



Demolition or adaptation?: post-industrial buildings in Ukraine

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ABSTRACT

Three case studies are presented that assess the post-industrial development of industrial sites in Ukraine. The comparative analysis is based on (1) the geographical location on the territory of the country (Ivano-Frankivsk, Poltava, Kharkiv), (2) the functional transformation of the buildings (from the initial functions to new ones), and (3) the impact on the further development of the urban environment (in urban planning, economic, environmental and social security directions). These sites are considered as post-Soviet architectural heritage, which have been overlooked by the society and positioned as dissonant and controversial. The stereotypical perceptions concerning industrial sites are examined in order to rethink their status in the future. The research shows that the question of industrial heritage is manifold and cannot be solved without understanding the complexity and uniqueness of each individual case.

POLICY RELEVANCE

Three different reuse strategies of the post-industrial sites in Ukraine are compared: (1) demolition and replacement with a new building, (2) renovation of the buildings for public use and cultural functions, and (3) adaptation for private needs. The lens of 'dissonant heritage' is used to understand the evolution of these sites and different processes that have shaped them. Negative connotations are typical Ukrainian responses to industrial heritage, as it can also be associated with post-socialist trauma. The case studies provide lessons for handling post-industrial architecture in the modern city. These lessons will be particularly relevant to the rebuilding of Ukraine and decisions surrounding its cultural heritage.

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The era of industrialisation has left its mark on Ukrainian cities, characterised by the creation of large industrial enterprises with factory villages near them, often on the urban periphery. After the Second World War, when Ukraine became a part of the Soviet Union, urban planning focused on industrial zones. These areas became formative cores, which were surrounded by residential areas and large public squares. According to this principle, practically the whole of eastern Ukraine was developed in this way, in particular cities such as Kramatorsk, Sloviansk and Bakhmut, which were turned into mono-industrial cities. To implement this approach, entire areas of the historical districts were cleared partially or completely, and in some places a new city centre was laid in this way (Kosheliuk & Thoman 2021).

Industrial buildings of the Soviet era were built based on urbanist principles to create multifunctional complexes where people can live, work, rest and study. Their potential for today still lies in the same principles. They can become a tool for solving the problems of the cities by providing more space for its development and restructuration (Holubka 2021), especially if the renovation of previously isolated industrial sites is accompanied by the creation of a new public transport routes and other resource-efficient technologies.

1.1 INDUSTRIAL HERITAGE AND THE *BROKEN WINDOWS THEORY*

According to the 'Broken windows theory' (Wilson & Kelling 2010), the state of urban infrastructure in disadvantaged areas depends on the attitude of residents themselves: if someone breaks a window, others will easily take part in further destruction. This theory could also be applied to post-industrial areas: if there are well-maintained buildings instead of abandoned ruins in urban areas, the cities tend to continue developing. Safety and an attractive appearance are often key factors in choosing a place to work, live or rest. The transformation and re-evaluation of post-industrial zones is not a panacea for modern cities, but this would allow the preservation of architectural or cultural heritage, act as a stimulus for new initiatives and local products, and reduce the commute between the historically formed urban domestic and production zones. New spaces are not created by chance, but with the use of analysed urban planning.

Two important problems appear today: (1) a misunderstanding or neglect of the value of post-Soviet industrial architectural heritage (most of the industrial facilities are usually from that period); and (2) there is little interest from the investors for their development due to a long period of adaptation and deferred incomes for an indefinite time (it is easier to build something new than renovate an old building). In Ukraine, until 2022, these problems were discussed, but because of the full-scale Russian invasion, they became much less relevant. It is difficult to predict how the economic situation and perception of industrial heritage will develop in the country after the current crisis.

The challenge of re-evaluating the Soviet architectural heritage is typical for many post-socialist countries, not just Ukraine (Ingerpuu 2018; Németh 2018; Kideckel 2018). This heritage consists of many types of buildings and environments that used to serve many different purposes, including industrial zones. The pressure for the transformation of industrial areas comes from the requirement of the contemporary city development. Considering the Soviet industrial and mental legacy, Ukrainian society is increasingly faced with the need for the innovative and rational reuse of the post-industrial territories that have lost their initial economic role. The challenge is that there is no universal pattern for their development. Each city is unique and has its individual character and challenges. Instead of following an established pattern, lessons can be drawn from already initiated pilot projects.

Good examples can be found in renovated post-industrial complexes in the countries with a relatively similar Soviet past, e.g. in the Baltic States, Poland and the Czech Republic. In Łódź (Poland) a large textile factory has been transformed into Manufaktura, the biggest art and shopping/entertainment complex in Central Europe. On the site of a distillery plant there is a cultural and business centre Monopolis, and the thermal power plant has been replaced by

a cultural and scientific centre EC1. Other good examples are the cultural and communicative space Saprufabrika in Riga, Latvia (a former glass factory); the multidisciplinary art centre Fabrika Polymer in Tallinn, Estonia (a former Soviet doll factory); and the art space Jatka 78 in Prague, Czech Republic (a former slaughterhouse).

A key question is whether there is a ‘correct’ approach to the renovation of post-industrial areas that can be applied to all cases. This is a universal challenge where the industries are being developed and relocated. Previously, such areas were used for very specific purposes, and architecturally they are still adaptable for different uses. However, limitations exist: their dimensions are not always favourable for residential uses: existing sites and buildings are often very polluted. Their poor condition and need for repair prevents developers from seeing their potential. Due to these challenges, management and development are solved differently in different cities and contexts. This article analyses three examples from Ukraine to consider different approaches from demolition to adaptation and renovation.

