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Development Trends and Problems of Large Ukrainian Historical Cities in the Twentieth and Twenty-First Century: Case Study of Urban Tendencies and Problems of Revitalization of an Industrial District

Rozwój trendów i problemów dużych historycznych miast ukraińskich w XX i XXI wieku. Studium przypadku tendencji urbanistycznych i problemów w rewitalizacji dzielnicy przemysłowej

Keywords: tendencies, cities of Ukraine, urban-planning systems, basic urban-planning principles, negative processes, revitalization of industrial district, problems of historical environment preservation

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Introduction

Since urbanization processes are characterized by common trends, it is necessary to analyze these processes in the cities of Ukraine in the context of similar processes in European cities, which is especially justified against the background of the spread of globalization.¹ It can be argued that the process of increasing the number

of cities and the territorial concentration of the urban population is also characterized by unevenness. Thus, on the examples of both European cities and cities of Ukraine, we can note a common trend of outflow of the working population from small towns to large cities with a population of 5 million and more, which leads to an aging population of small towns, ad to a declining economic base.

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Statistics from 1950 showed the existence of 83 cities in the world with a population of more than 1 million people, and in 2000 there were already 411, and the population of 23 of them exceeded 10 million. As of today, there has been a de facto stabilization of the urban network development in Europe, while these processes have intensified in developing countries. They also occur in Ukraine, where an economic crisis, exacerbated by the coronavirus pandemic, has led to most small and medium-sized enterprises losing business or shutting down, especially in medium and small towns, and unemployment has risen, forcing the able-bodied population to go in search of work to such large cities as Kyiv, Kharkiv, Odesa, Lviv. A clear indication of the rapid population growth of these cities due to migrant workers is the increase in housing construction in these cities and the growing problems of finding additional areas for new development.

Unregulated extensive population growth in a limited number of large cities in Ukraine, first caused by the occupation of Crimea and the war in Donbas, and later intensified by the pandemic, exacerbated the problem of a lack of urban areas, and thus led to a negative intrusion into the established historical environment of large cities, a violation of the ecological balance, zoning, etc., which is largely due to non-compliance with the law.

In this context, attention should also be paid to the problem of protecting historic urban layouts, which are exposed to uncontrolled changes in their urban structure. These changes can very quickly lead to the cultural degradation of these areas, taking into account both buildings and historical spaces. In order to effectively counteract this, appropriate legal regulations are needed that will ensure the conservation of historic city centers and their greatest values. The above-mentioned problems have a global dimension, and their examples can be found almost all over the world. In this respect, social education in terms of the need to protect historic cities in terms of architecture and urban planning seems to be of particular importance.²

MAIN PART

Materials and methods

The authors used legislation,³ publications by M. Dyomin,⁴ Y. Ivashko,⁵ A. Dmytrenko,⁶ O. Ivashko,⁷ D. Chernyshev,⁸ J. Kobylarczyk,⁹ M. Orlenko,¹⁰ P. Kulikov,¹¹ D. Kuśnierz-Krupa,¹² M. Krupa,¹³ L. Savelieva,¹⁴ V. Yasiievych,¹⁵ M. Kushnirenko,¹⁶ I. Smoliar,¹⁷ K. Stefański,¹⁸ P. Gryglewski,¹⁹ and I. Fomin.²⁰

The aim was to analyze the trends of cities development in the twentieth and twenty-first centuries on the example of Ukrainian ones, identifying the problems of historic cities, the causes of negative trends in urban planning and ways to overcome them, as proved by the effectiveness of using the traditional system of urban planning for most cities and towns with low rates of

socio-economic development. Each of the largest metropolitan cities with a population of 10 million or more is unique and requires a developed methodology for managing the urban process.

The specificity of the methodology of urban planning is based on the principles of regionality, integrity, systematicity, hereditary connection, and on this basis it is possible to create sound models of urban systems. It is necessary to adhere to the principles of continuous urban planning and purposeful management of the development of urban systems.

Results and discussion

1. Legislation

One of the urgent problems of the revalorization of cities in post-Soviet space, in France, Germany, Slovenia, or Poland, is the problem of the revalorization of areas of industrial five-story buildings from the period between the 1950s and 80s. These problems are especially acute in the revalorization of large-panel buildings. In the fifty years since the development of free territories, the former outskirts have approached the center and received various types of engineering and transport infrastructure. Conflict situation is created due to the mismatch of consumer properties of buildings, its technical condition, aesthetic characteristics in the architectural and planning structure of modern cities.

