



01.

How the Pechersky District has Changed Over the Years

The Pechersky district of Kyiv has a rich and diverse history that is inextricably linked to the city's development. From the founding of the Kyiv-Pechersk Lavra monastery to periods of militarization and active development under the Soviets, the district has undergone significant changes over the years. The area's architecture reflects these changes, with a mix of historical monuments, modern commercial projects, and Soviet-era residential buildings. Today, the district is known for its well-developed infrastructure and new buildings, but it still holds a unique history that is worth exploring. By delving into the past, it is better understandable how the district has changed over the years and how it continues to shape the city of Kyiv. This chapter will take a closer look at the current situation and the future of the Pechersky district, highlighting its historical and architectural significance and how it has evolved over the years.

The Historical Significance of the Pechersky District

The Pechersky district of Kyiv is a small but historically rich area located in the city's geographical center. With an area of 19.6 sq. km, it boasts a significant proportion of green spaces, including 26 squares and seven parks [5]. The district is home to approximately 600 architectural monuments, including historical sites such as Vladimirska Gorka, Perevisyshe-Khreshchatyk, Lipki, Kievo-Pechersk, Ugorskoe, Askold's Grave, Berestovo, Navodnichi, Menagerie, Vydubychi, Verkhnyaya Telichka, Sappernaya Slobodka, and Lysaya mountain. The exact date of Kyiv's founding has yet to be determined, but it is believed to have become the capital of Rus in 882. The Pechersk district is associated with the foundation of the Kyiv-Pechersk Lavra, an Orthodox monastery located in caves near the village of Berestovoye, which remains a significant attraction in Ukraine (fig. 1). Today, the district serves as a hub for shopping and entertainment, which offers a variety of commercial and leisure options.

01. Panoramic view of the Kyiv-Pechersk Lavra. Kirill Rudenko, 2018.

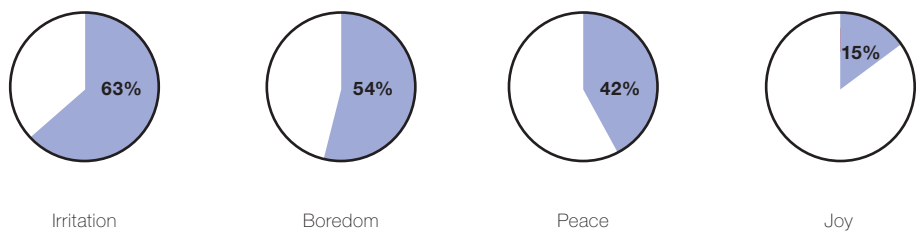


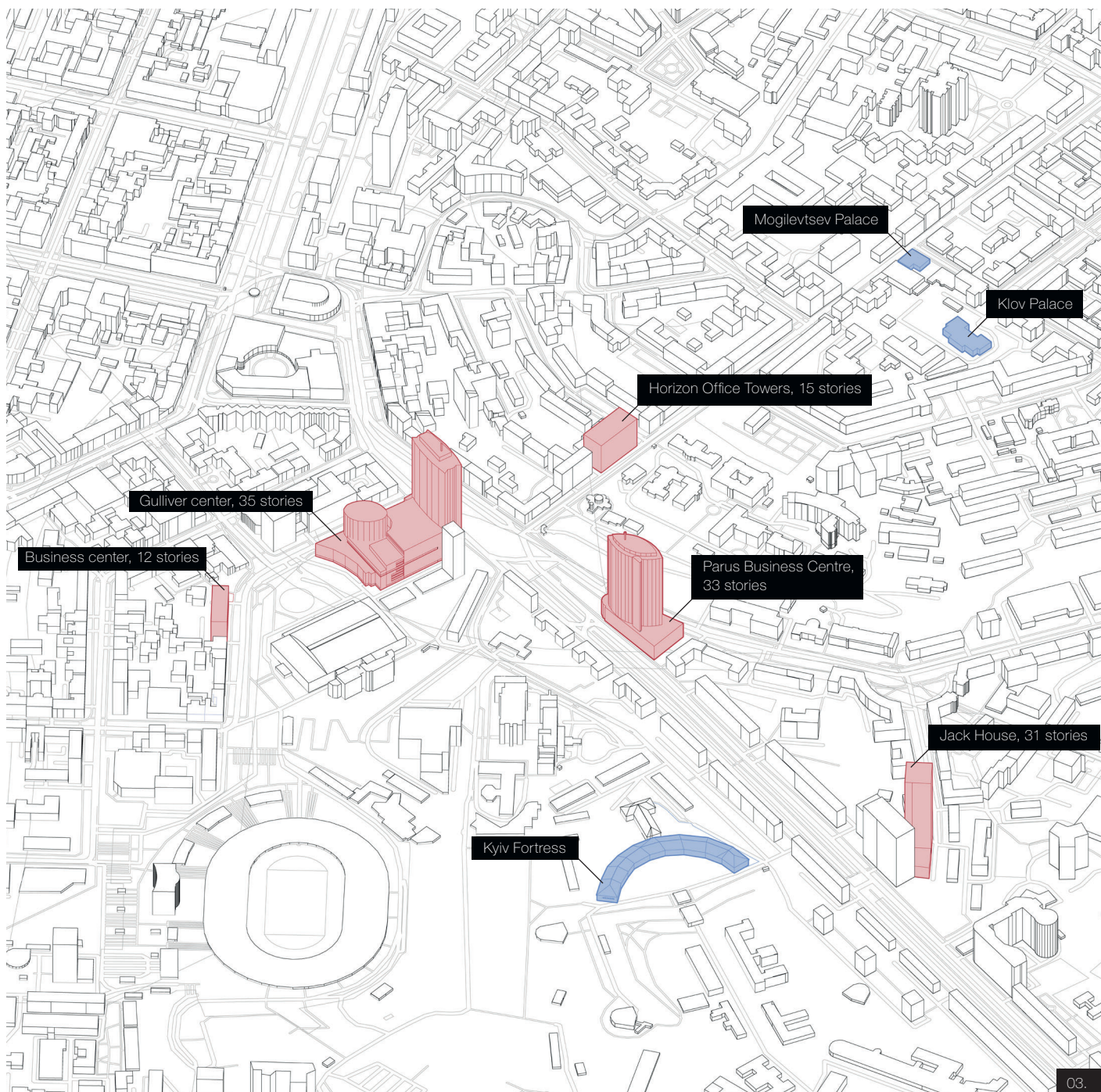
Type of Buildings

- Public Skyscrapers
- Residential Skyscrapers
- Architectural Monuments
- Architectural Monuments of Local Importance