1.2 DISSONANT HERITAGE

The concept of ‘dissonant heritage’ refers to heritage that is controversial or perhaps bears negative connotations. It also includes the idea that the heritage is often interpreted differently by different people and social groups (Turnbridge & Ashworth 1996: 21). In the past few decades an increasing number of publications have discussed and interpreted the dissonance of heritage (Ingerpuu 2018: 959). Dissonance can take different forms and have different origins in different circumstances. Dissonant heritage not only refers to the darkest periods of the past (960) but also can include industrial history, which may cause dissonance because of its environmental impact, non-human scale of the environments, or the poverty and poor labour conditions associated with the industrial era. Berger & Pickering (2018) have observed that the post-Soviet rejection of communist narratives of industrial heritage often makes it impossible to mobilise the population for its preservation.

For many years ‘industry’ was not perceived as a legitimate part of heritage. Indeed, it was seen as a threat to historic preservation. However, this position has been changing markedly over the past two decades. This can be seen in the development of the European Union’s cultural heritage policies (Kisiel 2020: 652). The ‘problem’ with industrial heritage is that it does not appear as a ‘legitimate’ monument and does not represent the desired image of the past (653).

Ingerpuu (2018: 964) states that post-socialist trauma plays an important role in the undervaluation of all socialist heritage. Post-Soviet industrial history has captured researchers’ attention quite recently, especially in the field of heritage studies. For example, Wicke *et al.* (2018) present case studies from Hungary and Romania (Németh 2018; Kideckel 2018).

In Ukraine, the perception of a dissonant heritage is even more controversial and evident in several social studies. Fedorova (2021: n.p.) notes that people perceive these objects as:

very controversial, they are a legacy of the Soviet period. They are unprofitable, they are in the city centre, they are big, they are industrial. It is easier for the authorities to turn a blind eye to them than to do something.

Furthermore, their current state and appearance, the lack of funding for such projects, and more pressing problems in the country in general are preventing society from considering the potential value of the industrial areas.

1.3 UKRAINIAN HERITAGE PROTECTION AND URBAN PLANNING REGULATIONS

The very first stage of any heritage preservation or renovation project in Ukraine is heritage protection and urban planning legislation. The protection of architectural and historical heritage in Ukraine was difficult even in the pre-war period, and in the current conditions of daily shelling it is even more topical—and complicated. By the latest information, around 1189 buildings have been destroyed or damaged because of shelling.

According to Ukrainian legislation all questions of heritage protection are under the competence of the Ministry of Culture and Information Policy of Ukraine, in particular the Department of Cultural Heritage, as well as partially the Directorate of Territories and Architecture Spatial Planning of the Ministry of Communities and Territories Development of Ukraine. The main law governing protection, preservation, repair, reconstruction and modernisation of architectural monuments (and all objects of cultural heritage) is the Law of Ukraine ‘On Protection of Cultural Heritage’ (Government of Ukraine 2000). Protection extends to the monuments of all historical eras, of any degree of preservation, of any functional group (public, residential, sacred, military, industrial, transport, etc.), of any type (separate buildings, complexes and ensembles), and any category (local, national importance, world heritage). It involves securing it from the negative effects of natural and man-made factors (landslides, flooding, environmental pollution, accidents, etc.). It also includes the preservation of its historically formed architectural and natural environment with the prohibition of the construction of modern buildings that can distort the traditional nature of the environment around the monument (Government of Ukraine 2000).

To obtain a protected status, the building should be registered in the State Register of Immovable Monuments of Ukraine under the categories of national or local value, and meet certain requirements: to preserve authenticity, to influence the development of the country’s culture, to have direct connection with historical events or figures, to be the masterpiece of a prominent architect or a vanished civilization, national minority or ethnic group. But at the same time this status imposes a huge number of prohibitions and difficulties regarding its further use. It is forbidden to change the purpose, parts and elements, or make marks on the monument, on the territory around it and in the protection zone without the permission of the relevant authorities. Conservation, restoration, repair and adaptation of monuments can be carried out only with the permission of city administrations and performed by specialised scientific and restoration organisations.

Ukrainian urban planning legislation does not allow the renovation and functional change of objects (including industrial ones) only by the wishes of the owner, the city administration or anyone else. Such actions need to be consistent with the existing urban planning documentation performed by certified architects and contribute to the development of the city environment. The main document of the planning system at the local level, i.e. in any city or village of Ukraine, is the general plan of the settlement. It is intended for substantiating the long-term planning and development strategy of the territory (Government of Ukraine 2011: article 17). Before the 2022 Russian invasion there was a process of intensive designing and updating of all urban planning documentation, but currently this process has stopped or just starting to resume (depending on the region).

The general plan specifies the boundaries of all lands and the regimes of their use, restrictions, purpose of these lands: residential, public, industrial, recreational, communal storage, transport, special purpose (cemeteries, nature protection, water protection, historical and cultural, etc.) (art. 17). It is based on the general plan that all permit documentation for construction or reconstruction is issued by local self-government bodies (the chief architect of the city or the Department of Urban Planning and Architecture). In other words, the general plan’s drawings determine a possibility of revitalising or renovating any post-industrial object in the city.

If the buildings are in the central part of the city or have a significant impact on the urban structure, they are considered by an architectural and urban planning council—an advisory public body consisting of leading architects, historians and art critics, as well as relevant municipal officials. The main task of such a council is to provide recommendations on issues of planning, construction, and other use of territories within the historical areas of the city, protected territories of architectural monuments and urban planning (art. 20). The latest amendments to this law approved the Programs of Complex Reconstruction of the Region (art. 15¹) and Territorial Community (art. 15²) because of the hostilities and defined the main algorithms for its implementation.

