CHALLENGES TO RESIDENTIAL QUARTER RECONSTRUCTION: THE CASE OF THE CENTER OF YEREVAN CITY

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Abstract: *This paper examines the key challenges to the reconstruction of residential development in urban areas. It aims to conduct a comparative analysis of the reconstruction processes of residential quarters in Yerevan and in international practices and to identify certain principles that are appropriate for the further development of the process in Yerevan. The paper presents the features of the reconstruction processes that took place in the sphere of a residential development of the city of Yerevan. The study has been conducted on the reconstruction processes of various nature and content of residential quarters in past decades in a number of cities around the world, focusing on the analysis of topics that remain unexplored in the practice of Yerevan city. A comparative analysis of the findings and conclusions made in the framework of this paper allows us to reveal the strengths and weaknesses in the research and design works for the reconstruction of residential quarters in Yerevan already developed, as well as to develop principles for the choice of study directions, analysis methods, systematization and classification objects, which can be applied to local and international research on the given topic and in the design processes.*

Keywords: *urban structure, residential quarter, development, key challenges, overview, reconstruction, principles, city center, Yerevan.*

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Introduction

The formation of the residential architecture is a complex task that is tied to the various requirements of the time (social conditions, forms of spatial organization, technical capabilities), and reflects a multitude of functional, artistic, social and economic considerations. However, time leaves its trace on the architecture of a city. Cities, as living organisms, change over time, losing some of their properties and acquiring new ones. Residential development also evolves. Social progress occasionally imposes new demands on the residential environment, and household formation is never complete, always requiring new solutions. Consequently, residential development requires constant reconstruction and modernization and the residential architecture is constantly subject to research, analysis and prediction of development prospects.

The present paper focuses on key challenges to the reconstruction of residential quarters in cities, considering the quarters as an inseparable element of the general concept of housing (from apartment to city).

The paper aims to conduct a comparative analysis of the reconstruction processes of residential quarters in Yerevan and in international practices and to identify key principles that are appropriate for the further development of the process in Yerevan. This was the basis for the determination of the objectives discussed in the paper, which were expressed in the elaboration of separate parts arising from the structural sequence of the paper.

The first part presents the peculiarities of the reconstruction processes that took place in the field of residential reconstruction in the city of Yerevan. Those are identified based on a generalization of researches, projects, and proposals made from the 19th to 21st centuries. The material is summarized in a few directions of the research subject, distinguished according to the principle - from general to particular: historical process of development, researches and proposals relating to the reorganization of yard spaces, the

city center and its residential quarters. The first part of the paper builds on the study of Armenian scientific publications (15 publications, 17 authors) and project proposals (7 projects, 8 authors), as well as on the field observations and measurements, surveys, cartographic and archival materials (recovered from Yerevan City Hall, the Agency for the Protection of Historical and Cultural Monuments of the Staff of the Ministry of Culture of the Republic of Armenia, the Yerevan History Museum, the National Museum-Institute of Architecture of the Republic of Armenia).

The second section of the paper studies the multidimensional features that underlie the reconstruction procedure of residential quarters in different cities across the globe. It examines the nature and content of various reconstruction techniques as applied to residential complexes in 15 cities worldwide. The findings of the study are grouped according to several characteristics of the reconstruction process focusing on the topics that remain unexplored in the practice of Yerevan city, namely research approaches and methodology, identification principles of the key challenges, development models of proposals, implementation and management tools. The second section of the paper was developed through the analysis of international scientific publications (26 publications, 49 authors).

The third and final part of the paper tackles the issue of prospects for the reconstruction of residential quarters in the city center of Yerevan. Analysis of past research and design works for the reconstruction of residential quarters in Yerevan reveals the strengths and weaknesses of said research and planning. Their comparison to the international practice of residential reconstruction led to the development of a number of principles for the selection of research paths, their analysis methods, a series of principles regarding the choice of the objects of systematization and classification, which needs to be applied to local and international research on the given topic and in the design processes.

Materials and Methods

The work was carried out on the basis of field studies of individual sites and specific elements of development as well as the study of published and archive sources on international and Armenian architecture. Methods of theoretical research, analysis, synthesis, systematization, classification and generalization of the material were used.

Result and Discussion

Reconstruction in the urban structure of Yerevan: summary of the journey, current situation, implemented studies and proposal

Housing modernization and renewal are the main issues of the housing policies of states. Meanwhile, reconstruction is a major trend of contemporary world architecture and has served as the principal tool for reforming and improving pre-established urban environments [1]. Urban reconstruction is a complex and multifaceted process that should be the result of the joint, complementary work of architects and many other related specialists [2]. This is witnessed through many instances of urban development interventions in cities across the globe (Salvador, Anhui, Wuhu, Tianjin, Hubei, Birmingham, Sheffield, Veszprem, Istanbul, Madrid, Huesca, Voronezh, Aceh, Nias, Lausann). Their experience shows that it is important during the design development not to view the selected area as a separately functioning environment, but pay special attention to its current urban situation, social conditions and architectural and artistic features. Urban development interventions are a recurring phenomenon performed by way of reconstruction projects. The latter are the result of comprehensive processes that incorporate different stages and are conditioned by various circumstances, including population and urban area growth, technogenic and natural disasters, evolving social requirements, negative effect of time, technological advances and other phenomena. Especially alarming,

noteworthy and underestimated are the rates of growing urbanization [3]. According to World Urbanization Prospects (2014), the share of people living in urban areas is larger than of those living in the countryside, with 54% of the world's population now settled in towns and cities. That number is expected to increase to 66% by 2050 [4]. Population growth rates of this scale directly impact the land consumption rate of urban settlements, owing in particular to the constant need to increase housing stock. For instance, this is reflected in the development history of the city of Madrid of the past 15 years, during which its area grew faster than in all the previous centuries combined on account of its ever-increasing suburban housing stock [5].

On the other hand, as Elena Lacilla Larrodé, Harry Smith and José María Ordeig Corsini (2019) explain, quoting Logan, and Firley and Stahl "Throughout history the shape of cities has been strongly influenced by preferences and habits in housing. As a corollary, the relationships between houses, the way they fit together to make neighbourhoods and the way they interrelate with other urban activities have determined the quality of city life" and "Housing is the most significant built form in the urban landscape and its success in achieving a sense of place is one of the bedrocks of social continuity" [6,7,8]. Consequently, the reconstruction of residential areas exerts great influence on the overall perception of a city's image and must be thoroughly studied.

In the above-mentioned context, Yerevan is no exception. Its urban structure and residential areas at different times also did not avoid the multifactorial and multilateral reconstruction processes that are still going on during the period of intensive changes in the city space. We will try to summarize the reconstruction of the elements of residential development in the center of Yerevan within the framework of chronological development.

Historical development

Like many other cities, Yerevan has also gone through multilateral reconstruction processes throughout its history. The establishment of the present-day city of Yerevan began thousands of years ago and has since welcomed many civilizations, held different forms of government, and survived through wars and disasters. And each such phenomenon has left a lasting impact on the historical development of its urban structure. In this context, the chronology of Yerevan's modern urban development dates back to the end of the 17th century, when the city structure underwent a complete transformation after the earthquake of 1679.

Whereas, the first significant processes of reconstruction of the urban structure of Yerevan took place in the 19th century. The formation of the province of Yerevan under the Russian Empire in 1828 led to a drastic change in the worldview, from East to West, which consequently became a basis for embarking on a new era in the history of Eastern Armenian architecture. One of the first expressions of the latter was reflected through the general plans of Yerevan of 1837 and 1856, based on the principle of regular planning of the territory. Here the functional zoning is preserved and at the same time, the main road segments of the street network are regulated (Fig. 1 a,b). Many of them still constitute the current street network in the center of Yerevan. The regulation of the street network leads to a fundamentally different composition-scale approach to the organization of the living environment, the creation of perimeter quarters with yard areas. Studies show that this leads to: improving the forms and functional organization of the housing unit; establishing a closed, private inner-yard space, which promotes the perception of these spaces as cells of social communication; regulating functional processes and adapting to the climatic conditions of the place [9, 10].

The following phase of reconstruction of the city structure is directly associated with Armenia becoming a member of the USSR. The rapid industrial development of the 1920s caused a sharp increase in the population of Yerevan, which evoked issues related to regular development and organization of life, thus triggering the need for reconstruction. In 1923-24, architect A. Tamanyan developed the new general plan for Yerevan based

on the principle of partial preservation of the existing system, combined with the approach of radical reconstruction (Fig. 1c). This has led to the formation of the current perimeter development of the center, which is manifested in the enlargement of yard areas and the gradual weakening of the private status of yards. Thus, the small provincial settlement of the past was restructured into a completely new-scale urban area. It is this reconstruction plan that defines the modern features of the center of Yerevan and makes it recognizable among other cities [11].