02. Names and Locations of Skyscrapers and Architectural Monuments, Authors' illustration, 2022.

Assessments of the Visual Environment in Kyiv by its Residents





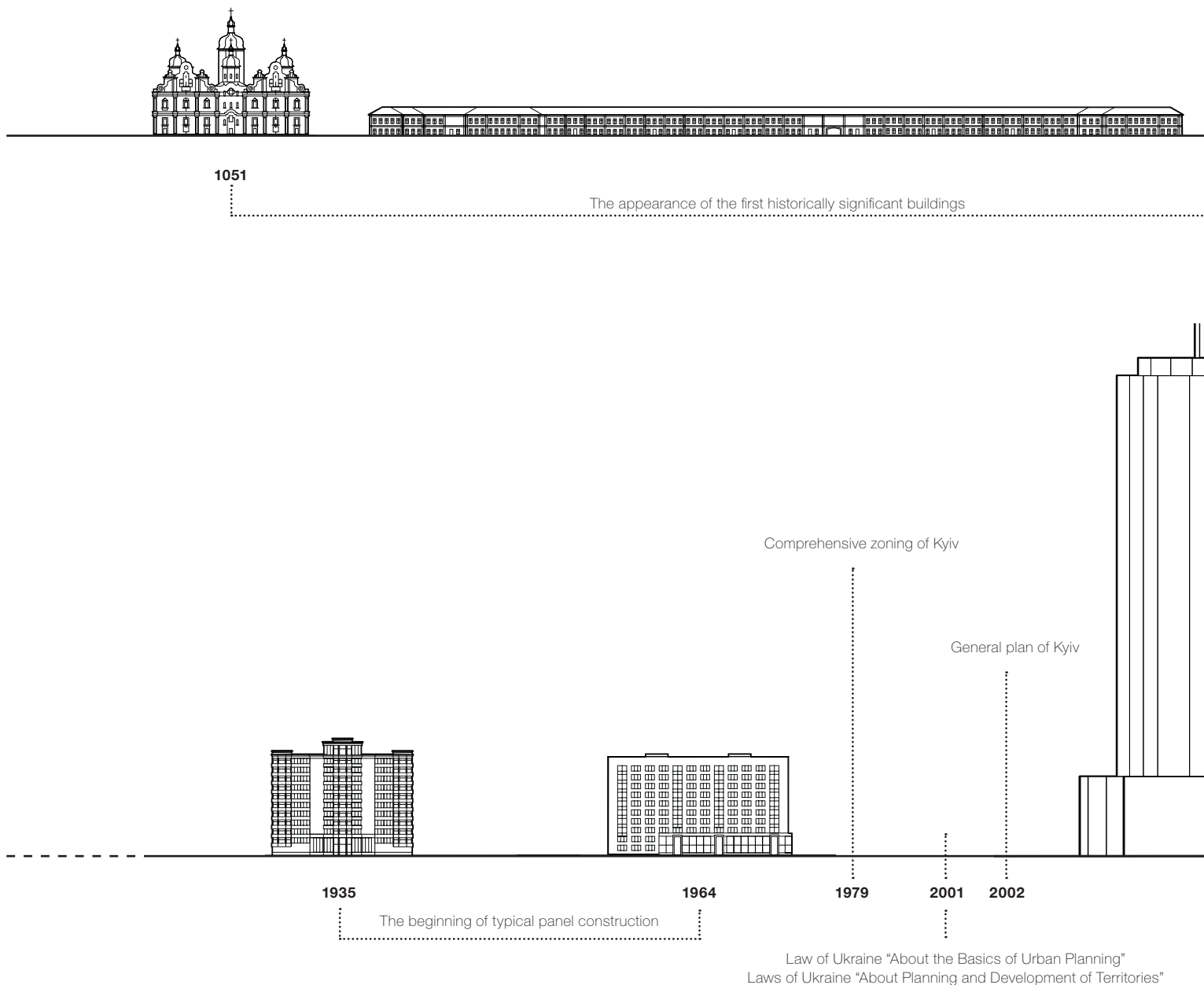
Challenges in the Pechersky District

The integration of modern architecture into historical development in the Pechersky district has become a pertinent issue as residential and commercial construction in the area continues to increase. While some argue that modern buildings should contrast with and dominate historical structures, others argue for a symbiotic relationship between the two. In the Pechersky district, it is evident that new high-rise buildings often dominate and detract from the historical aesthetics of the area. These buildings are often unattractive and lack architectural appeal, causing a negative perception of the district and a lack of desire to view them for an extended period (figs. 2–3).

Contrast of Buildings

- Public High-Rises
- Architectural Monuments

03. Zoom In: Density of Highrise Buildings and Architectural Monuments. Author's illustration, 2022.



04.