In Ukraine, the topic of revalorization of areas of mass construction of the second half of the twentieth century, the so-called “khrushchevkas,” as the territory of this building is several times larger than the entire building of previous historical periods. To some extent, these processes were due to the same factors as the processes associated with the need to redefine industrial zones within large cities: due to the extensive growth of urban areas, industrial enterprises and areas of “Khrushchev’s development,” which were originally on the outskirts, were the middle zone of cities with a good supply of engineering, transport infrastructure and elements of social infrastructure and the efficiency of use of both these areas and housing or industrial enterprises located on them no longer meets the needs of the time.

In cases of industrial development—it is non-compliance with environmental requirements, obsolete technology, and hence unprofitable, in cases of mass housing construction of the Khrushchev period—the non-compliance of apartments with modern housing standards, technical, economic, ergonomic and aesthetic characteristics. However, if the former industrial sites are assimilated quickly enough, mainly by clearing them for modern multi-story residential or public construction, the problem of “khrushchevkas,” despite being actively covered by politicians, experts, in the press, has not yet been resolved due to the complexity of resettlement and providing former residents with new housing.

Today there are two fundamentally different approaches to the problems of reconstruction of these areas—one involves the complete demolition of “khrushchevkas” for new construction (this path was taken in Moscow), the second—the complete preservation of the existing stock with subsequent modernization of housing and territory and the development of vacant plots (this path was taken in Vienna and Lille). As Ukraine today increasingly aligns itself with global urban trends, it is necessary to take into account the current positive experience in solving such problems in developed European countries. One such positive example is the twenty-second quarter in Vienna. The specifics of the implemented revalorization measures are that simultaneously with the reconstruction of residential and public buildings in this quarter, measures were taken to rehabilitate the inner quarter territory, underground space was used for modern needs, artificial relief was created, landscaping and greening were organized. Other positive examples include the revalorization of mass development in the 1930s and 1960s in France and Germany.

Despite the difficulties with the implementation of such revalorization measures in Kyiv, we can name an example of modernization of the environment in areas of mass development, specifically in Obolon, where the central part of the district was reconstructed and a modern embankment with a coastal park was created.

The success of the implementation of urban planning decisions depends on a balanced relationship between government entities, developers and the public. Poor urban planning can be prevented by planning based on compliance with the legal framework with fixed social indicators, economic parameters, environmental restrictions tested by the entire community, as well as urban restrictions, and such urban documentation specifies the relationship and activities of all investment entities.

Here it is necessary to refer to separate theses of the legislative document “Planning and development of territories: State building code Б.2.2-12:2019,” which defines modern approaches to planning and development of settlements: “The master plan of the city and the project of its suburban zone, definition of borders, architectural and planning structure, formation of green zones are developed on the basis of regional-level urban planning documentation.”²¹

According to this document, “in the process of urban planning of a territory at the local level, the following areas are defined: residential, industrial, recreational and landscape, within which individual land plots should be combined into functional zones including areas such as: housing and public buildings, industrial buildings, communal and warehouse buildings, landscaping and recreation, health resorts, green areas, environmental protection, transport communications, utilities and special purposes.”²²

2. Historical overview of the Ukrainian cities development

We can talk about the intensification of urbanization processes in Ukraine since the period after the Second World War. Back in the late 1950s, the urban population was 25%, but the rapid development of industrial production in the extractive industries (Donbas, Western region) and manufacturing (Kharkiv, Dnipropetrovsk, Kyiv, Lviv, Odesa, regional centers) accelerated the attraction of labor resources from rural areas and small urban settlements, as a result of which, as of the early 1990s, Ukraine’s urban population exceeded 70%. This disproportion has negatively affected the development of urban planning systems due to the maladaptation of migrant workers to life in traditional cities. Today, the most widespread manifestation of this problem is the chaotic distortion of facades by superstructures, glazing of loggias and balconies, first in courtyards and now in main squares and city highways, unauthorized construction, the littering of public spaces, deliberate damage to greenery and communal property.

In the twentieth century, master plans for all urban and rural settlements of Ukraine were developed and implemented under the control of the state. It was provided at intervals of 20–25 years the development of new master plans for the largest cities with intensive development—Kyiv, Kharkiv, Odesa, Dnipropetrovsk.

