from the activities of large players in the construction



Fig. 2. A favela in Rio de Janeiro. The public transport stop is the boundary between the unorganized and “well-to-do” areas of the city. The picturesque architectural appearance of the favela is an attraction for tourists. The spontaneous form reveals the unregulated construction initiatives of the favela’s inhabitants



Fig. 3. Unorganized development in Mumbai, India (Dharvi slum) against the background of the high-rise district of the capital. The contrast of the two living standards. The excessive level of poverty deprives the slums of the attractiveness inherent in the spontaneous architecture



Fig. 4. Unorganized development of the old quarters of Anapa. Obvious signs of non-project development of the territory of private plots of the residential area of the city. Weak horizontal neighborhood ties, but a fairly high level of well-being of the owners of backyards

market, the relative level of poverty (from extremely high to zero), insufficient engineering infrastructure, environmental violations, lack of public spaces and social infrastructure facilities.

The opposite type of deficit urban typology is the over-organized residential areas of multi-story residential buildings, combined into complexes, designed and built according to unchangeable and strictly controlled programs and regulations (Fig. 5).

The problems of this ultra-organized typology should include the almost complete absence of any possibility of expanding the living space of the family when changing its composition, and – such important circumstances as the inability to organize effective neighborhood connections, psychological discomfort due to separation from the land, the inability for residents to show creative initiative to change the environment of their habitat.

The flexibility factor in the search for a balance between organized and unorganized types of urban areas

The flexibility factor is a strength and a weakness of the unorganized areas; a strength because it allows this development to adapt to the continuous changes that occur, but a weakness because the excessive flexibility generates the effect of disorder in the relationship with the formal institutions of the state, including – with its social security and protection system. The same factor in the over-organized typical development of multi-story peripheral areas of the city manifests itself as a lack of flexibility. As a result, excessive order and control begin to dominate self-development.

Consequently, we draw attention to the contradictory nature of the flexibility factor. Considering the sustainable environment and the well-being of urban residents as the main goal, we



Fig. 5. Design of a 17-story apartment building by info@portal.group with a rigid standard layout of apartments. An example of organized development based on state and regulatory regulation

find that the excessive flexibility of unorganized areas gradually accumulates the threat of chaos and distress, but maintains the energy of self-expression, while over organized environment generates a special type of initiative-free existence while preserving external signs of relative well-being.

The factor of flexibility of urban planning policy and architectural and planning solutions is identified by us as a key aspect of the formation of a sustainable, that is, prosperous environment. But its implementation within the considered typologies – is a relatively new goal.

Accordingly, to fully take into account the flexibility factor requires a change in the number of strategic policies of the authorities, professionals, residents and investors in relation to the two mentioned types of urban environment, contrasting to each other. And although the architectural shop is not the main actor in the implementation of change, it is the architectural view of the problem is characterized by holistic coverage of its disparate components.

The task of our study is to find and develop concepts that bring together the two typologies under study in the optimal zone of strategic initiatives aimed at the creation of a third typology of residential environment in the framework format. This third typology is designed not only to combine the best characteristics of unorganized and over-organized approaches to development, but also to preserve the concept (factor) of flexibility as a basic imperative of sustainable environmental development.

Let's consider examples of ongoing experiments indicating the intention to implement comprehensive actions based on the strategy of flexible projects, or – the "flexibility factor". Architectural solutions in such experiments may precede all other relevant sections of conceptual developments of the sought "typology of balance". The search for social balance, says Chilean architect Alejandro Aravena, depends to a large extent on the chosen strategy of architectural companies. "It is a mistake to expect society to be interested in the problems of architecture. In fact, architecture has to keep its finger on the pulse and know what society needs at the moment," Aravena explains. – We create channels through which society can find solutions to existing problems" [5].

Architectural flexibility. Experiments

Stanislas Chaillou associates architectural flexibility with the natural process of functional metabolism and gives the flexibility factor a central place in the development of design methods of the 21st century: "Flexibility" in architecture refers to the ability of a building to continuously adapt its space layout and even its structure to evolving

needs. Stemming from the Modernist movement's dream which emerged in Japan in the 60's, the ideal of buildings as constantly evolving entities blends together three main aspirations: the need for a more efficient built environment, an answer to urban centers densification and the humanist promise of a city that would adapt to its citizens" [6].