Modern architectural heritage, especially from the post-Second World War period, is a rather problematic issue in Ukrainian legislation because there is no definition for it at all. This directly applies to post-industrial buildings. The closest in meaning is the term ‘newly discovered object of cultural heritage’. However, this status implies the further procedure of listing the building into

the state register and putting previously mentioned restrictions in its use. Therefore, this issue is debatable at the higher levels than this article and needs to be aligned with European practice and legislation in the future.

1.4 GROUNDWORK FOR RE-EVALUATION OF POST-INDUSTRIAL SPACES

Unlike previously mentioned countries of Eastern and Central Europe that were under the influence of Soviet industrialisation, Ukraine started working with the challenge of industrial architecture rather late. The rapid transition from ideological planning to the capitalist model is also reflected in the urban spaces that these transformations produced (Fedoriv 2018). The resulting urban environment has destroyed or rebuilt historic neighbourhoods, along with infrastructural and environmental problems, etc.

An analysis of Ukrainian experience of industrial territories revitalisation shows that functional reuse of industrial buildings in many ways depends on the city size. In circumstances of total deindustrialisation of Ukraine, revitalisation of these areas in a way of so-called 'creative industry' held mostly in the biggest cities such as Kyiv, Odesa, Lviv or Kharkiv. In smaller cities (Poltava, Sumy and Lutsk, with populations between 250,000 and 500,000), most projects involve revitalisation into a trade (trade-entertainment) function.

The attempt of the first complex spatial design experiment to rethink the tangible and intangible post-Soviet industrial heritage was carried out on the territory of the Kyiv Automobile Repair Plant No. 12 (KARZ-12), and described by Ponomaryova (2019). It reveals the processes, discourses and adaptive perspectives of former industrial areas and buildings in the context of attempts to create new rules for the existence of such spaces. Social research on industrial heritage, in particular Podil (the central district of Kyiv, the capital of Ukraine), where 50% of buildings are Soviet, show that people have a rather utilitarian attitude towards the (industrial) architecture of the 1960–80s and they perceive it only as a material value (Anisimov 2019). To change this vision and understanding, a series of educational events, a tour of industrial territories and the creation of the booklet were held together with students and professors from the Massachusetts Institute of Technology (MIT). This made it possible to see industrial areas from a different angle.

A similar approach was applied to the mono-industrial cities of eastern Ukraine: Sloviansk, Mariupol and Kostyantynivka. In each of them theoretical and field studies were conducted with the participation of the local residents, experts and authorities. The work in Sloviansk in 2014 was not very successful and delivered only a simple interactive map. The situation in Mariupol was different: a seasonal multifunctional space for locals was organised (Urban Curators 2016). The example of Kostyantynivka reflects the full-scale approach to the transformation of post-industrial territories—the analysis of the location, transport and pedestrian accessibility. The central industrial area of the city, located on the path between the two riverbanks, has been transformed into the main event location of the district (Urban Curators 2019). Unfortunately, these cities have been practically destroyed by shelling, and these projects no longer exist.

From this it can be concluded that the processes of adaptation of post-industrial buildings and territories in Ukraine were initiated in the mid-2010s not only as commercial cases for obtaining profit, but also informed by scientific studies and research, including the study of locations, interviews with potential users, clarification of their needs, cooperation of the community, activists and city management. Not all projects were successful or long-lasting, but they were significant in how they laid the groundwork for following developments and approaches to the re-evaluation of post-industrial objects.

2. CASE STUDIES

2.1 STUDY AREA

This study examines three post-industrial sites, which are located in different regions of Ukraine: Ivano-Frankivsk (in the west), Kharkiv (in the north-east) and Poltava (in the centre). Each case is or was an industrial facility that flourished during the Soviet Union (Figure 1).

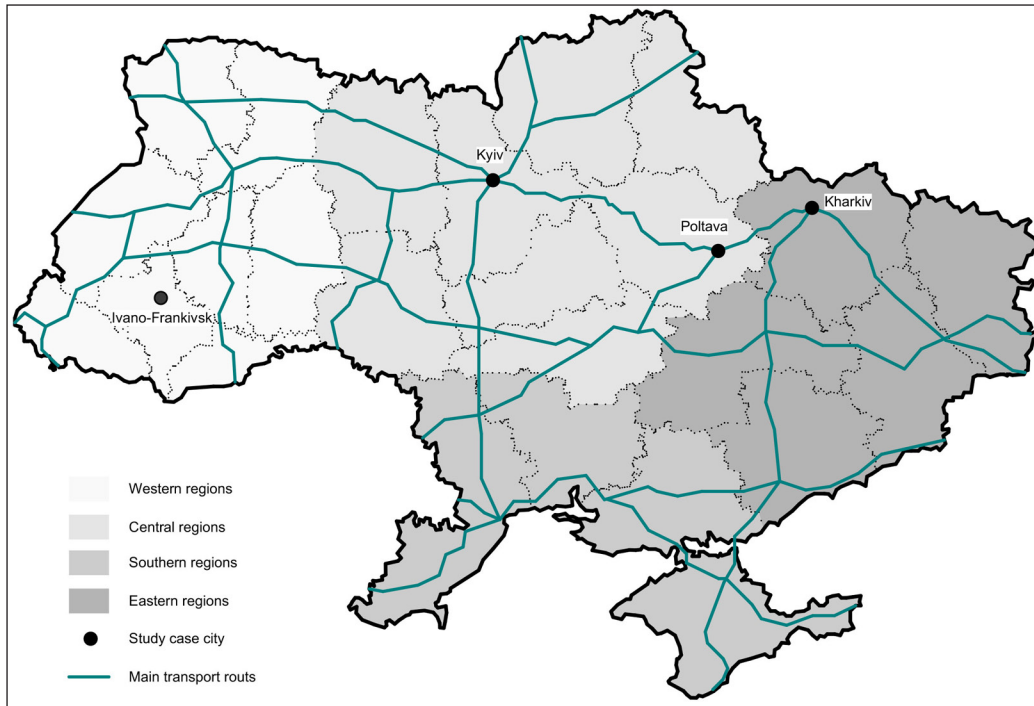


Figure 1: Study area: location of Ivano-Frankivsk, Poltava and Kharkiv.