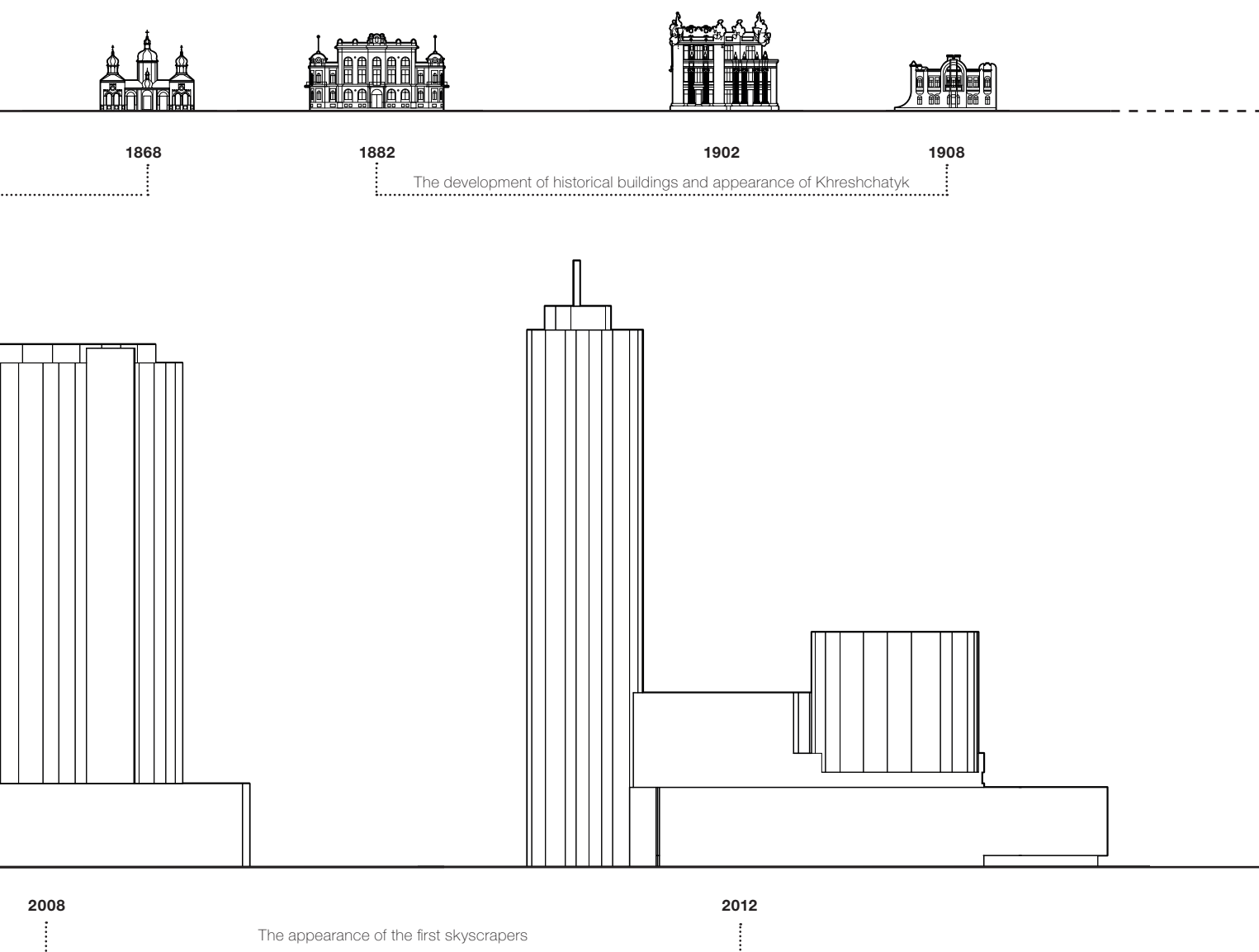
11th–18th Centuries: The Formation of Pechersk as a Historical District in Kyiv

The Pechersky district of Kyiv has a rich and diverse history closely tied to the city's development. In 1051, the Kyiv-Pechersk Lavra was established, which marked the beginning of the district's significance as a central historical region. The 17th century saw the active involvement of Ivan Mazepa in the construction of churches in the area. As time progressed, the district grew in importance with the construction of several notable structures in the 18th century, including palaces, government buildings, fortifications, and an arsenal made of yellow Kyiv brick. During the 19th century, the district underwent further development, with the emergence of distinct areas such as Khreshchatyk Street and Lipki and the establishment of cultural and historical institutions. However, with the growth of capitalism and urbanization, the district also faced challenges in balancing the preservation of its integration of historical architecture and modern structures [6].

Image Formation

The Image of the City Silhouette

04. Timeline of the Significant Events and the Image Bearers of the Environment, Author's illustration, 2022.



19th to Early 20th Centuries: A Period of Rapid Development

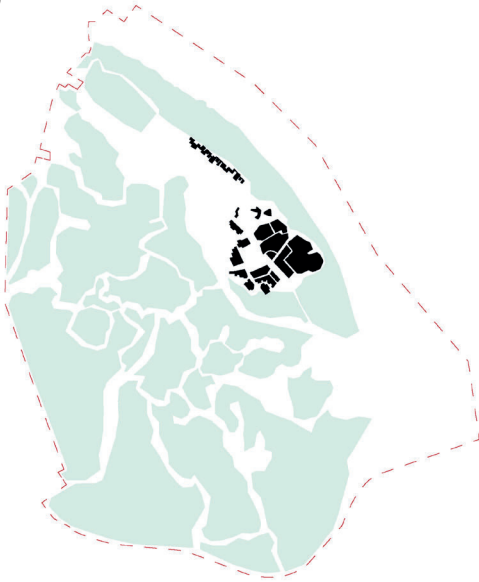
As capitalism began to take hold, Kyiv experienced rapid growth and development. The 19th century saw the emergence of Khreshchatyk Street, which became divided into distinct areas for business and high-end residential development. The Trinity Iainsky Monastery, City Museum of Antiquities and Arts, and other cultural institutions were also established during this time.

During World War I, Pechersk was heavily militarized, and the area saw the construction of housing developments in the late 19th and early 20th century, with a neoclassical urban planning layout. Two to four story buildings were erected as seen in (fig. 4) [2].

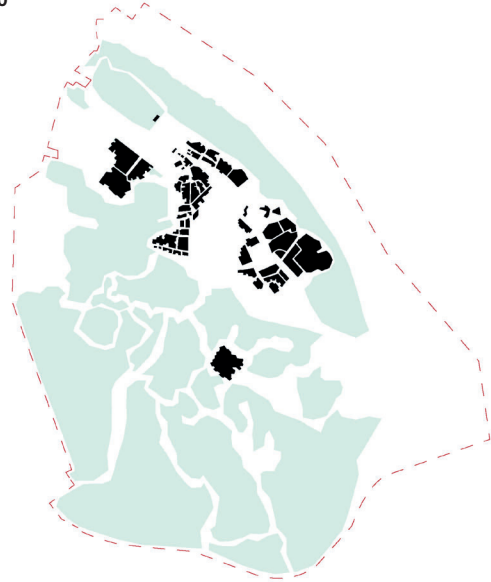
20th Century: World War II, the Soviet Period