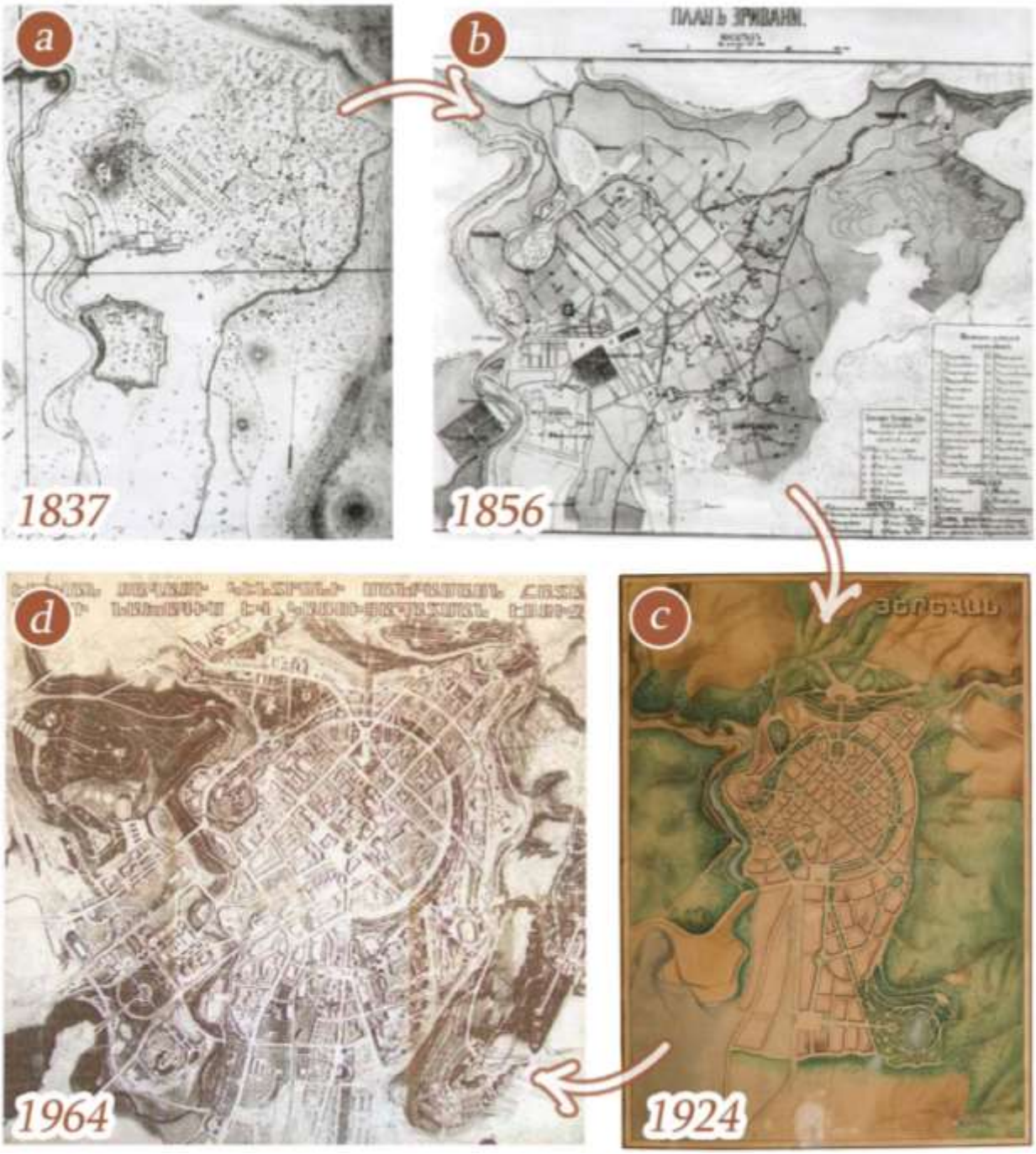

Fig. 1. *Development of the city structure of Yerevan (general plans through the history)*

From the 1950s, the city underwent territorial expansion through the integration of neighboring settlements, which consequently led to the disruption of the functional processes of the city, and thus, caused significant deviations from the revised general plan of 1951. From the end of the 50s, the urban development of residential structures evolved in two directions. Mass residential construction developed in the peripheral areas of the

city, carried out on the principles of free or line building of quarters, with a structure that strongly differed from the traditional perimeter development of the yard areas. Whereas, the center continued to adopt its traditional perimeter development model. However, yard areas underwent a significant change in their functional conception, since they lost their privacy and gradually evolved to public multi-use service areas. As a result of these complex processes, the concept of unity embraced in the urban development of the city gradually disappeared. The city, formerly intended to be an independent and separate functioning and developing organism, quickly evolves into a center of a large city. From this period on, issues of urban structure development were distinguished. The problem of the city center reconstruction within this context became a separate matter [10].

In order to avoid irregularities in the development plan of the city, a general plan for the reconstruction of the center was outlined in 1964, which later composed the basis for the general plan of the city in 1971 (Fig. 1d). According to it, the construction of high-rise residential buildings in the center of Yerevan commenced. In the 1970s and 1980s, the integration of many standard and amorphous high-rise residential buildings into the perimeter development of the center, including separate, local public structures (garages, ancillary buildings, engineering, storage, buildings and outbuildings), contradicted the functional-spatial structure of the environment which underwent certain formation process. Hence, this period initiates the process of demolition of the yard areas of the city center. The traditional yard environment undergoes radical changes. Social space of the yard loaded with green, water and recreation zones decreases, thereby becoming full of construction disrupting its functional organization. This approach to reconstruction, primarily aimed at supplying for the city's housing shortage, leaves an irreversible tollon the structure of the center, which inevitably brings to distortion of the scale and image of the historic core [12].

It should be noted, that since the 1920s, the new perimeter system of urban development is implemented in the existing development zones. Hence, a full demolition of the old housing stock was provided. However, due to the lack of economic means, accompanied by the need to increase the housing stock, only areas designed for new buildings are demolished, which are located on the perimeter zones of the quarters. The fact that more attention was paid to the artistic side of street architecture in the 1930s and 50s, is also important, as a result of which the organization of inner-yard areas becomes less significant. So the demolition of old houses located in inner-quarter zones, which was necessary for the organization and development of the yard space, was constantly delayed throughout the whole Soviet era.

The next and last period of reconstruction of the city center was during the post-Soviet years. It should be noted that if past processes of city reconstruction, in spite of results, had a certain direction, as of the 1990s, its development became entirely spontaneous. The unfavorable political and socio-economic situation of the country (caused by the formation of a new economic structure; the war; and other factors) leads to uncontrollable urban developments. In the perimeter structure quarters of the center within the above-mentioned not demolished zones of old housing, one by one, high-rise buildings are constructed, with each rising above the other, in a completely disordered manner, without unity of urban planning, alien to the scale of the city and based on purely economic motives. The issues of urban integrity are completely ignored throughout the process of reorganization in even the most comprehensive sections in the Northern and Main avenues of the city, which represent the compositional axes of the center. This tendency to pursue purely profit-oriented activities has significantly damaged the historical and cultural values of the city, and distorted its overall unique composition integrity. In the mentioned processes, in practice, the demands and opinions of the population are not taken into account, which causes contradictory responses among the public. Moreover, it also provokes serious problems of security and sanitation within the quarters [13,14,15]. The evolution ot the construction of the central quarters of Yerevan is illustrated in Fig. 2.