Since Ukraine’s independence, the state has virtually removed the function of controlling urban planning problems, updating urban planning documentation, while the functions of developing master plans (except for large cities—Kyiv, Kharkiv, Odesa) have been transferred to local governments. In comparison with the previous master plans, aimed at long-term tasks, the modern master plans of large metropolitan cities are aimed at specific urgent tasks.²³ This is due to the fact that, by the end of the twentieth century, it became possible to track and analyze urban processes and ensure their compliance with managed economic, social and urban development. At present, the pace of development of the largest cities-megacities is ahead of the pace of improvement of modern urban planning theory and practice, which makes urban processes in megacities unmanageable. Thus, the main thing that distinguishes the master plans of the twenty-first century from the master plans of the twentieth century is the lack of sense of historical perspective and pronounced disapproval of both urban regulations and the very idea of developing urban planning documentation, which ultimately leads to the dictates of purely commercial considerations, lobbying the priorities of group and private interests instead of public ones, a significant reduction in public areas and parks in favor of private housing and public buildings. The territories reserved by the master plans for the development of public functions and not used for this purpose in time due to the lack of targeted funding are being replaced by territories of other, commercial purpose.

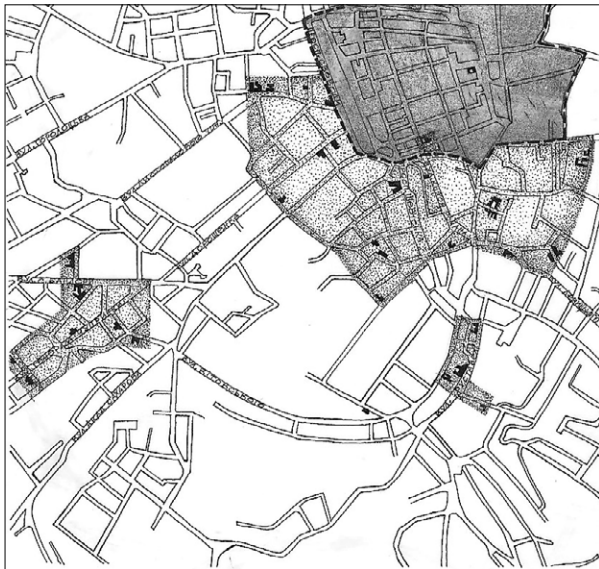


Fig. 1. Zones of Secession buildings (light grey color) and protection zone of UNESCO (dark grey color) in Lviv; by Y. Ivashko.

We have already discussed the prospects of replacing obsolete stock sections of mass housing (the so-called “khrushcheykas”) with modern buildings. Another problem that will be on the agenda in the near future is streamlining the system of functional zoning, which has been disrupted in recent years, namely: the reproduction of public functions, especially everyday services, social and spatial systems and public transport systems, solving transport problems.

In the twenty-first century, most residential areas in Kyiv are not used as a public or recreational function, as the tradition of close communication between neighbors and recreation has disappeared. These processes are intensifying due to the constant population renewal, when the neighbors in the same block of flats do not even know each other. A large number of residents, individualized life, and a lack of common interests create a specific attitude to the environment of residential spaces, where everything is alien, resulting in an indifference to the environment. The environment becomes uninhabited and, consequently, doomed to extinction due to decline or development.

Exceptions are some isolated elite neighborhoods, the so-called “cities in the city,” with well-groomed neighborhoods, parks, ponds, all for the full livelihood of residents.

3. Problems of historical buildings preservation

Problematic situations arise at different levels of life of the city—legal, economic, engineering and technical support, architectural and so on. As already mentioned the main problem of the historic districts of large cities is related to the intrusion of modern buildings into the historic urban substance and contradicts the established buildings. The difficulty lies in the fact that in the historic areas, especially attractive to developers in new construction, there is a large number of monuments with protected status.²⁴