The proposed cases were selected for the analysis based on several characteristics: their central location in the city structure, which influenced further development of the city, approximately the same time of construction and similar stylistic approaches to industrial architecture. What is also common to these sites is that they do not have any protected status. According to the Ukrainian heritage legislation, they do not meet any requirements for preservation. In fact, the owners have unlimited rights to convert, rebuild or demolish these buildings. In addition to their similar backgrounds, their different reuse strategies are explored.

A short description with general information about those cities is now provided:

- *Ivano-Frankivsk* is a city in Prykarpattia region with a population of 240,000 people. It is one of the three cultural centres of Halychyna (a historical and geographical region in western Ukraine), founded in 1662. Since the Austro-Hungarian Empire it has been a significant centre of machine-building, woodworking and chemical industries. The industrial territories comprise 18% of the total area of the city.
- *Kharkiv* is a city in north-east Slobozhanshchyna (a historical and geographical region in eastern Ukraine), and a scientific centre. It is the second most populated city of Ukraine with a 1.4 million inhabitants. At the beginning of 2020, some 19 higher educational institutions and 141 scientific organisations were located in the city. The total share of industrial territories is 10% of the city area, divided into five industrial nodes, nine industrial districts and 14 groups of enterprises.
- *Poltava* is a city in central Ukraine with a population of about 300,000 people. It is located at the intersection of important transport routes providing a connection between the largest cities of the country: Kyiv, Kharkiv and Dnipro. The total share of industrial areas is 18% of the city territory.

2.2 METHODS

The study analysed publicly available information about the facilities: their location, history, stages of evolution during the activity, current use, renovation or reconstruction projects. Based on general observations, the events organised by public activists and organisations in Ukraine related to the post-Soviet heritage. These were widely covered in the media and scientific circles, the available source base. The evidence shows that these post-industrial objects are dissonant or unwanted heritage. Neither the legislative framework of Ukraine nor the local self-government bodies nor the

city residents themselves know how to identify these objects, and there is no regulated mechanism for dealing with them. The main references used for renovation of researched cases are examples from other European countries, somehow adapted to the local realities and requirements. Due to the current invasion it has become quite difficult to follow the details of the renovation processes in the researched objects: there is less information, the emphasis has changed, especially regarding to Kharkiv, which is under fire every day and the situation is changing every moment.

2.2.1 Geographical location analysis

Depending on the geographical location, a difference in approaches to the adaptation of the presented objects and the new functions provided to them could be observed: in western Ivano-Frankivsk (with more cultural and touristic status) the studied complex is being revitalised into a multifunctional centre aimed at attracting the city community and creating a platform for local business, education, culture, leisure, etc.; in Kharkiv—the intellectual and technical centre—the building of the former factory has been adapted to an information technology (IT) cluster with a wide range of opportunities for the work and development of specialists in this field.

2.2.2 Functional transformation analysis

In each example considered, certain transformational processes took place from the beginning of the 2010s, with the initial function being transformed: art and cultural functions in Poltava (ART Platforma 11), commercial in Kharkiv (Fabrika.Space), and educational and economic in Ivano-Frankivsk (*Promprylad.Renovation* (n.d.)). Two of study examples are successful and functioning until the time of writing (the beginning of 2023), whereas one is in the process of demolition with new buildings being constructed on the same site.

In two functioning objects, the proposed and implemented space-planning solutions for the renovation, its stages and approaches to the preservation or demolition of industrial heritage (fragments of industrial building structures, open brickwork walls, technological equipment as elements of the new interior) were analysed.

2.2.3 Impact on the further development of the urban environment

The case studies are self-sufficient complexes, each of which is located practically in the central part of the city, at the intersection of the main highways or next to them, surrounded by residential or public buildings designed as an addition to the mentioned enterprises for the accommodation of employees. Over the decades these areas have developed, not always in an orderly manner, and today they form separate districts with their own infrastructure (*Figure 2*).

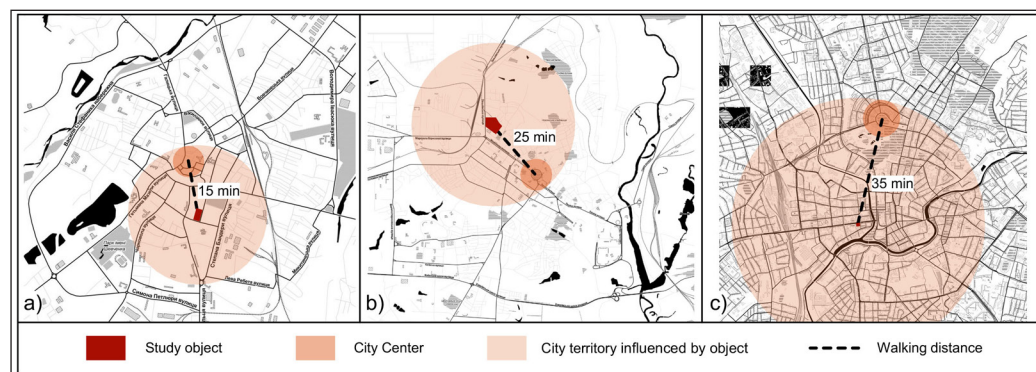


Figure 2: Study cases in the urban structure of the cities: **(a)** Ivano-Frankivsk, **(b)** Poltava and **(c)** Kharkiv.