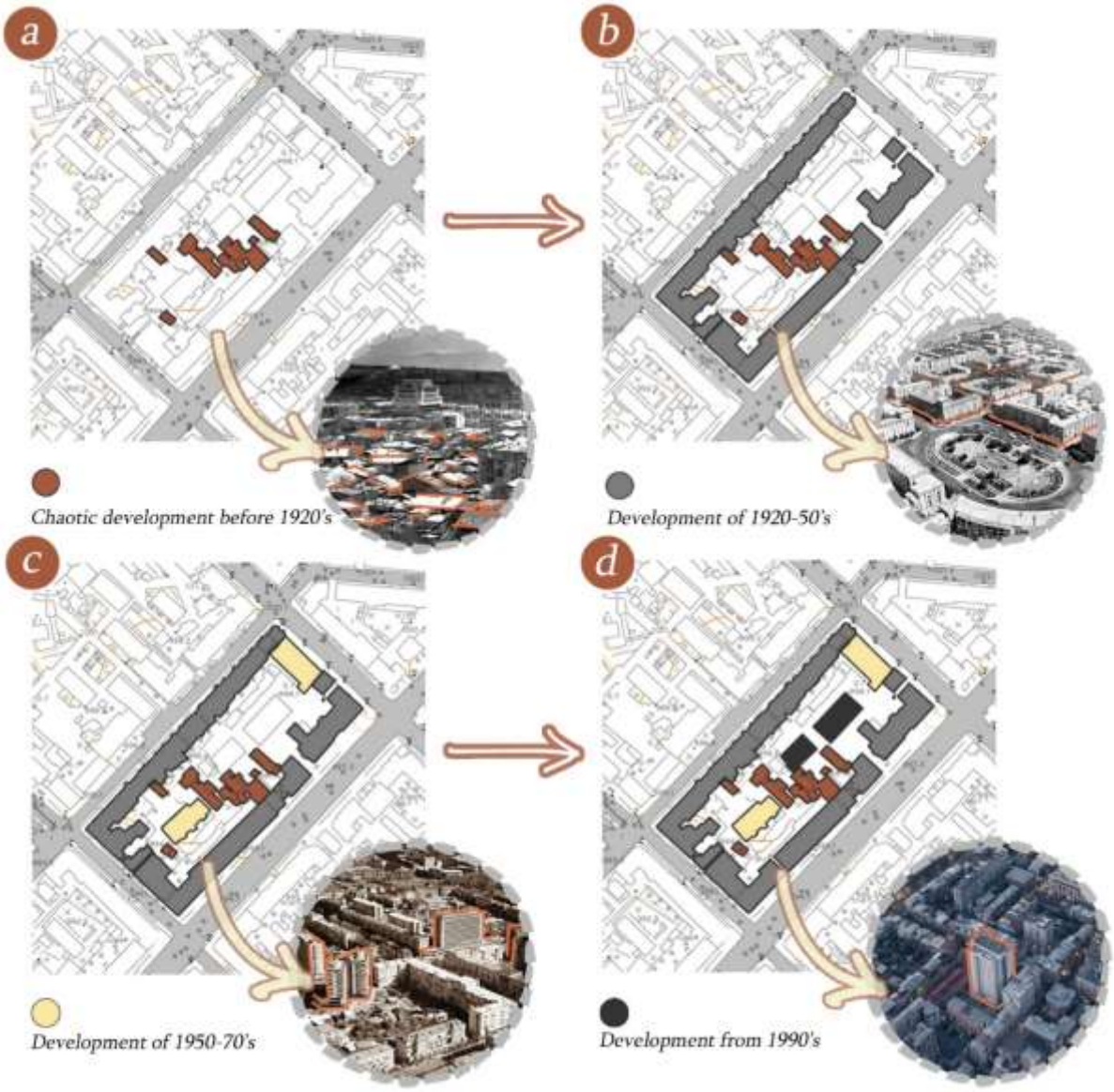

Fig. 2. *The evolution of the development of central quarters of Yerevan in different periods of the last century*

Mentioned different circumstances lead to the fact that the studies of the problem of reconstruction of the constituent elements of the city structure of Yerevan have become topical in the field of Armenian architectural science since the 2000s.

Summary of researches and proposals for the reorganization of yard spaces of Yerevan

The summary of the works related to the issues of yard spaces in the residential areas of Yerevan developed by the NUACA (National University of Architecture and Construction of Armenia) during the last decades allows to make an analytical generalization of their results, which is reflected in the provisions presented below.

Within the structure of the city of Yerevan, the yard space can be described as:

- the basic element of the urban structure, which largely determines the architectural image and historical identity of the development,
- an important component of urban improvement,

- the transitional degree from the intimate space of an apartment to larger urban areas: the preservation of this gradation in the hierarchy of the urban organism is an important factor in ensuring a psychologically healthy and full-fledged living environment [16].

The process of organizing the yard space in the structure of the city of Yerevan throughout the last century can be classifised into the following main chronological stages of development (Fig. 3):

- establishment of a yard in the center of a private house or an apartment building (stable social unit of a residential area - a traditional patio within the linear and perimeter development) (Fig. 3a),
- establishment of a yard in the center of the space enclosed by apartment buildings (reorganization of the yard in a new scale of perimeter development) (Fig. 3b),
- establishment of the yard in the open spaces between freely installed buildings (redefinition of the idea of the yard within the general spaces of free development) (Fig. 3c),
- establishment of the yard in the space enclosed by residential buildings structured in groups (reunification of the yard under the new conditions of the grouped development regulated space) (Fig. 3d),
- loss of the yard in the area filled with irregularly placed buildings (destruction of the yard in the conditions of widespread spontaneous development of the inner-areas of a quarter) (Fig. 3e).

A survey was conducted to determine the current requirements for reorganizing the yard areas, which sought to understand the needs of residents with respect to yards, their importance, and the structural solutions they provide. Based on the analysis of the answers provided by 200 residents, the overall issues raised by the latter can be categorized as follows:

- the relevance of the impact of yard spaces on human life,
- the importance of the social component within the formation of the architectural and spatial solutions in yard spaces,
- the communal necessity of yard spaces as a recreational and interactive environment in quarters,
- the significance of green spaces and playgrounds provided by yard spaces,
- the scarcity of recreational areas conditioned by unorganized parking areas, continuous construction processes, and the gradual reduction of green spaces [8,16,17,18].

The analysis of the results of the field observations and the surveys allows to identify the main negative aspects associated with the evolution of yard spaces in the city:

- unjustified densification: violation of the functional and compositional balance of the yards of the perimeter development due to the construction of multi-story residential buildings within the quarters (city center),
- installation of garages, private business structures and various ancillary buildings (center and suburbs),
- absence of a clear and organized layout between passages and recreation zones.

The elaboration of the typological classification of the yard areas, which was executed based on their functional layout characteristics (area, outline, green area, playgrounds, sports grounds, parking lots, passages and approaches) and on their location in the city structure, allowed to develop several proposals for their reorganization. These proposals were presented in the form of scientifically substantiated recommendations, which are based on the differentiated approach to the spatial layout, the outline and the absolute dimensions of the yards. The analytical summary of the results of the proposals and the mentioned classification are further explored in Fig. 4 [17].