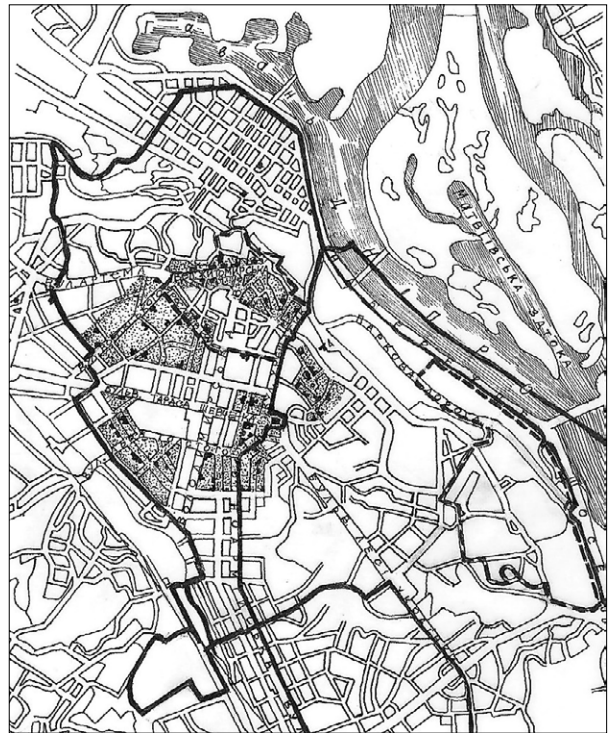


Fig. 2. Zones of Secession buildings (light grey color) and protection zones (black lines) in Kyiv; by Y. Ivashko.

The study of the problems of preservation of historic buildings in Ukraine should begin with an analysis of the chronology of these buildings. First of all, we note that, including Classicism and the Empire style, architecture in cities had a pronounced national and regional character. However, since the nineteenth century, it has been gradually supplanted by “international” architecture, and especially this process intensified against the background of several waves of “building surges” in the second half of the nineteenth and early twentieth centuries, during Historicism, Eclecticism and the Secession (Fig. 1, 2, 3).²⁵

The Secession style’s manifestations in the cities of Ukraine depended on whether a given city was administratively and territorially affiliated with Austria-Hungary or the Russian Empire. Since the current problems associated with the brutal intrusion of modern buildings into historic buildings are most pronounced in Kyiv, it is worth focusing on the features of historic buildings in Kyiv during the period of Historicism, Eclecticism and the Secession as it is a major part of the existing architectural heritage. In the late nineteenth and early twentieth centuries, all the streets of Kyiv were divided into four categories. This distribution meant that the streets of a certain category could be built in compliance with specific statutory requirements.

At the turn of the nineteenth and twentieth centuries, there were also problems similar to modern ones, when due to rising land prices, and hence immobility, influx of people from villages and small towns, rapid economic development, there was displacement of low-rise buildings of previous centuries compacted urban development and led to an increase in the num-