The modernist movement mentioned by Chaillou was founded by the architects Kikutake and Awazu, and one striking example of their idea of change according to external circumstances was Kurokawa's Nakagin Tower project. «The ideal scheme of the metabolic building is derived from an analogy with biology and nature: a tree. The core, the vertical circulation and the serving functions would be hosted in a trunk-like megastructure, on to which prefabricated-habitation capsules would be added, and ultimately replaced. From the "trunk" (core) to the "branches" (units), concerns of function and lifespan are radically distinct: the core is long-lasting while the units are interchangeable. The core serves the units for access and structural support» (Fig. 6).

«The Nagakin Capsule Tower, by Kisho Kurokawa best exemplifies the application of such a scheme. Built in 1972, the "Capsule Hotel" was an attempt by Kurokawa to align the Metabolist vision with the reality of construction. Using prefabricated units that would fit on transportation trucks Kurokawa erected in 30 days a residential tower, in the middle of the Shimbashi neighborhood, in Tokyo. The square concrete core was designed to host an elevator and a stair case, giving access successively to each capsule. Each one was self-contained and entirely prefabricated before being brought on-site» [7].

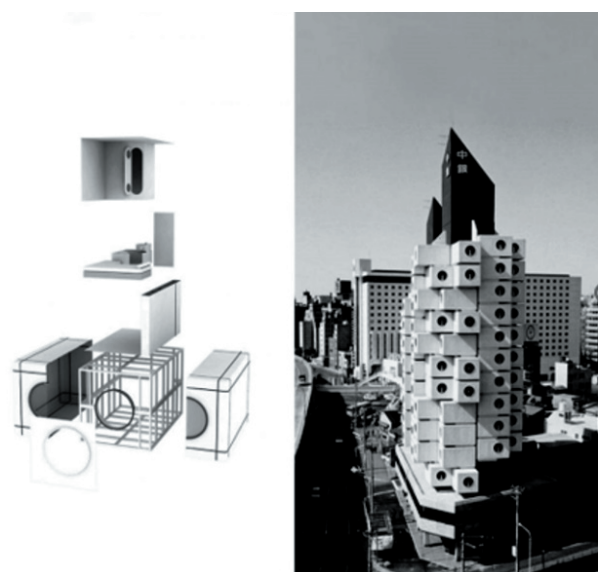


Fig. 6. Nakagin Tower, by K. Kurokawa

Although the author of this project did not succeed in further flexible replacement or addition of cells around the main core, the very idea of a flexible building with regard to cell autonomy has had a significant impact on further research in the field of flexible buildings. It is important for us that, for example, SANAA, a firm founded in Tokyo by Kazuyo Sejima and Ryue Nishizawa, continued to experiment with flexible layout while maintaining a focus on cell independence within the facility.

A closer look at the plans of SANAA's buildings reveals a parallel with the Metabolist manifesto: a revival of the unit as a free element in space. The matrix has vanished, leaving room for a continuous space into which the units are laid out. The focus is now on the "in-between" conditions that the neighboring of units creates. The system does not envision growth or reconfiguration, but the serendipity of the plan suggests a very organic organization of spaces. The idea of the organic organization of space is now based not on the external manipulation of cells, but on the rethinking and changing of the «space between cells (Fig. 7).

Studying the experiments of metabolists and SANAA, Chaillou concludes that the flexibility factor was only formally considered in their designs. These experiments were marked by the creation of some stylistic "images of flexibility", while no functional changes in fact took place. Therefore, it became important for Chaillou to develop proposals for "truly flexible" buildings. Chaillou's concept is illustrated by the manifesto and conceptual design of The Synaptic Building [6] (Fig. 8).

The current search for a "third typology" that combines the best qualities of "flexible unorganized building" and "rigid over-ordered" on a balance basis takes place both in the sphere of intellectual concepts, like The Synaptic Building, and in the "urgent" actions of various countries and design companies, aware of the dramatic difference of the established approaches: informal and controlled.