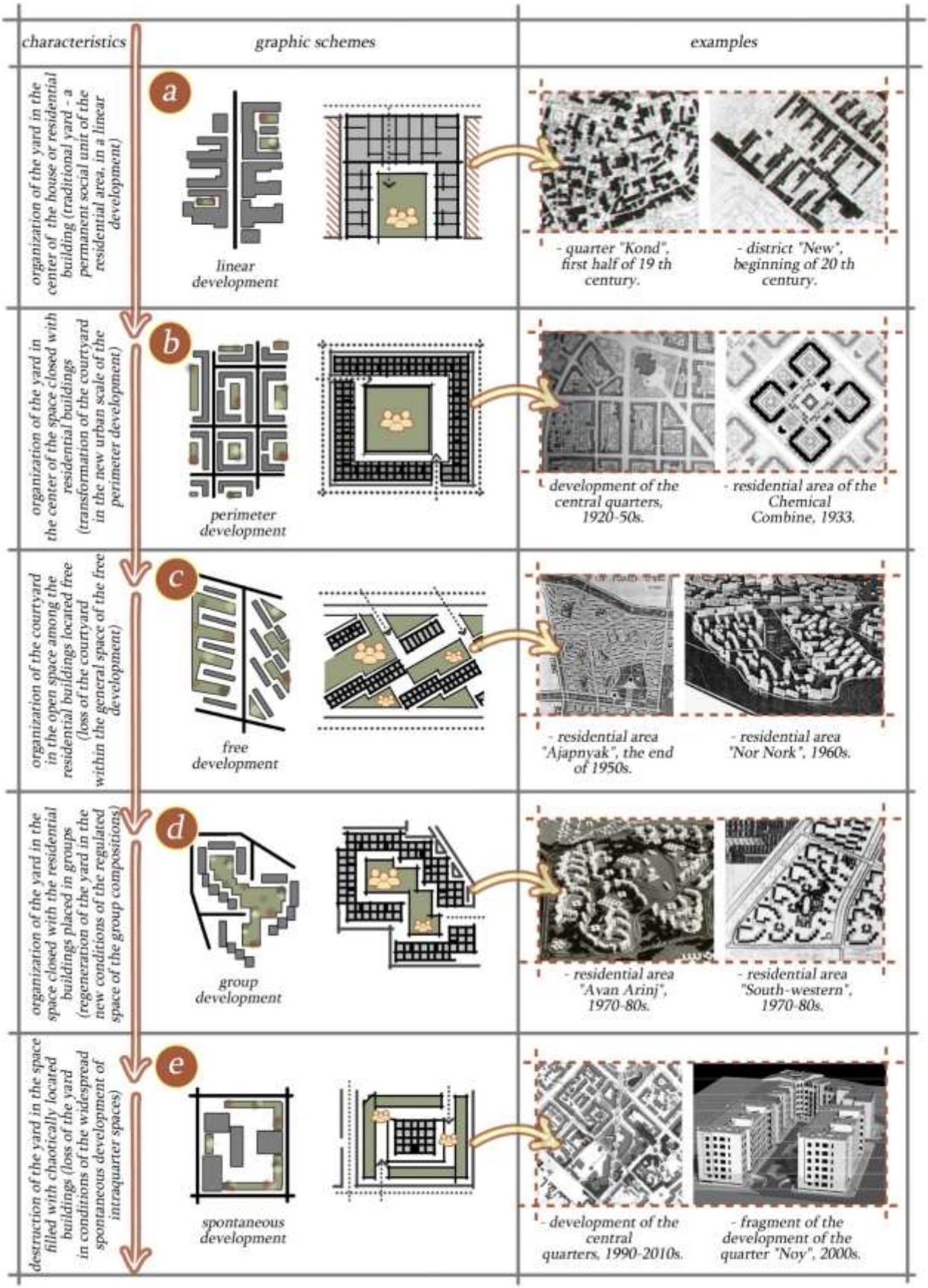

Fig. 3. *Main stages of the yard space development in Yerevan city*

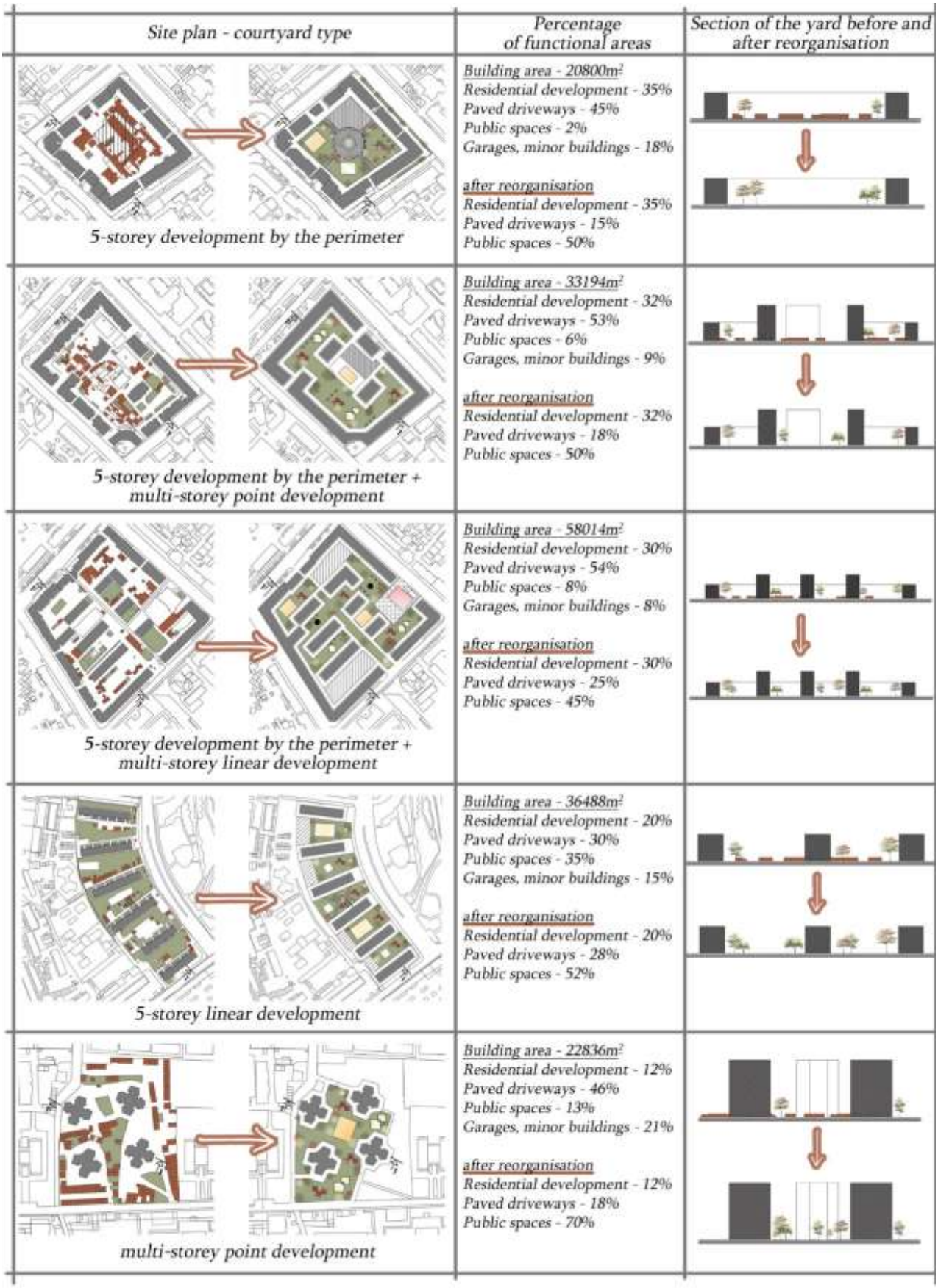

Fig. 4. *Classification of courtyard spaces of the city of Yerevan and proposals for their reorganization*

The city center

A number of studies conducted at the NUACA in recent years include also project proposals for the reconstruction of certain quarters in the center of Yerevan, which refer to the following parts of the center:

- quarter enclosed by Hanrapetutyan, Tpagrichner and Vardanants streets (2010, authors: R. Azatyan, K. Azatyan, Fig. 5a),
- quarter enclosed by Vardanants, Kochar, Kajaznuni and Vratsyan streets (2018, author: K. Azatyan, Fig. 5b) [19],
- quarter enclosed by Nar-Dos, Tigran Mets, Zavaryan and Khorenatsi streets (2019, authors: A. Ohanyan, K. Azatyan, Fig. 5c) [20],
- quarter enclosed by Charents, Vardanants and Shahinyan streets (2020, authors: I. Mirzoyan, K. Azatyan, Fig. 5d) [21],
- quarter enclosed by Kochar, Tigran Mets and Kori streets (2020, authors: A. Ohanyan, A. Gurgenyan, Fig. 5e),
- quarter enclosed by Khanjyan, Tigran Mets, Byuzand and Hanrapetutyan streets (2020, authors: A. Mirzoyan, A. Gurgenyan, Fig. 5f),
- quarter enclosed by Arshakunyats, Kristapor and Sevan streets (2020, authors: M. Aydinyan, A. Engoyan, Fig. 5g) [22].

Observational analysis of the mentioned researches and development projects shows that those were aimed to solve the accumulated problems within various quarters by providing sustainable solutions ensuring a prosperous living environment. Different means were deployed to achieve the given objective. In order to establish a more regulated environment, it is necessary to demolish the various constructions along the streets and in the yards. In some cases, the establishment of new structures are planned to compensate the owners of demolished properties, meanwhile promoting economic activity within quarters. On the lower floors of new residential buildings, public spaces are provided to promote servicing, renting or selling activities to provide for the basic needs of the quarter. Taking into account the high value on the real estate market, respective large public structures are proposed in certain quarters, depending on the location of quarters. In case of large industrial structures in the quarters, options of their renovation are considered, with the feasibility of offering further functions for public and residential usage. In addition, considering the growing number of cars, along with the overall scarcity of parking spaces, the proposals also include underground parking lots, the volume of which is calculated in accordance with the demand of quarter on the whole. In some cases, the proposal envisages the usage of attics in existing buildings, in order to improve the existing roof constructions in poor condition and also to expand possible areas of sales within the quarter [22, 24].

The proposed design concepts are aimed at ensuring the self-sustainability of the project on account of the generated real estate, meanwhile prioritizing the benefits of the public instead of business interests. The main goal of the projects is to improve the urban environment. Although the projects are not intended to provide additional financial income, the economic aspect of the issue has not been disregarded as well, in order to attract the attention of investors and governing bodies. Therefore, additional development is considered in a measure, derivable financial resources of which will be sufficient for the process of solving the problems of the quarter (design and research works, demolition, construction, improvement). Moreover, the main financial sources for the reorganization of yard spaces are considered:

- measures taken at the municipal level (municipality, district administration, community),
- private investments.

The financial calculations in the proposals were made with the following considerations:

- all project implementation costs are covered at the expense of the generated real estate (the positive difference between income and expenses is 15.66-26.67%),
- compensation for the demolished objects is envisaged at the expense of new development,
- research, design, construction and installation costs and real estate prices are determined according to the official normative and statistical data of the Republic of Armenia.