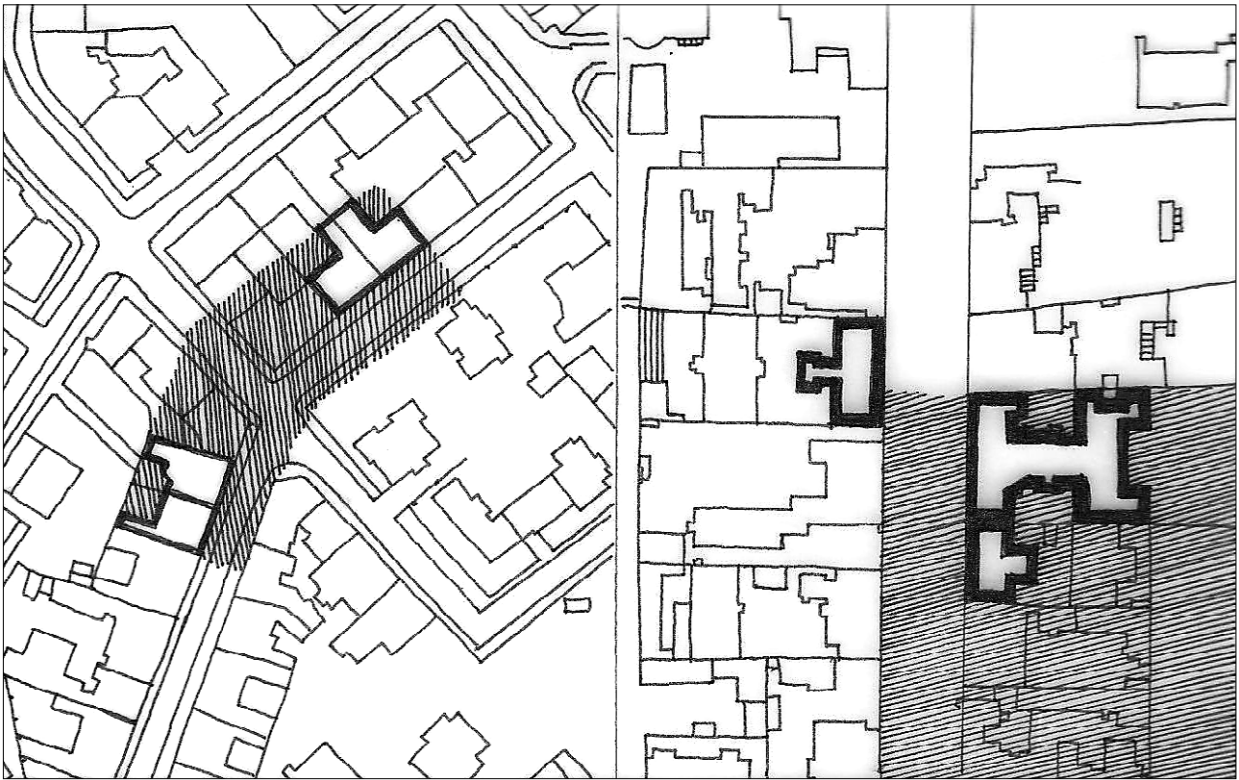


Fig. 3. Territories of Secession buildings concentrated in Lviv (left) and in Kyiv (right); by Y. Ivashko.



Fig. 4. Bessarabian market. Architect G. Gai, 1910–1912; from the collection of Y. Ivashko.

ber of stories of buildings. Evidence of this is the fact that the number of stories doubled from three to four floors to six or seven.²⁶ The now widespread practice of adding historic buildings with additional floors is not new and took place in the early twentieth century, when such were added to the mansions of the nineteenth century, and later, due to the aggravation of the problems of the need for new plots for construction in the central areas, three- or five-story apartment buildings were added on one or two floors. At the same time, there is an extensive growth of the city's territory, when new streets have been laid since the second half of the nineteenth century and the suburbs became increasingly connected with the central districts, including through the transport network. The fact that numerous buildings in the style of the Secession have survived in the central areas of Kiev to this day is due to the fact that the period of organization of the new city center between the Khreshchatyk Street, Volodymyrska Street and Bibikovskiy Boulevard (T. Shevchenko Blvd.) coincided with the spread of the Secession style. Secession buildings in the center, such as the Bessarabian market (architect G. Gai) (Fig. 4), buildings at 7 Kostiolna Street (architect I. Ledokhovskiy), 21 Pushkinska Street (architect J. Zekcer), House with Chimeras at 10 Bankova Street (architect V. Horodetskiy) (Fig. 5)—are structures of high architectural value and greater stylistic perfection than the Secessionist buildings along what used to be Kyiv's outskirts.

The best examples of Secession in Kyiv are buildings located in the quarters between Pushkinska, Fundukleivska, Khreshchatyk streets and Bibikovskiy

Boulevards, between Velyka Volodymyrska, Fundukleivska, Tereshchenkivska streets and Bibikovskiy Boulevards. According to statistics, 90% of the houses of Kyiv Secession are in the system of perimeter construction.

If we compare the construction situation of the late nineteenth and early twentieth centuries with the situation in Kyiv from the late twentieth to the beginning of the twenty-first century, we can see much in common, in particular:

- 1) at first there are singular new high-rise buildings, but the main building remains old;
- 2) the process of compaction of streets and plots is intensified, high-rise buildings become larger and they begin to displace the old buildings of smaller stories;
- 3) displacement of old buildings by new ones, maximum efficiency of site development—at the beginning of the twentieth century—due to perimeter construction of the site, appearance of yard outbuildings, at the beginning of the twenty-first century—due to different increase of stories and growth of buildings in height.

Similarly, at the turn of the nineteenth and twentieth centuries, the problem of the twentieth and twenty-first centuries was relevant, namely—the existence of houses that were dissonant in scale and number of stories, which ultimately leads to the replacement of lower story buildings—either through demolition or addition of additional floors.²⁷

Recent trends in the reconstruction of historic buildings in the central districts of Kyiv and other large cities indicate the adaptation of existing buildings for



Fig. 5. Kiev. House with Chimeras at the 10 Bankova Street. Architect V. Horodetskiy, 1901–1902; from the collection of Y. Ivashko.