Singapore-based design firm Urban-Rural Systems has developed an innovative housing prototype designed to respond to uncontrolled urban sprawl while providing better infrastructure for migrants from rural to urban areas. The first prototype of an expandable home was built based on this design. According to the design concept, the dwelling can be flexibly modified in order to increase its usable area. To meet these needs, the experimental house is designed with a roof that can be raised and a floor and foundation strong enough to support up to three stories (Fig.9) forming a multipurpose building (Fig. 10). Not only does this model allow for flexible financing-owners can expand their home from a single-story to a multi-story as needed-but it also promotes vertical growth to reduce urban sprawl. The adaptable

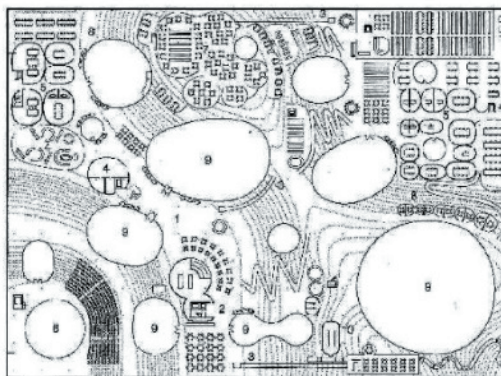
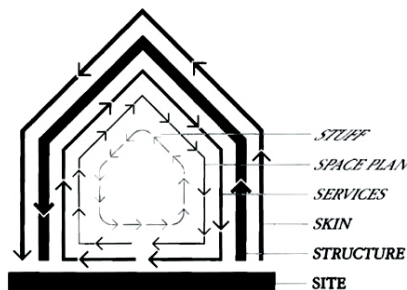
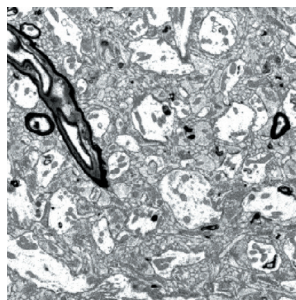


Fig. 7. The flexibility that SANAA offers at the Rolex Learning Center borrows significantly from Metabolist principles. The library, information desk, shops, and working "bubbles" are purposely misaligned with the column grid, to suggest the organicity of the scheme. The units' geometry is also distinct. The space left for "in-between" conditions is vast, and leaves room for its appropriation by the users (the couch area, the café, etc.)



SHEARING LAYERS OF CHANGE. Because of the different rates of change of its components, a building is always tearing itself apart.

Fig. 8. The Synaptic Building offers a new definition of our built environment, as a synaptic network, mirroring the principles of the human neural network. The same way our cortex performs through the action of individual neurons, a building can be thought as a set of connected "units" (elementary cells of activity, ie a retail, an office, a kitchen), that migrate and evolve across the building floors. A new usage implies a new space layout, a new space layout results in new building performances and new performances inform the space layout

housing system also includes rainwater and solar collection systems, passive design principles, local sewer systems, and food production systems for self-sufficiency and small business growth [6].

Thus, the goal was to build a flexible residential architectural unit that could:

- change according to use;
- generate income;
- manage waste, water and energy locally.

The residential area is divided into 16 lots, each with a green space with bamboo plantations and a

communal septic tank. There are also commercial services and open spaces (Fig. 11) [6].

The Expansion House Project addresses the housing needs of unorganized areas in Indonesia. The Expansion House offers affordable and environmentally friendly housing options for rapidly growing populations in major cities and elsewhere in Asia, combining lessons from existing informal settlements, precedents for incremental construction, and sustainable building principles in tropical climates (Fig. 11).



Fig. 9. Expansion of houses in Indonesia (1,2,3 -elevations)