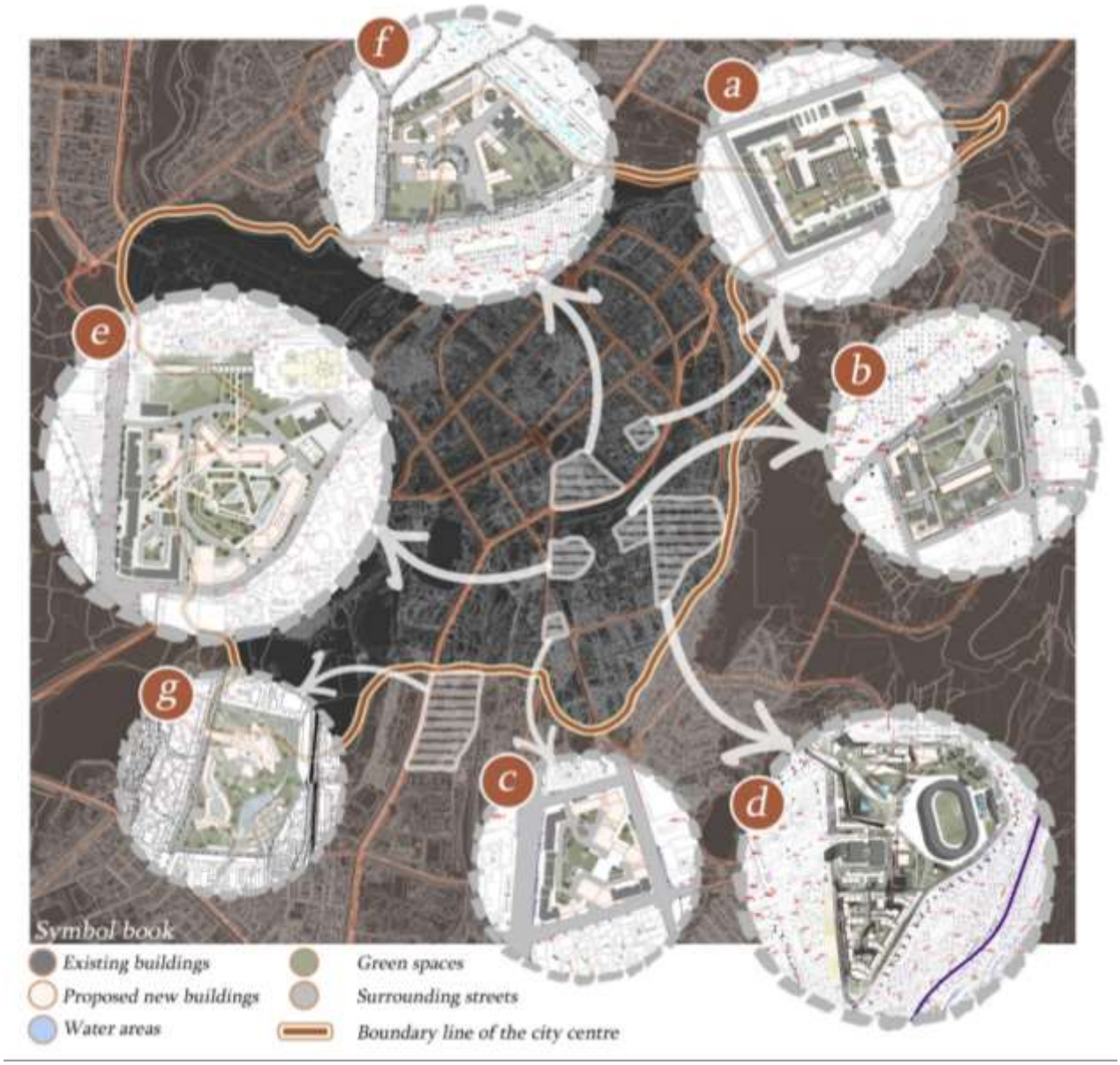

Fig. 5. *Proposals for the reconstruction of some quarters of the center of Yerevan*

Residential quarters of the city center

The project-proposals discussed include a significant amount of research into the center's residential quarters. Examination and comparison of those allow us to highlight certain patterns, which become apparent in the formed situation.

The summary of the various proposals shows that the features characteristic to the structure of the quarters identified in the research findings, depend on the peculiarities of the quarter placement in the structure of the center and conditioned by presence and quantity balance of the following components:

- ordinary structures or structures of cultural value,
- ramshackle housing stock,
- garages,
- structures implemented in violation of the urban planning requirements,
- green areas.

Given the aforementioned, for the reconstruction process plan the residential quarters of the center of Yerevan can be classified according to:

- the position and significance within the structure of the city center,
- the amount of development subject to demolition,
- the percentage of the development along the perimeter,
- the feasibility of new construction,
- the presence of historically or culturally significant structures.

The problems, emerged in the quarters, can be classified into the following groups:

- urban planning (violations of development density, distance between buildings, safety zones, pedestrian and transport routes, and provision of approaches, as well as significant volume of dilapidated, irregularly constructed private houses, garages, service structures in the yards, and spontaneously constructed development along the streets on the outside of the perimeter of the districts),
- structural (non-compliance with the current normative structural requirements from a significant part of the buildings, existence of a considerable number of impermissible interventions in the load-bearing structures, poor condition of the roofs),
- functional (severe lack of recreation areas, green zones, playgrounds, sports squares, pavilions, improvement elements, parking lots and landscaping, as well as the negative impact on the living conditions of residents, caused by public caterings, service and trade facilities located on the lower floors of residential buildings),
- economic (low power-efficient level of existing buildings),
- artistic (extremely low levels of development composition solutions, architectural appearance of buildings and aesthetics of the environment).

In the projects discussed:

1. the dynamics of changes in the main technical characteristics can be summarized through the following indicators:
   - built-up area: reduction of 4.7 - 35.8%,
   - the total surface area of residential buildings: from a reduction of 35.2% to a growth of 35.9%,
   - the total surface area of public buildings: growth of 12.8 - 211.7%,
   - coefficient of green zones: growth of 13.0 - 265.2%,
   - coefficient of population density: from a reduction of 26.3% to a growth of 66.4%.
2. the comparison of the main economic indicators leads to the following limits:
   - value of research, design, construction and installation works: within 1.20 - 32.24 bn. AMD,
   - the value of formed real estate: within 1.52 - 37.29 bn. AMD,
   - the duration of the process: between 20 and 40 months.

The positive aspects of the results obtained in the project proposals can be highlighted as:

- reduction of the built-up area, increase of the parking and green areas, dismantling of dilapidated structures along the streets and in the inner-quarter area, in violation of urban planning requirements, as well as organization of a well-maintained yard space, regulation of street development and improvement, provision of safe living conditions in the quarter.

The negative aspects can be highlighted as:

- the housing stock and population within the same spatial boundaries, the tendency of an increased total area of buildings.

Overview of the international practice of reconstructing residential quarters

Summarizing the experience of reconstruction of residential quarters of the center of Yerevan allows us to highlight the issues that have received attention in research papers and project proposals developed on their basis. These are the following: historical features of the reconstruction of the urban structure, the formation of a modern center and the growth of perimeter development, determination of the status of the yard space and classification of chronological stages of its organization, typological classification of the quarters, identification of characteristic features of their structure, determination of dynamics of technical and economic characteristics, coordination of the identified issues. At the same time, such generalization and parallels drawn with international practice make it possible to identify those main areas, generally unexplored in local practice. In particular, the methodology and approaches of the research, the role of social and economic factors, the identification of the key challenges characteristic to a particular environment and locality, the choice of recommendations and principles for the formation of proposals, their implementation, and management tools deserve attention and need to be specified. Therefore, specification in the above-mentioned areas of international practice research will be valuable for clarifying the ways and principles of further reconstruction of residential quarters of the center of Yerevan.

Reconstruction projects research approaches and methodology

Similar to any urban development activity, the reconstruction begins with an in-depth and detailed study of the site. This includes the study of historical sources, and graphic and archival materials, social surveys and interviews, field observations, analysis of the obtained material, documentation, the compilation of tables, diagrams and databases based on collected data, and various other research methods. Such approach allows to identify the existing problems in the considered site, and contributes to the development of a more guided and targeted design.

One such comprehensive study was conducted in the Hubei Ancient Village of Luohu District, Shenzhen, Guangdong Province, China. Considered a township under the country's official system of administrative divisions, Hubei Ancient Village, like many other localities in China, began as a historical village that was later incorporated into the nearest developing city, in this case Shenzhen, as a subdistrict of the latter. In conceptualizing the reconstruction of such settlements as Hubei, the following aspects have been thoroughly studied: the history of the village formation, the structure of street networks, historic buildings and their significance under different historical periods, as well as the chronological order of construction of these buildings and their unique architectural features. Their findings presented a basis for the fixing of the architectural preservation of each building, as well as for the creation and analysis of a map detailing their location [25]. All that data was then brought together to develop assessment strategies for maintaining the operation of selected structures in the given quarter (local renovation, major reconstruction, demolition). The degree of thoroughness of the work presents a solid basis for the effective reconstruction and preservation of similar settlements, especially as regards the prioritization of tasks.

Preserved historical urban plans played a particularly decisive role in the reconstruction of another city of Wuhu in Anhui Province, China. Prior to its reconstruction, the city's traditional houses and several of its temples, both of which were built before the 20th century according to the postulates of typical Chinese folk architecture, were preserved under poor conditions. And although such structures occupied only 15% of the city's total area, its historic street networks had not only been preserved, but were also still operational [26]. This and the archival cartographic materials discovered during research that showed the original structure of the city center allowed to restore the past idea behind the spatial development of the city.

Another noteworthy example in terms of the methodology used during the research phase is the reconstruction of the Sarı Kıs¸la barracks building in Istanbul, Turkey. The study of the reconstruction process of the building was carried out in two stages. The first involved identifying the architectural and constructive features of the building, and examining the process of its construction using historical documents and old photos. A study of the other buildings of the same author, and of the construction materials and technologies used during that same period was also conducted. During the next stage in the study of the reconstruction of the building ground-penetrating radar (GPR) surveys and electromagnetic field measurements were implemented to determine the presence of archeological remains in the subsurface of the building site [27]. A comprehensive reconstruction project for the building was proposed on the basis of the findings of the two stages.

Also noteworthy from the point of view of other approaches used in the study phase is the research on the possibilities of reconstruction of residential areas of Chinese cities, the concepts given along the way and the problems of their design and implementation [28]. Here too the reconstruction process requires a study of the origins of a chosen quarter, but with the added requirement that it must also examine the social relations formed between and the real needs of the residents of the quarter.