Source: <http://maps.stamen.com>.

The revitalisation of post-industrial buildings, as constituent parts of these districts, contributes to the further transformation of the urban environment in the following directions:

- urban planning: arrangement of transport and pedestrian connections, reuse of abandoned territories
- economic: creation of new jobs, placement of relocated businesses from the eastern and southern regions of the country

- ecological: disposal of landfills, harmful chemical elements, arrangement of green zones, introduction of new energy-saving technologies
- social and security: creation of attraction centres for residents of both a separate district and the entire city, improvement of the criminal situation.

3. RESULTS

As described above, the dissonant heritage may refer to heritage that is not appreciated and incomprehensible to local dwellers. The concept can be applied to the analysis of the cases of demolition/adaptation in Poltava, Ivano-Frankivsk and Kharkiv. The cases are typical representatives for their region and have not been researched earlier in this sense.

The cases are:

- demolition of the Poltava Machine-Building Plant as the easiest solution of the problem (replacement with new residential buildings)
- renovation of the Machine-Building Plant Promprylad as an innovative centre for the city development based on impact investing
- Transformation of the crops sorting and storage factory into IT company office (a gentrification example).

Table 1 shows the characteristics of these case studies.

	POLTAVA	IVANO-FRANKIVSK	KHARKIV
Original function	Poltava Machine-Building Plant	Machine-Building Plant Promprylad	Factory for the sorting and storage of selected agricultural crops
Year of construction	1946	1905, 1939 (rebuilt by Soviet example)	1933
Territory (ha)	16.5	4.05	0.1366
New object	ART Platforma 11	Promprylad.Renovation	Fabrika.Space
Year of renovation	2015–17	2018 (start of the pilot floor)–present	2015–present
New function after adaptation	Creative space with an event zone, café, gallery, choreography school, etc.	Innovative development centre for the economy, urbanism, modern art and stimulation of entrepreneurship	Complex: co-working centre, bar, restaurant, event hall and rental premises
Type of financing	Rent from the owner	Joint financing: investments of external partners, the state	Private property of Pics.io information technology company
Current situation (end of 2022)	Partly active production, partly demolished, partly construction of new residential buildings	Renovation, launch of food courts (December 2022), creation of space for relocated business from eastern Ukraine	Still working (within the limits of possibilities and safety), the building was not damaged by bombing

Table 1: Comparative characteristics of the case studies.

3.1 FROM AN INDUSTRIAL SITE TO A RESIDENTIAL AREA

A Ukrainian trend that began in the late 1990s was the creation of mass housing in open spaces in cities. This led to a decrease of available land. The attention of the development companies then switched to industrial facilities, even those still in use. The spatial location, the size of the land plot and the usual desire to take advantage of land values leads to the easiest approach: the demolition of existing buildings and the construction of new ones. That is what happened with the study case in Poltava.

The Poltava Machine-Building Plant was established in 1946 to produce machines and mechanisms for the knitting industry. During the Soviet period, production expanded to foundry products, compressor equipment and power equipment. The plant survived the collapse of the USSR, and actually expanded its list of products.

The location of the plant complex is in the central part of Poltava (at the intersection of Zinkivska Street and Pavlenkivska Square), defining the urban silhouette along the main highway. Such an urban planning approach reflects the entire ideology of the Soviet government—increasing its authority, and an absence of prioritising the environment for people in planning processes.

In the 2000s, production declined. One plant building was transformed into a creative space in 2015. This was facilitated by the flexibility of zoning and large capacity (Mykolaenko 2019). The location was free from architectural and spatial restrictions and met the needs of the local community. The creative space ART Platforma 11 hosted food and art festivals, book fairs, etc., but in 2017 it was closed due to the expiration of the lease agreement and the reluctance of the plant's owners to extend it. There is a suggestion that there were already plans for the demolition of unprofitable industrial buildings and the construction of new houses in their place.

This was confirmed in 2018 by the rapid commencement of demolition of the existing industrial buildings. The basis for this action was a claim about the unprofitability of production and the poor state of the buildings repair. Instead of the plant, the concept of a new district was developed by the architectural studio Urbanistika. The project included placing a residential complex of ten 10-storey buildings for 4500 residents, a kindergarten, two car parks, numerous sport playgrounds on an area of 16.5 ha, as well as the construction of the second part of the existing shopping and entertainment centre (the first building is the former industrial facility, transformed to a shopping mall in 2010s) (Figure 3).



Figure 3: Panorama view of the Poltava Machine-Building Plant: (a) current view and (b) project of the developer company (residential complex City Park).

Sources: <https://poltava.to/news/63533/>; <https://poltavtransbud.com/ukr/poltava/pavlenkivska-3v/>.

A central alley will pass through the blocks connecting Zinkivska Street with Pavlenkivskyi Park, which is also planned to be reconstructed and will include a basketball court, tennis courts and a dog walking area (Figure 4).

According to the owners, today it is economically more profitable to build new high-rise buildings or shopping centres on the site than to renovate an existing factory for these purposes. Therefore, two buildings of the plant are being demolished. A small building of the former paint shop and warehouse of finished goods has already been partly destroyed—only a few walls are left, with nothing between them. Nearby a more rectangular building—the former foundry—is also gradually being dismantled and already roofless (Figure 5). At the same time the new development raises some practical questions about the capacity of the existing infrastructure to accommodate residential functions: the city sewer, the number of places at schools for children, etc.