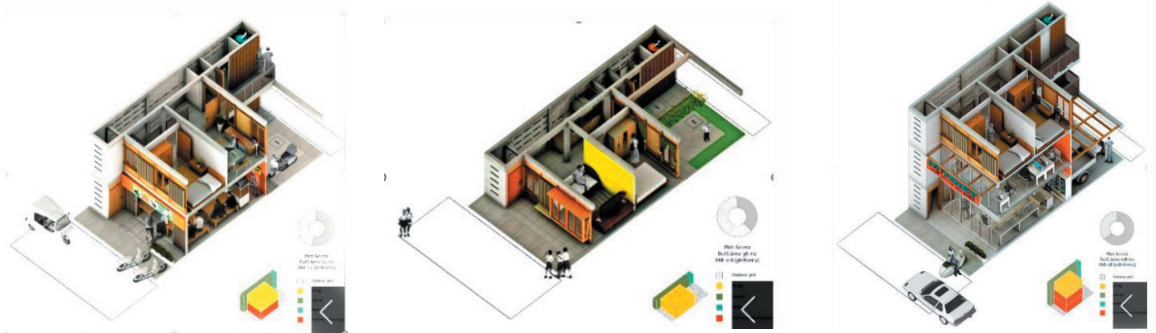


Fig. 10. Mixed use residential units



Fig. 11. a – The area is divided into 16 plots; b – one of the plots; c – plan of the house

The search for an adaptive typology in the projects of the Chilean architect Alejandro Aravena is of considerable interest.

Since 2000, his company has built more than 2,500 residential units for low-income families in Chile. One of the main principles of the Elemental bureau, headed by Aravena, is called “half of a good house (Fig. 12). Builders erect the boxes of future low-rise homes, run minimal utilities, and the rest is discussed with the residents, who take over

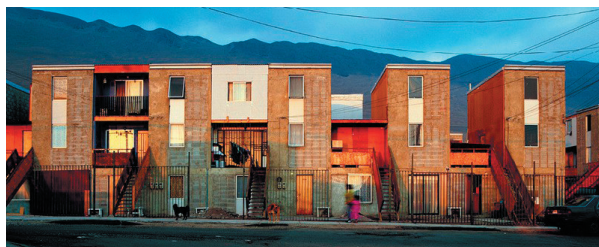


Fig. 12. Elemental Monterrey residential complex, 2009, Mexico, Santa Catarina. Architect Alejandro Aravena. Illustration of “planned self-development”: half of each house is designed, the other half is built up by residents as conditions change. The flexibility factor is realized through the combination of an ordered structure and a spontaneous one. Aravena calls the interaction of planners with the population the main principle of his work

planning, social policy, energy, transport and ecology (Fig. 13). Sustainable neighborhood – as one of the basic modules of the strategy of sustainable environment, in turn, can be a predetermining goal in the development of the “third typology” (typology of the balance between areas of unorganized and organized environment).

It is important to understand that if the design actions in relation to organized areas can be developed primarily through the improvement of architectural and scientific doctrines, as, for example, presented in the concept of The Synaptic Building, when dealing with unorganized areas, where the principle of flexibility is a de facto – an essential advantage, we must proceed from an adequate and respectful assessment of the existing lifestyle and a quite rational view of the actual problems. But these problems are less a matter of architectural design.

The practice of such an integrated approach, beginning with the study of the established features of unorganized areas, can be illustrated by the study of the Mezzeh Gardens area, which occupies a large area in the southern part of Damascus (Fig. 14).

To form an expert position on the level of environmental sustainability of the studied area, we can offer a brief comparison of the more organized environment of Bed Zed area in London with the specifics of Mezzeh Gardens area in Damascus (Fig. 15).

Sustainable development		
social sector	The economic sphere	Environmental sphere
public places	Energy	
Транспорт		
participation	Construction materials	Water
Land Use		waste management
Diversity / social mixing	Architecture	

Fig. 13. Table with the list of principle meaning and professional modules that form an integrated strategy for the sustainable development of unorganized urban areas

some of the rest of the work. “Let’s do the hard part now. Let the families take care of the rest as they see fit <...>. We turn the lack of resources into the principle of phasing,” the architect explains. This principle was tested in 2003, when Elemental built houses in northern Chile for \$7,500, the amount the government allocated per family for housing [8].