In 1934, upon the re-establishment of Kyiv as the capital city, government offices were set up in the Lipki district. Concurrently,

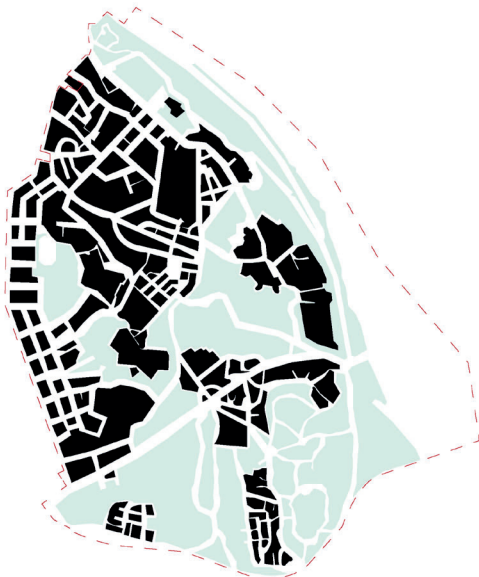
1400



1700



1947



2021



05. 0 3 km

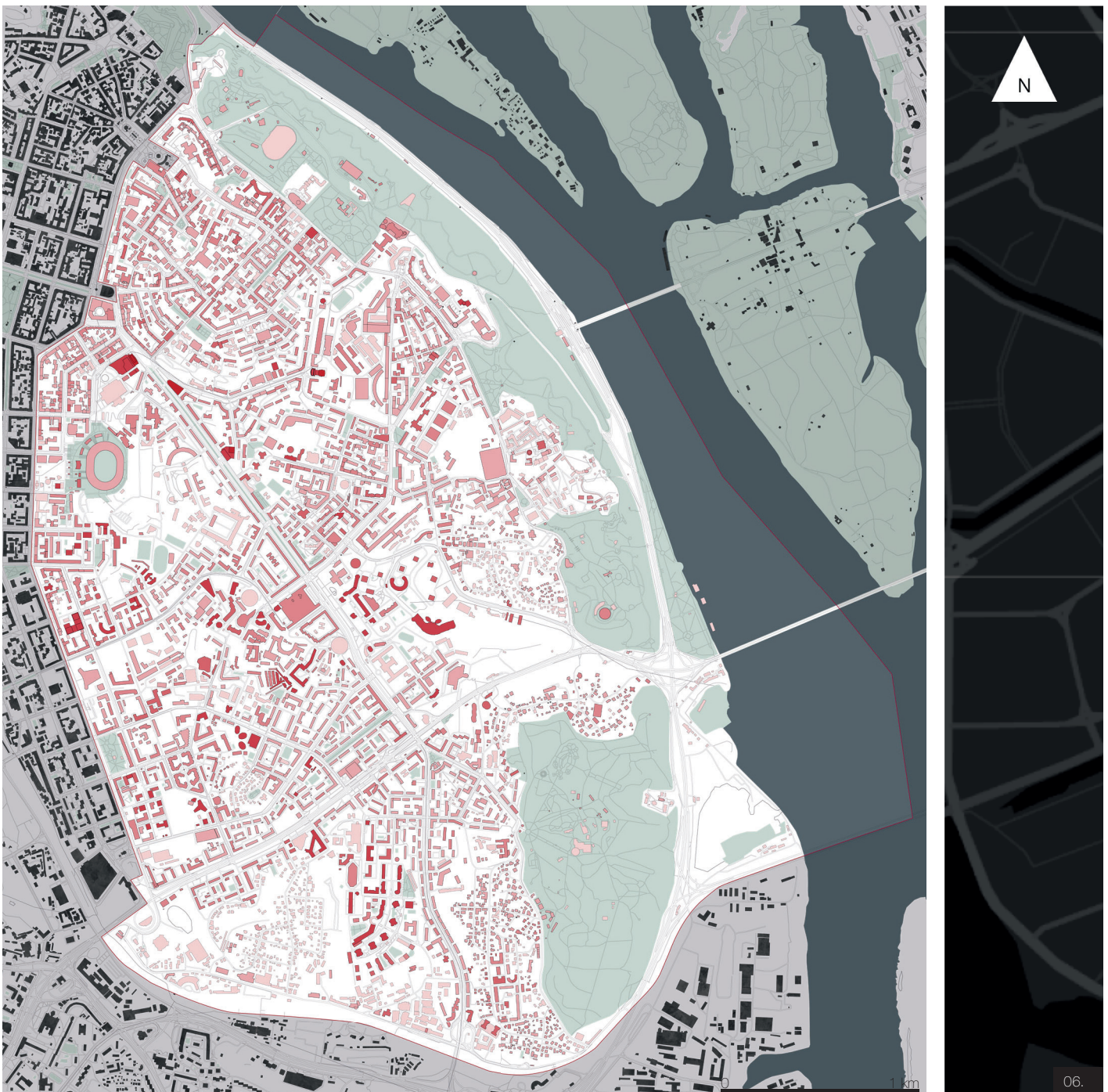
District Components

- Quarter
- Landscaping
- District boundaries

05. Development of the District Through Time,
Author's illustration, 2022.

several religious architectural monuments were demolished, including “Askold’s Grave” cemetery. During the 1930s, various buildings and infrastructure were constructed, such as the Verkhovna Rada parliament building, the NKVD headquarters (now the Cabinet of Ministers), clubs, schools, nurseries, residential buildings, the Dynamo stadium, and the Dnieper river embankment.

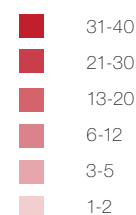
On September 19, 1941, during World War II, the city of Kyiv was invaded by German forces. During the occupation Kyiv was set ablaze twice. Streets such as Khreshchatyk, Nikolaevskaya, Merinovskaya, Olginskaya, and portions of Institutska, Lutheranskaya, Proreznaya, Pushkinskaya, Fun-Dunayevskaya, and Dumskaya Square were destroyed by fire. Roughly 200 large residential and administrative buildings were destroyed by explosions (fig. 5) and most notably, the Assumption Cathedral on November 3, 1941 [3].