A similar approach is evidenced in the study of the 2 de Julho neighbourhood in the Brazilian city of Salvador. According to the authors of the study, every citizen has rights to his or her residential environment, both in terms of their free access to the areas and services offered by the city, and their participation in its formation. The 2 de Julho neighbourhood is situated in the historic center of the city, and is surrounded by tourist attractions (part of the neighbourhood is included in the UNESCO World Heritage List) despite housing mainly low-income residents. This has earned the attention of the Brazilian government and investors, who have sought to transform the area by evacuating low-income residents, increasing land prices to attract higher-income residents, and implementing investment projects that involve purchasing property from the original residents of the neighbourhood. In response to such actions, and in anticipation of a change in the position of the authorities, an attempt was made to transfer control of the neighbourhood to the population. The research group 'Lugar Comum' (Common Place) from the Faculty of Architecture of the Federal University of Bahia (FA-UFBA) with neighbourhood residents implemented a project, within the framework of which a group of proposals for the improvement of the neighbourhood was formed. A total of 174 residents took part in the program over the course of 3 years. During the planning several problems were identified that arise in such processes. But it is possible to find their solution based on the experience gained through time. A major obstacle was mobilizing residents, conditioned by their inability to sustain dialogue, the unwillingness of some to engage in public debates, a general distrust towards the proposed projects (due to repeated failure to implement them), as well as display of leadership attitude from some people, lack of competence and professional knowledge in the field [29]. Despite these setbacks, the experiment led to the development of design proposals that are expected to have a positive impact on the reconstruction of the district and will prevent further conflicts between authorities and inhabitants.

An interesting approach is also shown in another work, which presents the results of the joint work of residents and the architects of the architectural department of the Federal Polytechnic School of Lausanne, Switzerland. It emphasizes that the residents are an invaluable source of information and that the existing

potential should be utilized as much as possible. Here, residents also took part in the entire designing process and in order to establish a direct connection with them and for easier perception of the future project, real-size space simulators were used. As a result of such a dialogue between the designer and the future resident, residential houses have been built in accordance with the user's requirements. These houses were constantly monitored during the year following the check-in, revealing the omissions. Such post-project consistent observations can play an important role in the process improvement, preventing authors from repeating the same omissions in the future [30].

Another example of resident involvement in the reconstruction process of a city quarter is that of the Birmingham Jewellery Quarter in the United Kingdom. In order to make the reconstruction more acceptable to its residents, the authors studied their perceptions about the identity of the urban environment in which they resided. Representatives of 13 companies operating in the area took part in the survey, which viewed two architectural structures in the quarter – the former Smith & Peppers factory, which now is the Museum of the Jewellery Quarter, and The "Big Peg" and its surroundings. The "Big Peg" is a multi-story building housing jewelry workshops whose modernist architecture is distinct from the historical architecture of the remainder of the quarter. Respondent opinions on the selected structures varied substantially. While some spoke in favor of the authenticity of the Smith & Peppers factory building, believing it to have largely preserved its historical architecture, others questioned it, claiming the building had in fact lost some of its authenticity after it underwent changes. As for The "Big Peg", many of the respondents viewed the modernist complex as unattractive and out of the city context, while others disagreed that it seemed artificial, explaining that it does not try to replicate the surrounding architecture [31]. Incorporation of various opinions and identification of general provisions allows to formulate a more clear idea about the approach most acceptable to the residents, which in turn has a direct impact on the redesigning process.

Such studies may also be carried out without direct resident participation. One such study was conducted for the reconstruction project of the Five Avenues Historic district in Tianjin, China. A total of 2.923 comments were collected from social media users, which were then classified into categories of positive (2.677), neutral (163) and negative (83) comments. Analysis showed that its residents had a much more positive view of the historic quarter than the tourists who visited it, owing to the collective memory and emotional attachment of the latter to the area [32]. Ultimately, the thorough study based on the comments allowed to shine a light on some of the major complaints of the quarter residents and to find the main directions for improvement.

A study by methodology discussed was conducted in Sheffield, England between 2010 and 2015 on the basis of 3 main approaches:

1. a detailed study of existing documents, including the city center general plans of the years 2000, 2008, and 2013,
2. interviews with City Council officials, consultants, as well as stakeholders in urban reconstruction and participants of the general plan development projects,
3. direct observations of changes in the urban structure, and the use of newly created and redefined public spaces by means of regular visits to the mentioned sites, which also included conversations with citizens [33].

Identifying the key challenges

All of the methods discussed above aim to identify the challenges faced by the quarters considered by each study. Every city, every quarter confronts a unique set of problems depending on their historical development, the changes they have undergone through time, the lifestyles of their residents, and other factors. Their detection allows architects to develop more effective and viable reconstruction projects. For example, the application of the active citizen participation method in the 2 de Julho neighbourhood in Brazil revealed which issues most concerned its residents. These included the lack of public protection in the quarter and the high crime rate that stemmed from it, the problems with its infrastructure, namely the poor condition of its sewer

lines, which leads to the spread of infectious diseases, the absence of green zones, and the disregard of the city authorities towards trees [29].

Another study, this time of the Hubei Ancient Village in Shenzhen, China, revealed that a key challenge for the site was the technical safety of its 560 old houses preserved, half of which were deemed unsafe, with 53 rated grade D dilapidated. The village also lacked public spaces, its historic street network was ill-equipped for modern pedestrian and traffic flows, and its residential spaces were deemed too small, the changes in layout made by residents had ridden certain rooms of lighting, power lines disrupted, garbage collection and street maintenance hampered [25].

Another noteworthy factor is the climate of the area and its direct influence on the design and reconstruction processes. A comprehensive study and perception of the local climate forms recommendations that should serve as a basis for architects and technical specialists [34]. Over time, local authors are already aware of the climatic conditions of the area, taking into account the existing conditions and the influencing factors in their projects. This leads to the formation of an architectural image inherent in the area. In this regard Charles Correa draws interesting parallels, stating that while in North America the primary image of an educational structure is the small red building, in India and some Asian countries, it is a guru sitting under a tree [35]. At the same time, it is very important to keep up with novelties and find new methods for more effective study of climatic conditions, since their clear awareness will lead to the most effective and comprehensive solutions from the authors in their future projects [36].

One of the most common challenges in the reconstruction process is the preservation of urban heritage. The general design principles should be based on local memory and the history of the observed region. In this age of globalization and technical development, such an approach will allow to create a more humane and acceptable environment [37,38]. To gain insight into the problem, Tianhang Liu, Richard J. Butler and Chunyan Zhang studied the 2011 UNESCO Recommendation on the Historic Urban Landscape (HUL), which details approaches to city protection. It touches upon how to overcome new challenges, which the urban heritage faces in the modern world. The paper also emphasizes the differences in the standards of perception and valuation of heritage sites within professional circles and in society at large. It explains that every citizen has their own perception of a given historical structure, which is conditioned by their own aesthetic, emotional, and cultural experiences, and which render the task of outlining common solutions to the reconstruction process all the more complicated [32].

Another common challenge of the reconstruction process is that relating to the city general plan, especially as regards its street network [5,25,28,33]. In their study of the city of Madrid, co-authors explain that cars have become a dominant feature of contemporary cities. As a result, many cities have lost their traditional urban shape and look like continuous passages for automobiles. Today, in many respects, the economic aspect and infrastructures are the priorities. A new approach is therefore needed to reduce dependency on investments and transportation, and shift attention towards ensuring a healthier pedestrian environment [5].

Recommendations and principles

The identification of challenges evidenced by the studies discussed above makes possible the formulation of principles of reconstruction suited to the quarter being considered, which in turn provide the basis for reconstruction project proposals. At the same time, various factors specific to a particular case are taken into account, as it is impossible to be guided by unambiguous and unchangeable design criteria, and even the lifestyle of future residents has a direct impact on the development of design recommendations and the correct guidance of the overall process [39]. In the case of the 2 de Julho neighbourhood discussed above, for example, the three-year joint research project led by its residents and the university group resulted in 43 project proposals grouped around 10 different topics [29].

A different study about the Hubei Ancient Village in China considered the significance of established social relations and determined that the preservation and reconstruction of the historical environment is a dynamic

process that must consider the landscape and the existing social relations on the whole. As such, the study suggests that the reconstruction and preservation of historical urban objects must be carried out gradually to maintain comfortable living conditions for its residents, and prevent social dissatisfaction with the process [25].

The importance of strong social relations is also emphasized in a study of the Indonesian cities of Aceh and Nias, where the reconstruction serves not only to create a more competent residential environment but also to establish higher standards of living and healthier relations among its residents. The study perceives the reconstruction of residential quarters as the main driving force for social rehabilitation and improved urban socioeconomic conditions [40].

There are alternative approaches to proposals for the reconstruction of urban quarters when relevant concepts are presented based not on the problems of a particular quarter, but rather on the classification of quarters. For example, in a study on the reconstruction of urban quarters in China, the authors present different types of proposals for their modernization, such as: 1. perimeter commercial blocks with minimal limits to entry; 2. bounded superblocks without gates; and 3. completely bounded and gated superblocks. However, the same authors simultaneously question the effectiveness of such an approach, considering the specificities of each quarter and the needs of respective inhabitants [28].

While developing proposals for quarter reconstruction, many criteria related to modern needs of life and new urban planning solutions must be taken into consideration. One such criteria, as an example, concerns the availability of green and common areas. For instance, all the apartments in the quarter of Padre Querbes in the Spanish city of Huesca include open spaces in the form of gardens on the ground floor of the building and balconies overlooking the adjacent park on higher floors. Thus, the communal concept of the latter protects its residents from traffic accidents and crime, meanwhile providing them a common space for rest and collective activities. Furthermore, it is imperative to ensure the availability of public facilities within the quarter, therefore, some parts of the ground floors of the project under consideration are non-residential. One of the most important requirements is the type of housing, as well as the population and development density. In this project, for example, the offered housing stock abides by the needs of single-family housing. It is also important to consider urban scale challenges. The new residential buildings presented in the proposal are designed in consideration of the proportions of the existing adjacent construction. The latter encompasses 270 apartments with different designs and layout solutions, which allows for the accommodation of families of different sizes and social interaction between different age groups. This should also be included in the requirements of quarter development [6].