Integrated factors of sustainable development

The complex nature of the problem may mean that the factor of flexibility – as a key concept of sustainable development of the environment – is formed of several principled meaning and professional modules, such as architecture, urban

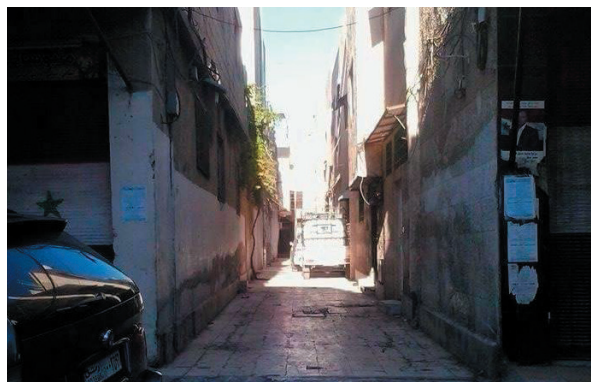


Fig. 14. One of the small roads in an unorganized residential area – Mezzeh Gardens. Damascus. Syria



	<p>Bed Zed – London</p> 	<p>Меззех Сады – Syria</p> 
Location and description	<p>The district of Hackbridge, in southwest London, is an ancient site of 7.1 hectares. 82 houses, 17 apartments and 1405 m² of working space. It is an environmentally friendly residential project [9]. It produces and consumes renewable energy, because the energy needed to cover all the needs of the project comes from renewable sources. The development is in the category of «carbon-free» neighborhood, which emits no carbon dioxide into the surrounding atmosphere [10]</p>	<p>An unorganized residential area in the south of Damascus, covering an area of 214.9 hectares. It is located on two main streets, the first of which is the Southern Expressway, and the second is the Mazze Expressway. It is near Umayyad Square (the center of the city). Historically an agricultural area with few houses, with the passage of time and the expansion of the city the density of population in the area has increased</p>
Architect	Bill Dunster	Local residents
Energy	<p>777 m² of solar panels were installed on the roofs of the buildings. The houses have been distributed in the ground in such a way as to provide heat from the sun to the south and to provide natural humidification by pointing the terraces of the buildings to the north; The design meets very high environmental standards, with emphasis on rooftop gardens, natural light, solar energy, energy reduction and recycling of waste water [11]</p>	<p>There are no energy production technologies in the region. Most houses have living rooms oriented south to keep warm in winter</p>
Water	<p>The water consumption was reduced to 76 liters per day because 18 % of the water comes from rainwater and recycled water [11]</p>	<p>The water in this area is clean, and there are no activities in this area that cause water pollution. It is only a water-consuming area, with no rainwater harvesting or recycling technology</p>
Construction materials	<p>He buildings use materials that retain heat during the day and return it at night. Materials were obtained no more than 60 km from the territory of the implemented project to reduce energy consumption during transportation of materials [12]</p>	<p>Building materials – cement blocks and cement roofs</p>
Transport	<p>The goal is to reduce fossil fuel consumption by 50 %. The use of bicycles and public transportation, and a charging station for electric cars has been installed in the center of the neighborhood</p>	<p>Bicycles are used heavily because public transportation does not reach all places in the area. Personal vehicle participation because most of the population knows each other and participates in daily commutes to get to the highways adjacent to the neighborhood</p>

Fig. 15. Comparative characteristics of the more organized environment of the Bed Zed neighborhood in London The specifics of the Mezzeh Gardens neighborhood in Damascus

Land Use	This neighborhood was built on vacant land; All the houses have a small green garden	This neighborhood was founded on farmland, so all residents are interested in crops and plants; all homes have a small green garden, which may be on the first floor if the house is large, or on the roof of the house if small
public places	Sports centers, health centers and social centers	There are no sports or social centers here, but people gather in very small squares adjacent to stores
Diversity / social mixing	Social mixing has been achieved through a balanced distribution of activities, with one third of the units allocated to high-income people, where apartments are larger, the income tax on these units will be higher than the others to help fund the rest of the neighborhood, the second third are housing units intended for middle-income people). Professions related to community service, such as firemen, teachers and nurses). The last third are for low-income classes.	The area is home to all but the high-income population. Since houses were built by the population independently, each person built or expanded their house in proportion to their economic situation, so the area of houses in the region is very diverse and can easily be changed when family conditions and needs change; respectively, the houses are suitable for all categories of people from middle-income and below

Fig. 15. (End)

From the above, we note that the Bed Zed neighborhood was created with a focus on environmental, economic and social aspects, resulting in a sustainable environment that consumes energy with minimal negative impact on the environment and provides comfortable and balanced social interactions.