21st Century: The Beginning of Independence and the Advent of New Problems

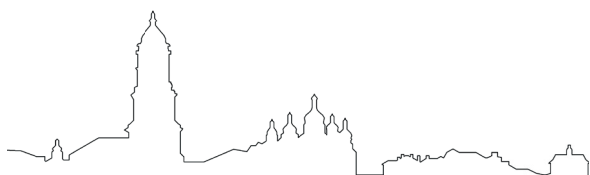
In 1991, Ukraine achieved independence. This newfound freedom led to a resurgence of architectural creativity but also introduced new challenges. In the early 2000s, illegal construction practices became prevalent in Ukraine. On December 2, 2010, a law known as “On the regulation of urban development” was passed, which directly contravened the Constitution, thereby initiating the erosion of the management system for urban development. As a result, the number of building stories began to increase rapidly. In 1997, the Kyiv Institute of Master Planning began to draft a master plan for the city, a process that continued until 2020, with the plan ultimately approved in 2002. By law, this master plan should have been updated every five years. However, it remained in force for over 20 years. The proposed master plan for 2020-2045, however, does not comply with established standards [8] (fig. 6).

Number of Storeys

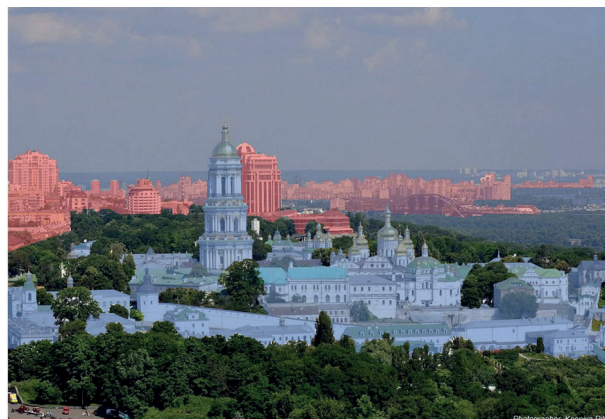


06. Height of the Buildings in the Pechersky District, Author's illustration, 2022.

1860



2021



07.

Visual Conflicts in the Urban Skyline

Each city has its unique skyline, shaped by factors such as the local landscape, individual buildings, and architectural complexes. The more varied and strategically located these elements are, the more prosperous the city's skyline will appear [8, 9]. However, chaotic buildings forms and significant variations in building height degrade the streetscape and clutter the urban composition with unnecessary information, juxtaposing dominant forms and accents among otherwise unremarkable buildings. This problem affects the Pechersk district particularly [2]. As one of the first monasteries in Kievan Rus and a significant Orthodox shrine, the Kyiv-Pechersk complex pointedly represents the problem of chaotic development in the area. From certain angles, the complex maintains its original appearance, while from others, changes to the skyline can be perceived as visual interference in the background.

The contrast in the district skyline between the years 1860 and 2021 is particularly striking. The main factors contributing to this change can be identified as the roof profiles and the main building volumes. In the earlier views, the domes of the Great Lavra bell tower and the monastery's low-rise secondary buildings dominate, creating an exciting and varied silhouette. As this silhouette examined in 2021, new elements, such as panel and multi-story buildings, have been added to the background, most of which feature flat roofs. Many of these are visually overwhelming, thus diminishing the historic silhouette and reducing curves and small details to straight lines. This environment directly impacts the perception of the Kyiv-Pechersk Lavra, which is such an important architectural object for Ukrainian history. Its grandeur is significantly diminished by the gray, uninspiring, high-rise buildings in the background (figs. 7–8).

City Silhouette

- Kyiv Pechersk Lavra
- New Buildings
- Line of the Silhouette

07. Changes in the City Silhouette Through the Decades, Author's illustration, 2022.

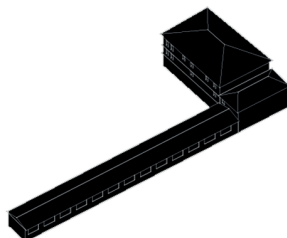
08. The Dominant Shapes of the Selected Perspective, Author's illustration, 2022.

3D models

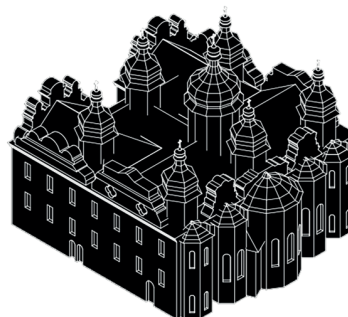
Kyiv Pechersk Lavra Buildings



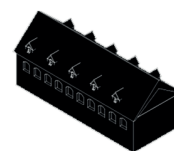
1. Great Lavra Bell Tower



2. Pilgrimage Department of the Lavra

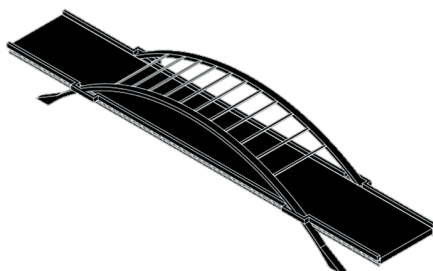


3. Uspensky Cathedral



4. Assembly Hall of the Lavra

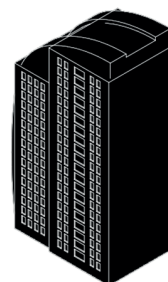
Modern Background Buildings



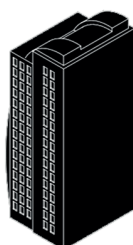
5. Podilskyi Bridge



6. Hotel Salute



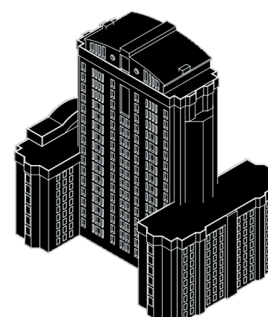
7. Stone Park Residential Complex, Pavilion 1