In addition to being necessary, these requirements can also be a useful tool for the designer. For example, between 2008 and 2014, during the reconstruction of one of the central quarters of the Hungarian city of Veszprém, the perception of the urban environment and its aesthetic qualities were completely changed through the improvement of green areas and the incorporation of an active public space. The contrast created by the new materials used and the small architectural shapes gave the existing structures a new lease of life[1].

Implementation and management tools

Reconstruction projects concerned in this section do not pursue any business goals since the authors focus solely on improving urban environments and the lives of their inhabitants that will lead to the formation of a healthier and happier society [41]. As a result, most of the projects need additional funding and the intervention of respective public institutions. For example, almost half (48%) of proposals for the reconstruction of the 2 de Julho neighbourhood in Brazil were intended for government implementation, and in 22% of requests the

[1] D. Holmes, The Reconstruction of the city centre of Vezprém, Hungary. World Landscape Architect. https://worldlandscapearchitect.com/the-reconstruction-of-the-city-centre-of-veszprem-hungary/#.XhSsiHduJPb

actions were supposed to be the result of collaboration between the public and relevant responsible entities [29]. While according to the policies of Har Ye Kan, Ann Forsyth and Peter Rowe the following bodies should be involved in the implementation process: the Ministry of Housing and Urban-Rural Development; the Ministry of Law; the State Council; the National People's Congress; planning commissions and bureaus from the provincial to local district levels; real estate developers; property managers; neighbourhood small and medium businesses; sub-district offices and local community service providers; and residents' and homeowners' associations [28].

Aside from government funding, proposals also need to address financial issues and provide strategic solutions to ensure the successful implementation of the latter. For example, in a study of the city of Voronezh, the authors emphasized the regulatory role of state and local government institutions in improving the preservation of buildings of historical and cultural value by modifying the legal framework and adapting relevant policies, so as to encourage investors to support the renovation of such infrastructures [42]. Moreover, another study on Madrid suggests that government funding be provided in the form of privilege tax for homeowners (Perez and Walker 2018). Yet another study on the British city of Birmingham recommends changes to rent payments and their taxation policies aimed at promotion of interests and favorable conditions for small business operating in the quarter and the balanced development and allocation of historic and trading companies [31]. The use of special mechanisms by the Government can also play a crucial role in ensuring the inviolability of structures and neighbourhoods of historical and cultural value. Such tools can be the creation of special reservation areas, the imposition of fines, the dissemination of care-promoting announcements and recommendations [43,38]. A well-developed general plan also plays a crucial role within the framework of financial management, since it can demonstrate the economic potential of a given urban environment, thereby promoting its image and attracting investments [33].

Conclusion

A generalized analysis of the studies conducted in Yerevan and the proposals presented based on them as well as the studied examples of international practice allow us to systematize the main positive and negative trends shown in the research outcomes.

Summing up the studies conducted in Yerevan, it should be noted that comprehensive approaches have already been used to achieve the utmost effective result for the reconstruction of quarters. A comprehensive study was carried out to reveal the history of the formation of the selected areas, identify the sources of the problems as well as find preserved archival and documentary materials related to the quarters. The current situation has been thoroughly studied, and drawings have been compiled showing the functions of the existing structures, their number, and the territory that they occupy. And in the submitted project proposals, an attempt was made to solve the identified existing problems, as well as finding ways to overcome them as effectively as possible. Particular attention has been paid to the implementation of projects, financial calculations, and suggestions of certain ways to implement them more efficiently.

Nevertheless, the study and analysis of a variety of international works allow us to identify flaws in the work done and raise questions that require further attention.

First of all, it is necessary to mention the local nature of the proposals for the reconstruction of the quarters. The identified problems and their solutions were not fully considered in the overall context of the city center. With the main emphasis on the newly proposed development, the issues of the existing and preserved buildings have not been sufficiently studied, moreover, clear principles and approaches to their modernization or reconstruction processes have not been presented. The proposed projects did not consider the natural climatic features of the territory, the environmental and energy efficiency problems of construction and improvement elements. The challenges of engineering infrastructure present in the areas have not been adequately studied, and engineering estimates for newly added development have not been implemented. The proposals did not include measures to identify opportunities for the restoration of the socially enriched environment of traditional

Yerevan yards. In the process of developing project proposals, the involvement of the population has not been sufficiently organized, the opinions of the municipal authorities and potential investors have not been considered properly. Additionally, in developing an economic strategy for implementing projects, the main emphasis has been on the principle of addressing the necessary costs of reconstruction at the expense of the new development. Such a unilateral approach, as well as an incomplete observation of the economic factor (in separate parts of the center), has often led to the need for obligated additional development.

The observations outlined as well as the comprehensive study of international examples show that further research and proposals related to the process of reconstruction of residential quarters of the city center of Yerevan need to be supplemented with the following principles and approaches.

To have a more thorough analysis, contributing to further research and design, it is necessary to subject the process to certain additions. Based on the results of the already conducted surveys, field observations, historical, archival, documentary, statistical and program-related documents, the following should be further studied:

- the history of the origin and formation of quarters,
- climatic conditions of the area,
- population growth trends and predictions,
- social relationships and real demands of residents in neighbourhoods,
- the presence and status of general plans, the structure of development and street networks,
- existing buildings, their chronology, architectural and structural characteristics, authenticity, historical and cultural significance, degree of preservation,
- social perceptions of the urban environment and its identity.

On the basis of a generalized analysis of the conducted research, the acquired information and the observations made, all the fundamental problems have to be revealed, that relate to:

- protection of society,
- technical safety of the buildings,
- road and engineering infrastructure,
- provision of sanitary and hygienic conditions in sites and buildings,
- presence of green zones and public spaces,
- preservation of urban heritage.

As a result of the analysis carried out based on the conclusion of problems and a comprehensive assessment of the situation, it is necessary to compile:

- classifications based on different characteristics of quarters,
- approaches to evaluating the conservation opportunities of previous urban development ideas,
- systems for assessing the subsequent use of neighbourhood structures,
  models of resident participation in reconstruction processes, ways to implement them.

The results of research and analysis show that the following approaches should be introduced in proposals for quarters:

- detailed design of general plans,
- implementation of multifaceted variant development,
- reflection of social demands in emerging solutions of the environment,
- provision of favorable conditions for social interactions,
- solutions to the problems faced by vulnerable groups of the population,
- creation of a social diversity of housing stock,
- the increase of green zones and public spaces,
- improvement of functional and planning parameters of housing, sanitary and hygienic provision,

- regulation of the functional composition of public service structures,
- enhancement of the aesthetic and artistic qualities of the environment.

In order to ensure the smooth implementation of the developed project proposals, to maintain the adequacy of the applied principles, as well as to obtain a better environment for life, special attention should be paid to the program implementation models towards:

- the improving urban environments and quality of life,
- the use of the full potential of the urban economy in the process,
- the involvement of additional sources of financing besides government and local self-governing bodies,
- the development of clear plans for legal, financial, and tax policy activities.

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References

[1]. J.C Laurence Ma, F. Wu, Restructuring the Chinese City: Changing Society, Economy and Space. Routledge, New York, 2005. Doi: https://doi.org/10.1111/j.1467-9787.2006.00453_5.x

[2]. Larry R. Ford, Cities and Buildings: Skyscrapers, Skid Rows, and Suburbs. The Johns University Press, London,1994.

[3]. M. Cohen, The City is Missing in the Millennium Development Goals. Journal of Human Development and Capabilities, 15(2-3), 2014, 261-274. Doi: https://doi.org/10.1080/19452829.2014.899564

[4]. I.A. Rana, S.S. Bhatti, H.S.H. Arshad, Assessing the Socioeconomic and Infrastructure Development Disparity: A Case Study of City Districts of Punjab, Pakistan. International Journal of Urban Sustainable Development, 9 (3), 2017, 346-358. Doi: https://doi.org/10.1080/19463138.2017.1320286

[5]. A.M. Perez, S. Walker, Around Madrid: the Continuing Influence of Historical Urban Development Plans on Today's Periphery. Journal of Urban Design, 25(5), 2018, 712-731. Doi: https://doi.org/10.1080/13574809.2017.1413934

[6]. E.L. Larrodé, H. Smith, J.M.O. Corsini, Towards Complex and Integrated Urban Design in Pre-Crisis Spain: The Case of the Padre Querbes Urban Project in Huesca. Journal of Urban Design. 24(5), 2019, 794-811. Doi: https://doi.org/10.1080/13574809.2019.1568188

[7]. E. Firley, C. Stahl, The Urban Housing Handbook. Wiley Publication, London, 2009.

[8]. M.A. Gasparyan, Architecture of Yerevan in the 19th and Early 20th Century: City in Space and Time. Palmarium Academic Publishing, Riga, 2018.

[9]. D. Logan, Housing and Urbanism, in: S. Davis (ed.), The Form of Housing. Van Nostrand Reinhold Company, New York, 1977, 55–115.