Fig. 6. The Kyiv grain elevator, current state, Kyiv, Ukraine; photo by S. Reshetnyk, 2020.

business functions, hotels, trade and consumer services (resulting in a reduction in housing in historic parts) and changes in population, because after the modernization of old residential buildings, the natives are not able to buy and keep such apartments and are forced to move to the periphery (this leads to the stratification of the city by property division). Such trends came to Ukraine late, as they took place in Europe and the United States in the mid-twentieth century, while in the late 1970s there was a reverse trend—the growth of housing in historic areas and it was at that time was developed and the concept of mixed resettlement on the property was implemented. In Austria and Germany, state programs and economic mechanisms have been developed to support low-income residents of the reconstructed areas in order to create conditions for their further residence in these areas (the experience of a comprehensive reconstruction of the twenty-second quarter of Vienna was mentioned earlier, where the poor received a targeted, almost interest-free long-term loan from the state, which was transferred by the bank to the construction company).

4. The latest proposals for the redevelopment of industrial sites

The problem of the unprofitable revitalization of industrial facilities proved to be very relevant for the entire post-Soviet space and for large cities of Ukraine, where due to changes in economic conditions and po-

litical situation since the 1990s, a large part of industrial facilities located in the urban area proved unprofitable. Since the plots of unprofitable industrial enterprises occupy large areas in the central parts of cities, they have retained the buildings of the former industrial shops in good technical condition; there is a problem of the most efficient use of both plots and buildings.

This problem was exacerbated by the sharp increase in the population of large cities of Ukraine, which led to the mass construction of high-rise housing, and as a result—an acute crisis of established cities, exacerbation of housing problems, problems of transport, engineering equipment, landscaping, as well as the problems of urban ecology. Transport networks, engineering networks, and the service sector are no longer able to cope with such an increase in the urban population employed in industry and other sectors of the economy not related to agricultural production.

However, in Kyiv, as well as in other cities of Ukraine, in contrast to London, Lille, Łódź, there are almost no monuments of industrial architecture, they were built mainly on standard projects and not all of them are of historical and architectural value. Therefore, for example, in Kyiv the process of revitalization is easier, because the task is not to preserve the authentic appearance of the plant or factory—retaining structures, part of buildings, while arranging new facades and modern layout for new functions (Motorcycle Plant, Lapse Plant, Reductor Plant, Bolshevik Plant). Thus, the industrial territory is preserved, but its purpose is changed for trade, office, trade and entertainment function. Due to the extensive growth of the Kyiv territory from the end of the nineteenth century to the present day, the former industrial suburbs of pre-revolutionary and Soviet times with harmful production have found themselves in the central districts, among residential buildings. The crisis, exacerbated by the recent pandemic, intensified the development process of former industrial areas in the central regions of Kyiv. This process was supported by a program of the removal of industrial zones outside the city and their conversion into residential neighborhoods and public spaces. Among those industrial facilities in Kyiv that have already been demolished—Kyiv Yeast Plant, Kyiv Refrigeration Plant, some are leased to various tenants (Bakery and Confectionery Factory, Sausage Factory on Pavlovska Street), some are abandoned (separate buildings of the Motorcycle Plant, industrial shops on Telychka, the former Richert plant on Kyrylivska Street, an elevator on Naberezhno-Khreschatytska Street, industrial shops on the Rybalskyi Peninsula). While most of the projects provide for the complete clearing of industrial buildings for new construction, there are project proposals for the organization of research and production, innovation and creative spaces and green areas in these areas, especially in cases of industrial sites in the Dnipro coastal zone.²⁸ That is why one of the promising proposals of the new Master Plan of Kyiv concerns the revitalization of the Naberezhno-Khreschatytska-



Fig. 7. The project of the Kyiv grain elevator reconstruction for cultural and public function (general view), 2020; designed by S. Reshetnyk, J. Vig, Y. Ivashko.