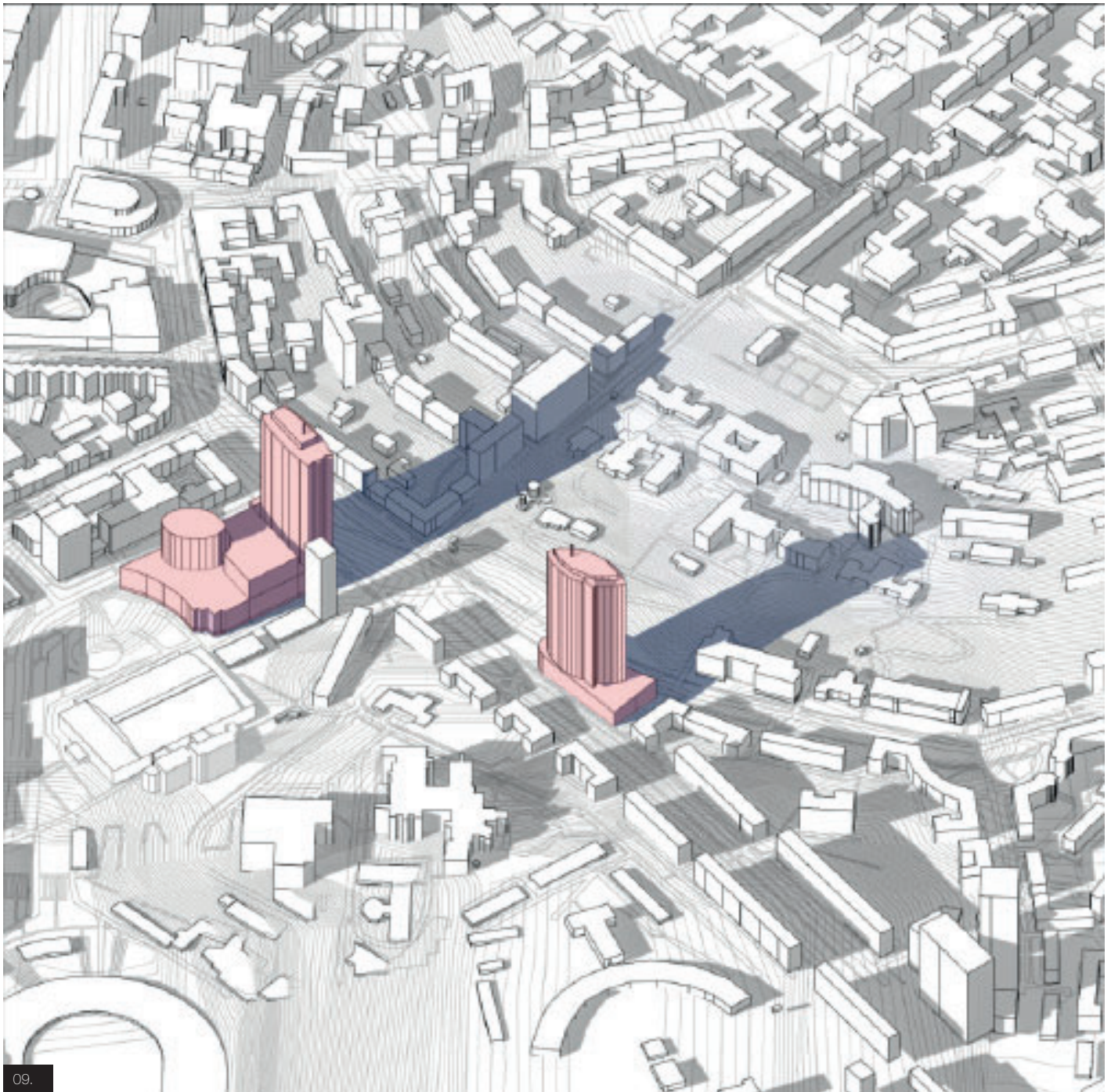
8. Stone Park Residential Complex, Pavilion 2