As for the unorganized area of Mezzeh Gardens, which was created by residents freely according to their needs and their economic situation, we can note the presence of a certain deficit of characteristics inherent in design and state regulation and control. Since the area has not been included in state and project planning and the corresponding processes of supply, energy production, or water recycling, it is correspondingly deprived of sufficient basic services. But, on the other hand, social life in the area seems to be quite successful, which has a positive effect on several important aspects, including transportation, communication, and the integration of different community groups with each other. Such a prosperous social life has developed for several reasons, including:

- Residents lived in these neighborhoods for quite some time and did not have to move and change their housing due to changing circumstances, which contributed to good social relationships among residents over time.

- When families grew larger and separated into smaller families, the smaller families could continue to live in the same neighborhood next to their common large family, by virtue of the fact that the neighborhood had a variety of housing adequate to the economic situation of the population.

- The houses that were built consisted of 1-3 stories, and the nature of the dense road network, caused people to meet more often.

Conclusions

1. Population growth around the world has led to a rapid increase in the need for housing, utilities, and jobs. The result has been a rapid expansion of residential and industrial land use worldwide and the emergence of many urban problems, most notably the formation and expansion of informal and unorganized neighborhoods where the middle class and lower classes live, and the higher-income classes live in organized neighborhoods with higher levels of services and control. Meanwhile, organized neighborhoods are increasingly divided between elite and mass high-rise development in the city's peripheral areas, which, in turn, are populated by a potentially middle-class but economically far from well-off urban class, most often workers, employees, and migrants.

2. As a result, the real division between unorganized districts and organized neighborhoods occurs not so much in the social sphere as in the level of flexibility of development, able or not able to respond to the changes taking place. A significant difference is also the lack of sufficient public services in unorganized urban areas, as well as an increased level of environmental disadvantage .

3. The flexibility factor , as the analysis of the situation shows, is characterized by a number of positive properties of development. According to the definition of Abel, who considers the concept of

sustainable environment, the necessary condition for its emergence is not the presence of high-quality architectural works, but the phenomenon of flexible response of buildings and the emergence of its variations in response to the constantly occurring challenges and changes [13]. What helped the presence of positive factors in some unorganized areas was architectural diversity and transformation over time, and this was the result of flexibility precisely in unorganized areas. The flexibility in these areas helped residents to easily change buildings according to their needs. Because of their flexibility, these neighborhoods offered good options for residents to match their economic situation. Flexibility and ease of change have helped these neighborhoods meet the needs of a large group of people. Two common attributes define flexibility: first, flexibility is a process, not a product [9, 14]; and second, flexibility is adaptability, not stability [10, 11].

4. In the typology of disorganized areas – a high level of flexibility, predetermining a rich palette of variants of response and social interrelations. But any system becomes incomplete if the spontaneity of what happens in it is not balanced by the presence of ordered components. An understandable response to the idea of balance is to incorporate into the life of an unorganized area project and support activities, the source of which can be hierarchically more holistic institutions, and first of all, the state and large investors. The issues of systematic provision of these areas with medical and school care, engineering and transport infrastructure, security and waste disposal are elements of the ordered part of the system and the competence of the state.

5. The typology of organized neighborhoods, unlike unorganized neighborhoods, benefits from social and engineering support from state institutions. At the same time, the most mass variant of this typology, as well as unorganized districts, is increasingly in the peripheral zone of the metropolis, and accordingly – receives the level of services at an undervalued standard. The situation seems even less favorable when it turns out that this typology is not able to respond adequately to continuous current changes, and in this sense – the flexibility factor does not work as a positive trigger for the transition of this typology to the status of sustainable development environment.

6. As a result of the analysis, there is a strong perception and the need to find a balance between two typologies of environment: organized and disorganized. The unorganized typology provides flexibility and self-development of the built environment, as well as close neighborhood relations, while the organized typology balances the spontaneous manifestations through the inclusion

of design control and government support. In accordance with this dilemma, the study hypothesizes the need for theoretical modeling and practical development of the concept of «third» typology, balancing the advantages of the two typologies as much as possible on the basis of the principles of sustainable development of the environment.