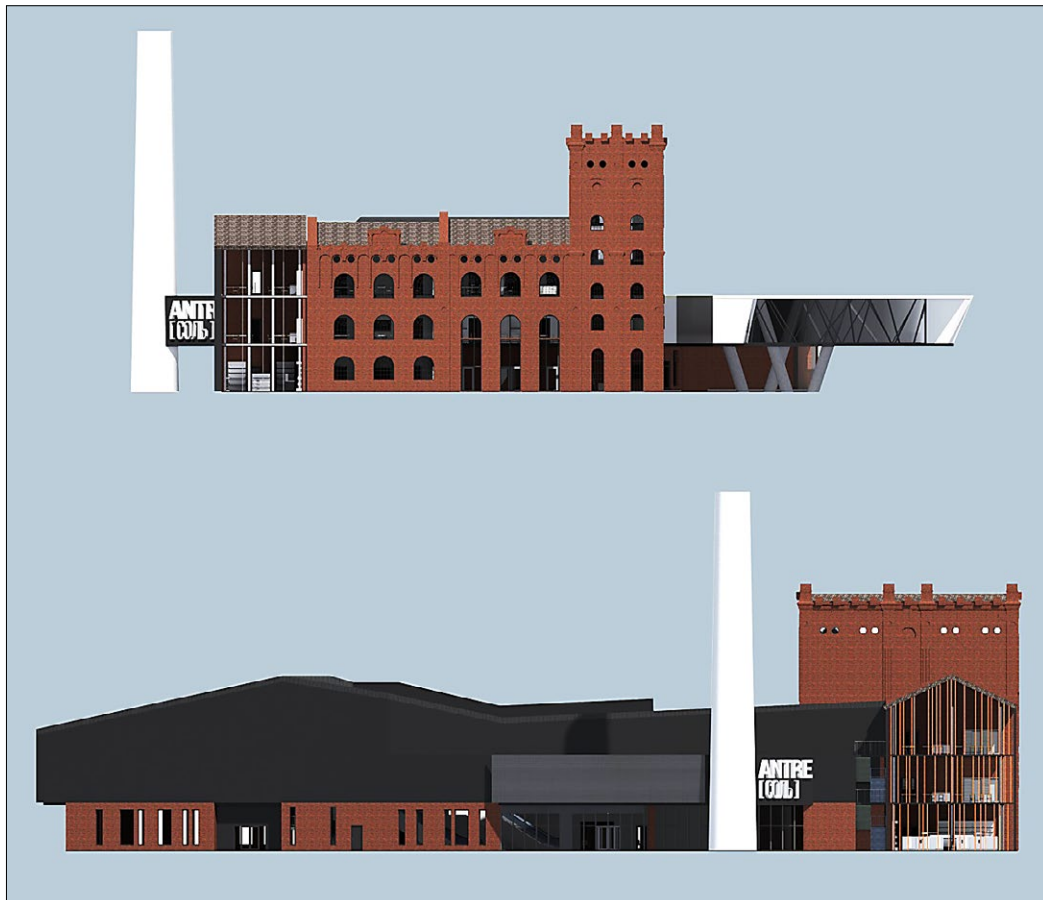


Fig. 8. Concept of Richert's brewery revitalization in Kyiv for art function. Elevations with old and new parts, 2018; designed by O. Ivashko.

Havan industrial district, both Podil and Rybalskyi Peninsula. There is one of the well-known Kyiv landmarks—an elevator complex of the M-3-175 type (1950, architect V. Holstein, engineer V. Hemmerling) at 10 Naberezhno-Khreshchatytska Street (Fig. 6).

Despite the typicality of such a complex, consisting of a working tower with a roof height of 66.9 m, two silos, three upper connecting bridges, a two-story lower connecting gallery, a receiving device for eight boxes, a pneumatic device for receiving grain from water transport, it is an interesting accent dominant and can be preserved, although the revitalization of two four-row blocks of 44 old silos with a diameter of 6 m and a height of 30 m is probably one of the most difficult tasks in the conversion of industrial facilities. One of the last conceptual projects of elevator revitalization was proposed by S. Reshetnyk and implemented under the direction of J. Vig (project part) and Y. Ivashko (scientific part).

The concept allows the preservation of an authentic block of the working tower, two silos, to which is added a new completed with a catering establishment, assembly hall, office space, conference halls, coworking rooms, workshops and laboratories. In the interior spaces of the former silos there is a functional zoning in height: the first floor—catering establishments, between two and five floors—exhibition-gallery and museum premises, the upper floor—a lounge area with a winter garden. Stylistically, it is proposed to design the entire revitalized complex as based on the contrast of the modernized old part with preservation of concrete silos and arrangement of openings and glass superstructures (block A) and the new part with dominance of glazed areas over concrete wall areas (block B) (Fig. 7).