9. Diamond Hill Residential Complex



10. Grushevsky 9A Residential Complex



Darkening of the District by High-Rise Buildings

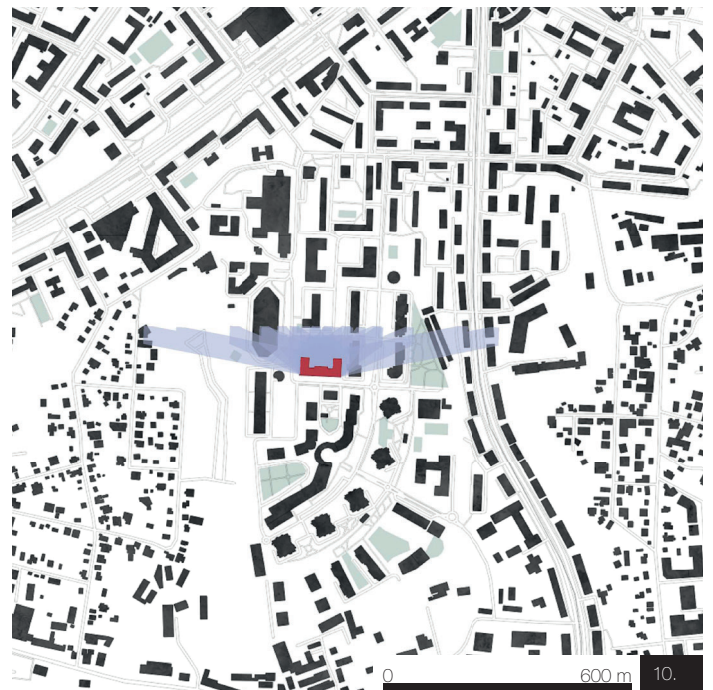
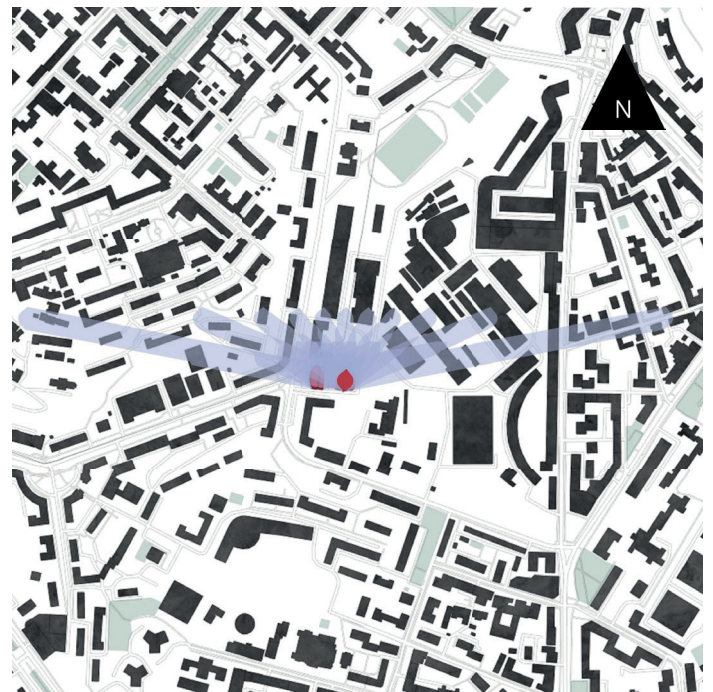
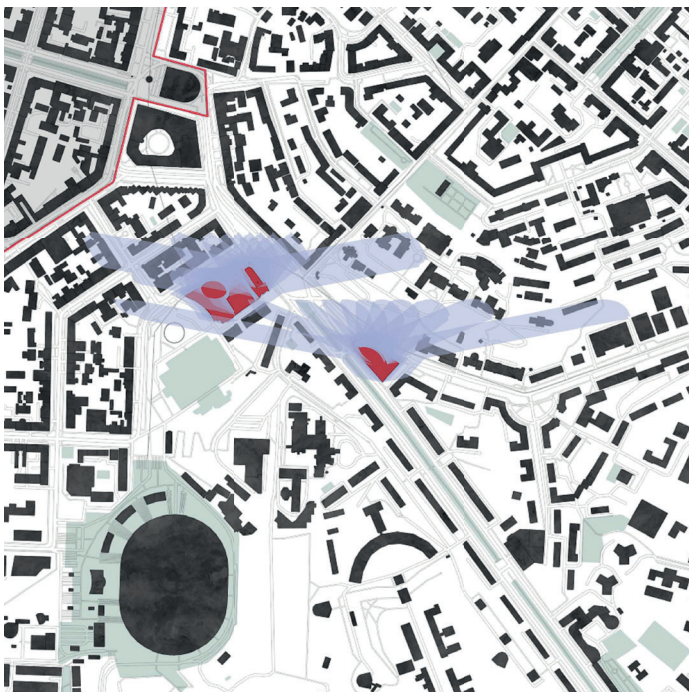
High-rise buildings are an integral part of the urban environment, but they also have a negative impact. The large shadows cast by skyscrapers can negatively affect nature and human life. The shadows cast by these buildings on neighboring buildings, streets, parks, and open spaces reduce access to natural light. Kyiv, located in the North-western climatic region, is characterized by comfortable, cool summers and cold winters; the shadows cast by skyscrapers can reduce solar heat gain during the cold season and negatively impact vegetation, which is essential for people's social activities. The lack of direct sunlight also undermines the concept of green architecture, hindering large-scale landscaping [5].

Additionally, high-rise buildings lead to low insolation, that is, the level of radiation that buildings, plots, and land areas receive from direct sunlight. The lack of sun can cause disturbances in the body's vital functions. Some of the most common consequences of

Darkening from High-Rises

- High-Rise
- Shadow

09. Darkening from the High-Rises, Maryna Hrechanovska, 2022.

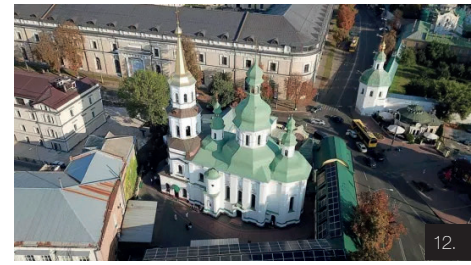


low insolation are a slowdown in metabolism, a decrease in visual acuity, and a deterioration in physical and emotional states [10]. During the reconstruction and construction of new buildings, standards require the fulfillment of insolation conditions and specify the coefficient of natural light in the premises for existing buildings and new urban development projects. One of the primary methods for optimizing insolation is the determination of building orientation, height, and location within the urban fabric. It is essential to consider the building's intended purpose, the climatic characteristics of the immediate area, and the nature of existing urban development [15] (figs. 9–10).

Darkening of the District

- High-Rises
- Shadow

10. Darkening of the District, Maryna Hrechanovska, 2022.



Zones

- New Residential Construction
- Complex Reconstruction for the Future
- Buffer Zone of Cultural Heritage Objects
- Adjustment of Buffer Zone

- 11. Pechersky District, Propositions 2025, Mariia Lytvynenko, 2022.
- 12. St. Theodosian Stauropygian Men's Monastery, 2018.
- 13. Kyiv Pechersk Lyceum No. 171 "Leader" 2017.
- 14. Future Residential Zone, Mariia Lytvynenko, 2022.

Consequences of New Housing Development

Ukraine's construction industry has been experiencing significant growth in the past decade. According to the State Statistics Service of Ukraine, roughly one-sixth of the country's total housing was constructed in Kyiv [3]. Given these trends, the Pechersky district will continue to see further development. However, new buildings have negatively impacted the environment beginning with the initial design stages. The desire to quickly achieve profits and minimize costs often results in a significant decline in construction quality. This can be attributed to several factors, such as:

- The absence of proper oversight of developers.
- The alteration of urban planning standards and technical and regulatory documentation for building construction to suit developers' interests.



According to the State Statistics Service of Ukraine, in 2018, 8,689.4 thousand square meters of housing were occupied, with 498.4 thousand square meters being constructed without obtaining the necessary construction permits [11]. It is essential to undertake a sensitive renovation of existing buildings while preserving their authenticity and traditional character and adapting them to meet the modern needs of residents. If no significant changes are implemented in the construction sector, the problems in the Pechersk district will continue to worsen. Given the historical significance of the Pechersk district, the problems associated with chaotic urban development pose a significant threat to the region's cultural heritage (figs. 11–12).