In the context of the gradual demolition of the plant buildings, it is ironic that there was a round table discussion called 'New life of industrial territories in Poltava' held in January 2019. City officials, architects and directors of industrial enterprises were invited to discuss the possibilities of the revitalisation of the abandoned industrial territories of the city. According to rough calculations, industrial zones make up 18% of the entire territory of the city. But the same city representatives agreed and gave permission for the demolition of the PTMZ complex and the development of

this territory with a quarter of residential buildings without analysing many technical and infrastructural issues. Such inconsistency and illogicality of actions raises more questions than answers about the perception of industrial heritage and requires a broader discussion about gaps in construction legislation and activities of local officials.



Figure 4: Poltava Machine-Building Plant: existing buildings and new residential houses.

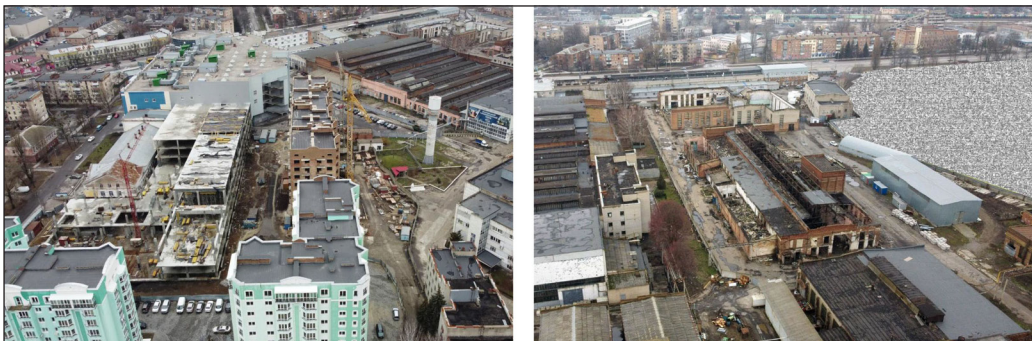


Figure 5: Process of demolition in Poltava.

Source: <https://poltava.to/news/59090/>.

3.2 FROM PRODUCTION TO CREATION

The worldwide practice of industrial buildings revitalisation proves that the most optimal option is multifunctionality (following examples such as Medialab in Madrid, Art Inkubator in Łódź, Játka 78 in Prague, Melkweg in Amsterdam, etc.). Industrial spaces can also be ideal locations for a variety of cultural facilities, IT centres, research companies, etc., because even on relatively small pieces of land, it can make economic sense to create the necessary infrastructure. Such projects are quite

realistic to implement in Ukraine, and it is easier to do so in former industrial zones, rather than launching techno parks from scratch outside the city or creating galleries for young artists in the city centres, with sky-high rents.

The Promprylad.Renovation space in Ivano-Frankivsk followed the path proposed by the Leipzig Charter of 2007. The integration of functions in the cities, balanced and polycentric development, where residents become closer to services and products, creates new connections, knowledge and interactions. The complex is located on the area of 4.05 ha (at the corner of Melnyk and Ukrainian Victory Streets) within 15 minutes' walk from the city centre. The machine-building plant, part of which is being converted, has not completely retired from industrial use and is still operating at about 10% capacity. This provides an opportunity to combine the theoretical development of small businesses and young start-ups with the real production process and the implementation of their ideas in the practical plane.

The concept of adaptation and reconstruction covers four existing buildings and consists of six main stages: (1) the launch of a pilot project—arrangement of the third floor of Building B for analysis and understanding of society's needs, as well as attracting investors; (2) the dismantling of buildings and structures that do not meet operational and safety requirements; (3) the creation of portals for interconnection between the internal space of the complex and the city (buildings A and D); (4) the construction of the attics and communication cores (buildings A and C); (5) the construction of two office blocks E and F (perpendicularly above building D, connecting buildings A and C); and (6) the construction of a cinema centre (extension to building D) (Figure 6).

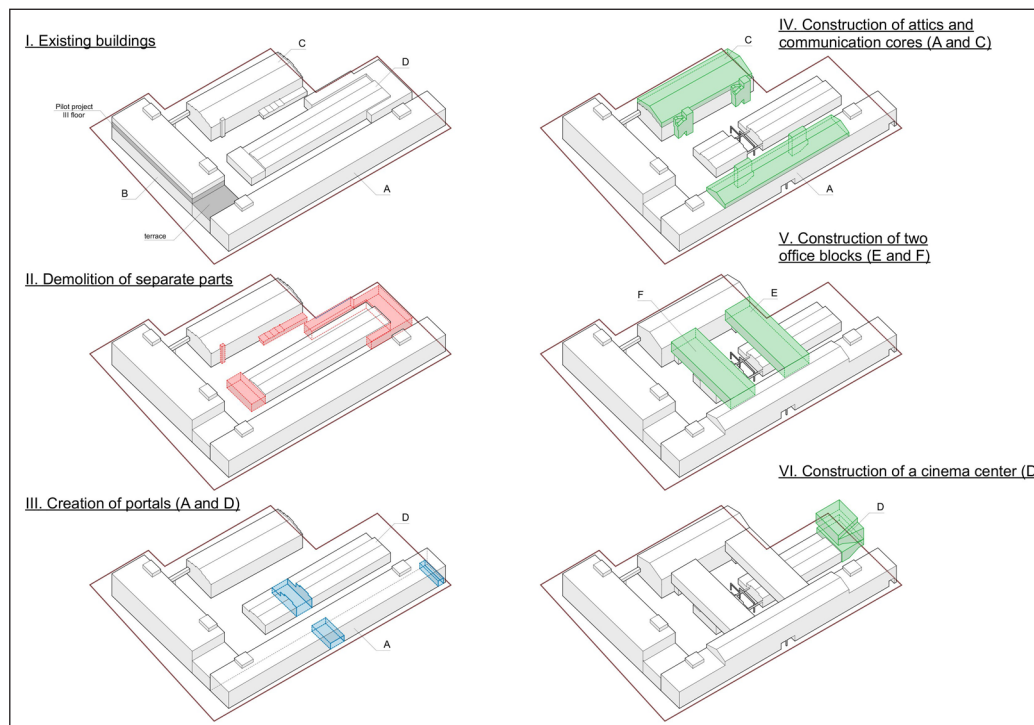


Figure 6: Stages of the transformation of Promprylad. Renovation, Ivano-Frankivsk.