The next example was the project of the former Richert's brewery revitalization in Kyiv (project of O. Ivashko) (Fig. 8).

Conclusions

Urban development has always depended on freedom of creativity: if in the period of totalitarianism of the 1930s and 1940s freedom was interpreted as a “conscious necessity” and control was solely in the hands of the state, in the between the 1950s and 90s urban planning rules were determined by political and economic factors, as well as directed ideological doctrine. From the early 1990s until today, freedom in urban planning began to be interpreted as “permissiveness,” which led to the chaotic development of megacities.

Architectural creativity in urban planning and architectural creativity in the design of an object or park is not the same thing, because architectural creativity in urban planning begins at the stage of solving environmental problems, when preliminary judgments about the aesthetic properties of planning and three-dimensional composition of buildings are formed. This stage of urban planning involves forecasting the construction of interiors, spaces, architectural forms, details and proportions.²⁹

Neglect in Soviet times of attention to the problems of preserving the historic environment, environmental problems, excessive unification of design and planning decisions, neglect of the aesthetic expressiveness of mass development of settlements, problems of landscaping and landscaping of mass construction led to an inferior urban environment with low aesthetic properties. This has led to the current problems of modernizing obsolete housing.

Lack of a systematic approach in modern urban planning, dominance of the market element, non-compliance with the law, lack of forecasting for the future, lack of scientific support for practical urban planning will also lead to problems that will need to be solved in the future.

For balanced development, a modern city or region needs a modern information base on their condition, trends in factors and conditions that determine the prospects for urban systems (socio-demographic, technological, economic, political, cultural), effective forecasting technology with further assessment of the consequences of decisions. Without all these components, it is impossible to build an effective management system for urban processes, as the forecast should be based on an analysis of the real state of consequences of decisions and then it allows to trace all possible options for urban development, assessing architectural planning, socio-economic, environmental consequences, determining the optimal models of development of urban systems in the long run (30–50 years or more), and as a result to optimize the intermediate states of the object in the process of choosing the optimal strategy for the implementation of a forecast model.

Successfully overcoming of the above-mentioned negative trends in the cities of Ukraine is possible only by taking into account the regional and social aspects of urban planning, analytical awareness of the need to streamline planning and development of cities on the basis of integrity.

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Abstract

This paper analyzes the specifics of urban development in Ukraine in terms of existential growth of demographic processes and urbanization, identifies the impact of external and internal factors on the fixation of urban boundaries, functional and planning elements of the city that ensure the stability of urban systems. The important role of management processes has been noted. It is stressed that around the turn of the twenty-first century, the role of legislation as a guarantor of balanced relations between citizens, individuals and society has increased.

The problems of revitalization of non-operating industrial enterprises in the conditions of acute deficit of urban areas for development have been analyzed.

On the example of urban development of Ukraine in the era of historicism–eclecticism and Secession as the main historical buildings that have survived to this day, its urban planning with the definition of problems and the need for a systematic approach to its preservation has been analyzed. Design proposals for the revitalization of industrial areas have been presented.

Streszczenie

W artykule przeanalizowano specyfikę rozwoju urbanistycznego na Ukrainie pod względem egzystencjalnego wzrostu procesów demograficznych i urbanizacji, a także zidentyfikowano wpływ zewnętrznych i wewnętrznych czynników na ustalenie granic urbanistycznych, funkcjonalnych i planistycznych elementów miasta, które zapewniają stabilność systemem miejskim. Wskazano na ważną rolę procesów zarządzania. Podkreślono, że na przełomie XX i XXI wieku powierzono legislacji rolę gwaranta rozwoju zrównoważonych stosunków pomiędzy obywatelami, jednostkami i społeczeństwem.

Zanalizowano problemy rewitalizacji nieczynnych przedsiębiorstw przemysłowych w warunkach ostrego deficytu obszarów inwestycyjnych w miastach.

Na przykładzie rozwoju urbanistycznego Ukrainy w dobie historyzmu, eklektyzmu i secesji, w których były utrzymane główne zabytki zachowane do dziś, wraz z planowaniem miejskim i zdefiniowaniem problemów zanalizowano potrzeby systematycznego podejścia do ich ochrony. Przedstawiono również koncepcje rewitalizacji obszarów przemysłowych.