[10]. K.R. Azatyan, The Evolution of the 20th Century Residential Architecture of Yerevan in Space and Time: Doctoral thesis, Yerevan, 2018 (in Armenian).

[11]. V.M. Harutyunyan, M.M. Hasratsyan, A.A. Meliqyan, Arkhitektura Sovetskoy Armenii. Stroyizdat, Moscow, 1972 (in Russian).

[12]. A.G. Grigoryan, M.L. Tovmasyan, Arkhitektura Sovetskoy Armenii. Stroyizdat, Moscow, 1986 (in Russian).

[13]. G.H. Rashidyan, Razvitie arkhitektury massovogo zhilishcha armenii i zadachi sovremennogo etapa. Printing and Information Center of YSUAC, Yerevan, 1999 (in Russian).

[14]. S. Petrosyan, G. Bădescu, Armenian Cultural Territorial Systems First Experience, in: Rotondo F., Selicato F., Marin V., Lopez Galdeano J. (eds.), Cultural Territorial Systems. Springer Geography, 2016, 191-214. Doi: https://doi.org/10.1007/978-3-319-20753-7_15

[15]. D.K. Ter-Ghazaryan, Civilizing the City Center: Symbolic Spaces and Narratives of the Nation in Yerevan's Post-Soviet Landscape. Nationalities Papers. The Journal of Nationalism and Ethnicity, 41 (4), 2013, 570-589. Doi: https://doi.org/10.1080/00905992.2013.802766

[16]. Z.G. Mamyan, M.Y. Igitkhanyan, The Role of Yard Spaces in the Structure of Steady Urban Environment. Proceedings of the International Conference on Contemporary Problems in Architecture and Construction, Sustainable Building Industry of the Future. Czestochowa, Poland, Sept. 24-27, 2012, 387-390.

[17]. M.Y. Igitkhanyan, Problems of Urban Development Reorganisation of Courtyard Spaces in Yerevan: Phd thesis, National University of Architecture and Construction of Armenia, 2012 (in Russian).

[18]. M.Y. Igitkhanyan, Environmental Influences on Person's Lifestyle. Proceedings of 3rd International Conference on Contemporary Problems in Architecture and Construction, Beijing, China, Nov.20-24, 2011, 46-50.

[19]. K.R. Azatyan, Opportunities for the Reconstruction of the Quarter Between the Streets Vardanants, E. Kochar, Kadjaznuni and Vratsyan of the City of Yerevan. Bulletin of National University of Architecture and Construction of Armenia, 2 (63), 2019, 33-42.

[20]. K.R. Azatyan, A.A. Ohanyan, Opportunities for the Reconstruction of the Quarter Between the Streets Nar-Dos, Tigran Mets, Zavaryan and Khorenatsi of the city of Yerevan. Proceedings of Moscow State University of Civil Engineering, 14 (4), 2019, 408-416.
Doi: https://doi.org/10.22227/1997-0935.2019.4.408-416

[21]. K.R. Azatyan, I.A. Mirzoyan, Proposal for the Reconstruction of the Quarter Adjacent to the Streets Vardanants, Charents, and Shahinyan of Yerevan City. Vestnik MGSU, 15(2), 2020, 201-211.
Doi: https://doi.org/10.22227/1997-0935.2020.2.201-211

[22]. A.R. Yengoyan, K.R. Azatyan, M.A. Aydinyan, Proposal for the Reconstruction of an Industrial Zone in Yerevan. Papers of Scientific Articles on the Results of the Interuniversity Scientific Congress: Higher school: Scientific researches, 2020, 180-190.

[23]. K.R. Azatyan, A.A. Ohanyan, The Main Problems of Reconstruction of the Residential Quarters in the Centre of Yerevan City. Contemporary Problems of Architecture and Construction: Selected, Peer Reviewed Papers, Yerevan, Armenia, Oct. 14-16, 2019, 24-32.

[24]. A. Ohanyan, K. Azatyan, Perspectives of Reconstruction of the Residential Quarters in the Centre of Yerevan City. Architecture and Modern Information Technologies, 1 (50), 2020, 225–237 (in Russian). Doi: https://doi.org/10.24411/1998-4839-2020-15014

[25]. N. Mao, B. Gu, Study of the Protection and Renewal of Urban Villages in Emerging Cities: The Example of Hubei Ancient Village in Shenzhen. Journal of Architectural Conservation, 26 (1), 2019, 22-41. Doi: https://doi.org/10.1080/13556207.2019.1678258

[26]. F. Isidori, A Structural Project: Redevelopment of the Historic Center of Wuhu. Frontiers of Architectural Research, 4 (2), 2015, 100-118. Doi: https://doi.org/10.1016/j.foar.2015.01.001

[27]. C. Akcay, A. Şolt, N.M. Korkmaz, B. Sayin, A proposal for the Reconstruction of a Historical Masonry Building Constructed in Ottoman Era (Istanbul). Journal of Building Engineering, 32 (101493), 2020. Doi: https://doi.org/10.1016/j.jobe.2020.101493

[28]. H.Y. Kan, A. Forsyth, P. Rowe, Redesigning China's Superblock Neighbourhoods: Policies, Opportunities and Challenges. Journal of Urban Design, 22 (6), 2017, 757-777.
Doi: https://doi.org/10.1080/13574809.2017.1337493

[29]. M. Manzi, G.C.S. Figueiredo, L.N. Mourad, T.M. Rebouças, Neighbourhood Planning and the Right to the City: Confronting Neoliberal State Urban Practices in Salvador, Brazil. International Journal of Urban Sustainable Development, 10 (1), 2018, 1-15.
Doi: https://doi.org/10.1080/19463138.2018.1433677

[30]. R.J. Lawrence, User-Participation in House Design. Batiment International, Building Research and Practice, 13 (1), 1985, 25-30. Doi: https://doi.org/10.1080/09613218508551238

[31]. A. Wesener, This Place Feels Authentic: Exploring Experiences of Authenticity of Place in Relation to the Urban Built Environment in the Jewellery Quarter, Birmingham. Journal of Urban Design, 21(1), 2016, 67-83. Doi: https://doi.org/10.1080/13574809.2015.1106915

[32]. T. Liu, R.J. Butler, Ch. Zhang, Evaluation of Public Perceptions of Authenticity of Urban Heritage Under the Conservation Paradigm of Historic Urban Landscape: A Case Study of the Five Avenues Historic District in Tianjin, China. Journal of Architectural Conservation, 25 (3), 2019, 228-251.
Doi: https://doi.org/10.1080/13556207.2019.1638605

[33]. A. Madanipour, K. Miciukiewicz, G. Vigar, Master Plans and Urban Change: The Case of Sheffield City Centre. Journal of Urban Design, 23 (4), 2018, 465-481.
Doi: https://doi.org/10.1080/13574809.2018.1435996

[34]. O. Aleksandrowicz, Appearance and Performance: Israeli Building Climatology and its Effect on Local Architectural Practice (1940–1977). Architectural Science Review, 60 (5), 2017, 371-381. Doi: https://doi.org/10.1080/00038628.2017.1354812
[35]. Ch. Correa, India: From a Philosophy of Ages, Architecture for Today. Museum International, 41 (4), 1989, 223-229. Doi: https://doi.org/10.1111/j.1468-0033.1989.tb00811.x
[36]. A.K. Upadhyay, Climate Information for Building Designers: A Graphical Approach. Architectural Science Review, 61 (1-2), 2017, 58-67. Doi: https://doi.org/10.1080/00038628.2017.1389690
[37]. M.A. Burayidi, Culture, Urbanism and Planning. Journal of the American Planning Association, 75 (1), 2008, 103. Doi: https://doi.org/10.1080/01944360802540638
[38]. A. Suprapti, N.H. Kistanto, E.E. Pandelaki, D. Indrosaptono, Control of Spatial Protection in Kauman Semarang. Journal of Architecture and Urbanism, 41 (4), 2017, 268-277. Doi: https://doi.org/10.3846/20297955.2017.1402717
[39]. R.J. Lawrence, Constancy and Change in Household Demography, Dwelling Designs and Home Life: The Case of Geneva. Housing Studies, 4 (1), 1989, 36-43. Doi: https://doi.org/10.1080/02673038908720641
[40]. F. Steinberg, Housing Reconstruction and Rehabilitation in Aceh and Nias, Indonesia -Rebuilding lives. Habitat International, 31 (1), 2007, 150-166. Doi: https://doi.org/10.1016/j.habitatint.2006.11.002
[41]. J.F.C. Turner, From housing to building community. City, 1 (3-4), 1996, 30-39. Doi: https://doi.org/10.1080/13604819608713429
[42]. T. Mikhaylova, D. Parshin, V. Shoshinov, A. Trebukhin, Architectural and Town-Planning Reconstruction Problems of the City of Voronezh. E3S Web of Conferences, 33 (01033), 2018, 1-7. Doi: https://doi.org/10.1051/e3sconf/20183301033
[43]. M. Cohen, Preserve or Perish? Case Studies of Six Historic Buildings in Greater London. The London Journal, 6 (2), 2013, 176-194. Doi: https://doi.org/10.1179/ldn.1980.6.2.176

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