Promprylad.Renovation includes a dance school, a barber academy, a modern art gallery and creative workshop, a multimedia laboratory, children's non-formal education clubs, a café, a bar, an office for an IT company, a conference hall, an urban laboratory and even an office for the Investment Policy Department of the City Executive Committee (Figure 7). In December 2022, despite the military actions in Ukraine, the opening of the first floor with the food market Foodoteka was announced, which is an additional opportunity for businesses relocated from the cities affected by Russian armed aggression (Morozov 2022).



Figure 7: Existing buildings and renovation project propositions for Promprylad: **(a)** view from Ukrainian Victory Street, **(b)** internal territory and **(c)** interior design.

Sources: (a) Olexandra Sosnina for Facebook/Promprylad. Renovation; (b) Roman Turyi for <https://galka.if.ua/>; and (c) Andriy Bashtovyi for www.the-village.com.ua. Project visualisations are from promprylad.ua/ua/.

The Promprylad.Renovation project is an example of an innovative centre for the development of the city in four areas (education, art, new economy and urban planning) based on impact investing: investors finance a social initiative, become co-owners of a plant and receive dividends. The factory is gradually being rebuilt as office premises, laboratories, workshops, exhibition and entertainment centres, a hotel and hostel, a farmer's market, and restaurants.

The main task of the revitalisation of the old plant, applied in the case of Ivano-Frankivsk, is to help the city and the region move to a qualitatively new level, restart the old systems, discover opportunities that did not exist during the Soviet Union, and bring them into the global markets not only economically, but also culturally and educationally. The idea is to encourage people to create fulfilling lives in Ivano-Frankivsk, rather than moving to other regions. Of course, in future there is a risk of gentrification. This is the process whereby former industrial areas change their appearance, and because of this, wealthier residents move there, displacing the poorer parts of the population. This raises the issue of whether revitalisation provokes social inequality.

Gentrification is observed in the case of Fabrika.Space in Kharkiv. The project works entirely on a commercial basis and is completely dependent on the owners of the building itself—the IT company Pics.io. This unique place has become the embodiment of a classic loft and the style of modern minimalism and is popular in certain circles; but it is not 'publicly available' to all citizens. The founders themselves call it a 'hub of minds attraction, a workshop of ideas and recreation', working in a co-working space, attending lectures, conferences seminars in the event area or development of the district or city. This automatically reduces the functionality of an adapted industrial facility (Hryhorash 2016).

The original building served as a factory for sorting and storing grain crops until the 1960s. Like most industrial facilities in the post-Soviet space, it felt idle in the 1990s (Holubka 2021). In 2015, the four-storey building was reconstructed to create a public catering establishment on the first floor, an event area on the second and third floors, and a co-working space on the fourth floor

(Figure 8). During the renovation paintings, documents, furniture, ancient flasks for germinating grain and tags for marking bags were found in the basements, and these elements were used in the interior decoration of the first floor (Figure 9). The parquet floor of the 1930s, walls, ceilings, helical conveyor and elevators were left in their authentic state to preserve the atmosphere of an industrial building. The conservation designer of the site, Iryna Sterina, states that the space itself dictated what needed to be done (Hryhorash 2016).

Despite the Russian bombing of Kharkiv, the building of Fabrika.Space has not been damaged and continues to work as much as possible in the conditions of ongoing shelling. But Fabrika.Space is still inaccessible to the average city dweller who does not belong to a certain profession or subculture. This example shows an understanding and reinterpreting industrial heritage for a limited demographic group of people.



Figure 8: Former building for sorting and storing grain crops in Kharkiv: (a) space before reconstruction and (b) after reconstruction.

Source: <https://bzh.life/ua/gorod/fabrika-space/>.



Figure 9: Modern interiors of Fabrika.Space with old factory details.

Source: <http://www.kharkovinfo.com>.

4. DISCUSSION

The presented Ukrainian case studies show three different approaches to industrial heritage. There is a complete demolition (the Poltava case), a revitalisation with adaptation to modern demands and realities of society (the Ivano-Frankivsk case), and a process of gentrification and limitations (the Kharkiv case). Each example is unique, and it is impossible to evaluate their success in the long run. The most important thing is that these processes of re-evaluating such dissonant heritage have taken place, and there is an understanding that industrial objects as components of the urban environment cannot be separated from the city, but must be transformed in accordance with other development processes.

The stereotypical thinking that was formed in Ukraine around the definition of the building's 'value', resulting in the demolition of so-called 'dissonant heritage', is most vividly manifested within the post-Soviet heritage. If one can look beyond all the ideological stigmas, these buildings are beginning to be appreciated as material and cultural resources. This is true more generally for industrial buildings, which often tend to be regarded through the lens of negative consequences associated with industry (Kisiel 2020: 662). Ingerpuu (2018: 954) has pointed out that the studies on the socialist built heritage:

have mainly concentrated on the buildings and monuments representing the political ideology of the socialist era due to their evidently controversial character, while the more mundane and ordinary legacy has seldom been the focus.