7. It turns out that the intention to build a balance of the two typologies is embodied in two parallel processes: 1) continuous efforts of specialists, authorities and residents to change step by step the real characteristics within the already implemented areas; 2) continuous theoretical and conceptual experiments and developments to create a new («third») typology, which puts forward the flexibility factor as a basis for an integrated strategy of transformation on the way to create a sustainable environment. The complexity of the strategy implies the inclusion of a conglomerate of disciplines, each of which is focused on solving its specific problem. However, only quality design, according to Aravena, gives this strategy a systemic character. It is the design actions of architects that allow to give integrity to the entire model of typological transformation.

8. As a result of the study of the concept of flexibility in modern architecture revealed the fact of the established tradition of theoretical and experimental modeling of flexibility by analogy with natural metabolism. Specific feature of «architecture of metabolism» was the desire to embody, first of all, a romantic image of changeable structure and form of the building and the city. In reality these experiments remained for a long time the prerogative of «artistic influence» on architecture, and only starting from the mid-1970s it became increasingly clear that the real achievement of flexibility and sustainability of the environment depended not so much on the form as on the functional algorithms and social relationships of the experimenters.

9. Development of functional algorithm as the basis of future «flexible architecture» was tested in several experiments and acquired a form of a complete theoretical model in the concept of Synoptic Building, which implies continuous self-modification of the building within a given shell. Authors of the concept have found it reasonable to compare this process with the work of neural system of the human brain and to entrust control over implementation of continuously changing functional scenario to special computer programs.

10. Since the problem of flexibility was more related to the problems of residential areas, Rod Hackney's experiments played a significant role in the experiments on self-organization, and in recent years – social interaction as the basis for the effective implementation of the factor of flexibility –

has already shown itself in the projects of low-cost housing Chilean architect Aravena. Principles of flexible control over the processes of sustainable development in the 80s were actively developed in the group MEMIREX (Samara) [13], and later in the advocacy projects of the historical environment of Institut-City-Samara [15]. Projects that include the idea of developing houses – similar to the natural development of the development of unorganized areas – can include, among others, the proposal for the «expanding house» of the Singapore design firm Urban-Rural Systems [7].

11. The formulation of a strategic model of sustainable development based on the flexibility factor – as the most likely model of the future architecture – can look reasonable both in the form of a matrix diagram, which chaotically lists the main directions of development and implementation of the «third typology» (balance typology), and in the form of a hierarchically constructed concept. In the case of the matrix representation, the interaction between the spheres of competence will take place not so much on a planned basis, as on spontaneous interrelationships and priorities. In a hierarchically constructed program, the integrity of the whole scenario will be ensured by qualitative architecture and co-participation procedures. Of interest is the analysis of the matrix representation of the ongoing experimental search for the contours and characteristics of the future balance typology. The study compared the characteristics of London's Bed Zed neighborhood in Hackbridge and the disorganized Mezzeh Gardens neighborhood in Damascus [16]. In both cases, the comparison factors were listed in random order (matrix principle), but the analysis revealed that the unorganized area in Damascus retained significant priorities compared to the London version of the neighborhood. The effect of social cohesion shows itself as a priority condition for the sustainable development of the urban area [17].

12. General hypothetical contours of a balance typology.

Following the general results of the research conducted here, the general impact of the flexibility factor on the development of a comprehensive model of a “third typology” can be found in both established and newly proposed sections of the strategy, and can manifest itself in the following aspects [18–21].

a) Because people's needs are not fixed but change over time, flexible and variable models must be followed in order to deal effectively with rapid population growth and avoid the formation and expansion of informal and unorganized areas and thus avoid class divisions among neighborhoods.

b) These flexible models conform to the principles of sustainability because sustainability essentially requires trade-offs to improve human well-being by strengthening neighborhood

connections, economic development, and reducing consumption of non-renewable energy sources and other natural resources, according to (WCED).

c) The “third typology” concept involves integrating all segments of society with each other according to environmental, health, social, and recreational conditions suitable to all.

13. Successful projects are the modernization of unorganized areas when the priority is given to the community and the inhabitants, bringing them together with municipalities, professionals, the private sector and NGOs to jointly solve urban housing problems.

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