Quite often industrial sites are examples of elaborately thought-out complexes, inscribed in the urban environment. The load-bearing structures of these buildings may have strong characteristics that many times exceed those of modern equivalents. This gives a potential advantage to the reuse of old industrial complexes, whose colossal interiors can be accommodated to many different functions. For ordinary people to understand the value of these buildings, it is necessary to create and support projects such as Prompylad. Renovation in Ivano-Frankivsk, which clearly shows how beneficial the adaptation of an industrial complexes can be for the development of the city.

Modern society is changing, and the emphasis of its values is shifting from the enrichment and accumulation of material goods to the wise use and maximum preservation of available resources. In fact, a kind of 'anti-industrial revolution' is starting to take place. If society can reuse everyday items (clothes, appliances, furniture), and recycling of waste becomes a norm, then can this also be applied to industrial buildings and territories? Instead of demolition, it is more environmentally friendly to make use of the existing resource and give new life to these spaces.

Awareness and sensitivity are needed into whose heritage is being handled and what it symbolises. Kisiel (2020: 654) stated:

the push to save industrial heritage has not been driven by the former workers, but (mostly) middle-class outsiders.

Thought must also be given to how the sites are handled. According to Berger & Pickering (2018: 229), the revitalisation of such industrial spaces often leads to the aestheticisation of the sites, cleaning the machines and, as a result, sanitising the industrial history. The renovation of these objects causes the rejection of the Soviet legacy, which has negative associations, and the transition to a European future. Today, such transformations are carried out at different levels (linguistic, religious, cultural), so the architectural component in this regard is as important as a visualisation of these processes.

Attentiveness to the context of each site is needed because every adaptation is an individual case. People are afraid of changes in their environment and often react negatively, even if that environment is abandoned or uncomfortable. This happens due to a lack of reuse culture in Ukraine, which has been practiced in other European countries for decades. But industrial buildings often have everything in their favour to be used again, if the technical and environmental aspects do not prevent it.

This article is an attempt to discover the peculiarities of the Ukrainian post-industrial, potentially dissonant, heritage and analyse the architectural and cultural processes in the pre-war period and during it. It is quite difficult to break the connection between the architecture and the political ideology of that time. Therefore, the demolition of industrial buildings is still a dominating practice in Ukraine, and there is very little research exploring other possibilities.

An alternative approach is needed with the following steps: research–evaluation–discussion–adaptation/demolition (only if necessary). In the case of adaptation, the main principles can be proposed for the development of an architectural concept based on a scientifically comprehensive analysis (Hanets 2018: 50):

- to coordinate the structure of the site with the network of existing pedestrian and transport routes for optimal integration into the urban street network
- to preserve the historical appearance of the building or site
- to combine project solutions with town plans for the development of the surrounding territories
- compliance of the concept with the areas, engineering and technical indicators, purpose, and requests of potential tenants or investors
- economic expediency of invested funds relative to architectural and construction costs for changing the appearance and purpose of the building or site.

5. CONCLUSIONS

The three case studies represent different processes of urban and industrial development. They also convey different perceptions about the potential of the former industrial sites. The study of the controversies of dissonant heritage, such as Ukrainian industrial heritage, is essential to understand the development that might lead to demolition and heavy transformation.

Despite the rejection of symbols of the Soviet past, there are ways to reinterpret the dissonant heritage in a boarder context. It is a significant urban and economic resource for the city, region and country. The environmental narrative is also important: the reuse of existing buildings helps to prevent carbon emissions and reduce waste.

There can be a compelling business case for developers. Buildings in central areas are attractive and can attain a high price per square metre and, at the same time, the site cost for post-industrial buildings is inexpensive. Many existing industrial buildings were designed and constructed to high standards and may be more robust than modern buildings.

Regeneration is complex: the urban planners, representatives of city administrations, business, education and ordinary city residents all need to think deeply about how to see such areas, who uses the buildings and the space around them. It is worthwhile not to lose all this complexity in the process of regeneration, simply because it seems the easiest solution to erase everything and start with a clean slate.

No comprehensive support exists for the integrated development of the cities in Ukraine. Former industrial zones are developing according to different scenarios. Most developer-led solutions still win. However, there are emerging positive examples of revitalised spaces.

Given the need to conserve planetary resources and reduce consumption, it is beneficial to create an approach that emphasises stewardship: the reuse existing built environment for our needs, rather than constantly constructing anew.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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ORIGINAL DOCUMENT (UKRAINIAN)	ENGLISH TRANSLATION	URL
Схема генерального плану міста Івано-Франківськ	General Plan Scheme of Ivano-Frankivsk	https://www.mvk.if.ua/uploads/files/gplm.jpg
Пояснювальна записка до генплану міста Івано-Франківськ	Explanatory Note to the General Plan of Ivano-Frankivsk	http://www.mvk.if.ua/uploads/files/gplm_vt.pdf
Генеральний план міста Харків	General Plan of Kharkiv	https://drive.google.com/drive/folders/1Pze1fwOeat2_--QIfVbn8OGe7k55vtLi
Генеральний план міста Полтава	General Plan of Poltava	https://imgur.com/76SOBQ2
Полтава 2030. Концепція інтегрованого розвитку міста (звіт)	Poltava 2030. Concept of Integrated Urban Development (Report)	https://drive.google.com/file/d/1Rzf_AaUJ29PNKfNoDts2Ar4BF7Z7Nt1D/view (Ukr) https://drive.google.com/file/d/1sXaty2HwYHd9bGFOz0-3KVQpjvxLGP6X/view (Eng)
Проект «Інтегрований розвиток міст України». Робочий пакет «Структура міста Полтава». Номер проекту: 2015.2071.7.001	Project 'Integrated development of Ukrainian cities'. Work package 'Structure of the Poltava city'. Project number: 2015.2071.7.001	https://www.2030.poltava.ua/files/2.2.2.pdf

Table A1: Key documents.

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