Landmarks in the Area

 Kyiv-Pechersk Lavra

15. Negative Forecasts for the Residential Zone in the Pechersky District, Author's illustration, 2022.

List of References:

1. Oleksandr Anisimov; Svitlana Shlipchenko, 2022. 4Blocks in Podil: Kyiv's Response to the Crisis of Modernist Planning [online]. 2022. [Accessed on November 24, 2022]. Available: <http://mics.org.ua/journal/index.php/mics/article/view/199>.
2. Bekker A.M., Shchenkov A.S. Modern urban environment, and architectural heritage, M.Stroyizdat, 1986, p. 83.
3. L.O. Boginska, 2018. Status and development prospects of the construction industry of Ukraine [online]. [Accessed on November 24, 2022]. Available: [http://www.lef.lviv.ua/files/archive/journal/2018/2\(20\)_2018.pdf#page=25](http://www.lef.lviv.ua/files/archive/journal/2018/2(20)_2018.pdf#page=25).
4. Stephy Chung, 2017. An unusual look at some of the world's densest megacities [online]. [Accessed on November 24, 2022]. Available: <https://edition.cnn.com/style/article/jasper-james-double-exposure/index.html>.
5. Anastasia Ischenko, 2020. Pechersky district: elite, beautiful, and exorbitantly expensive [online]. 2020. [Accessed on November 24, 2022]. Available: <https://www.segodnya.ua/longread/pechersk/index.html>.
6. Mehrdad Karimimoshavera; Mastooreh Parsamanesha; Farshid Aramb; Amir Mosavi, 2021. The impact of the city skyline on pleasantness; state of the art and a case study [online]. 2021. [Accessed on November 24, 2022]. Available: <https://www.sciencedirect.com/science/article/pii/S2405844021011129>.
7. Kuznetsov A.V., Denisov E.A., Parfenov A.V., and Shapovalova V.A., 2016. To the question of the duration of insolation of the built-up territory [online]. [Accessed on November 24, 2022]. Available: <https://www.elibrary.ru/item.asp?id=29081047>.
8. Leshchenko N.A., Guley D.V., 2019. Regeneration of the residential quarter of the Podil district in the context of the historical building of the city of Kyiv [online]. [Access on November 24, 2022]. Available: <https://repository.knuba.edu.ua/bitstream/handle/87654321/6017/201969-226-235.pdf?sequence=1&isAllowed=y>.
9. Müller-Menkens G. New life of old buildings. Continuity in the development of architecture. M. Stroyizdat, 1981. p.34. Shimko. V.T., 2004. Design of Architectural Environment.
10. Shimko. V.T., 2004. Design of Architectural Environment.
11. Svitlana Linda, 2021. "Socialist postmodernism": residential architecture in Kyiv Podil district (Ukraine) [online]. 2021. [Accessed on November 24, 2022]. Available: <https://rb.gy/ekkxse>
12. Pecherska District State Administration in the City of Kyiv Official Internet Portal, 11/2022 [Accessed on November 24, 2022]. Available: <https://pechersk.kyivcity.gov.ua/content/mennyu-1.html>.
13. Didenko Serhiy, 2019. Construction in Ukraine: assessment and development prospects [online]. [Accessed on November 24, 2022]. Available: <https://ua.news.ru/money/budivnytstvo-v-ukrayini-otsinka-ta-perspektyvy-rozvytku>.
14. Oleg Smirnov, 2019. Influence of high-rise buildings on the city and the urban environment [online]. 2019. [Accessed on November 24, 2022]. Available: https://www.researchgate.net/publication/333709529_Vlianie_vysotnoj_zastrojki_na_gorod_i_gorodskuu_sredu.
15. Wojciech Terlikowski, 2017. Interdisciplinary diagnostics in the process of revitalization of historic buildings, in terms of changing their function [online]. 2017. [Accessed on November 24, 2022]. Available: <https://rb.gy/9z3qat>.
16. WIKIPEDIA, 11/2022. Kyiv [online]. 2022. [Accessed on 24. November 2022]. Available: <https://ru.wikipedia.org/wiki>.

List of Figures:

1. Panoramic view of the Kyiv-Pechersk Lavra. Kirill Rudenko, 2018. History [online]. 2018. [Accessed on October 26, 2022]. Available: <https://www.gettyimages.com/faq/working-files>.
2. Names and location of various high-rise buildings and architectural monuments, authors' illustration, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on October 25, 2022]. Available at: <https://cadmapper.com/> and Google Maps [online]. Google, 2022 [Accessed on October 25, 2022]. Available: <https://www.google.pl/maps>.
3. Zoom In: Density of high-rise buildings and architectural monuments. authors' illustration, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on October 25, 2022]. Available: <https://cadmapper.com>.
4. Timeline of the significant events and the image bearers in the local environment, authors' illustration, 2022, Historical development of Kyiv 17.
5. Development of the district through time, authors' illustration, 2022, based on: Kyiv historical maps. [Accessed on October 31, 2022]. Available: <http://toursde-kiev.com.ua/ru/map>.
6. Height of the buildings in the Pechersky district, authors' illustration, 2022, based on: OSM Buildings [online]. OpenStreetMap, 2022. [Accessed on October 31, 2022]. Available: <https://osmbuildings.org/?lat=50.44070&lon=30.52488&-zoom=16.2&tilt=30>.
7. Changes to the city skyline through the decades, authors' illustration, 2022, based on: Kyiv-Pechersk Lavra, 1860. History [online]. 2022 [Accessed on November 15, 2022]. Available: https://en.wikipedia.org/wiki/Kyiv_Pechersk_Lavra.
8. The dominant forms in the selected perspective, authors' illustration, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on December 04, 2022]. Available: <https://cadmapper.com>.

9. Darkening caused by high-rise buildings, author's illustration, Hrechanovska, Maryna, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on November 08, 2022]. Available: <https://cadmapper.com>.
10. Darkening within the district, author's illustration, Hrechanovska, Maryna, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on November 08, 2022]. Available: <https://cadmapper.com>.
11. Plan of Pechersky district, Propositions 2025, author's illustration, Lytvyneko, Mariia, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on October 25, 2022]. Available: <https://cadmapper.com/> [Accessed on November 08, 2022]. Available: <http://kyiv-landuse.com/content/proekt-generalnogo-planu-do-2025-r-2009-2020#7>.
12. St. Theodosian Stauropygian Men's Monastery. 2018. History [online]. 2018. [Accessed on December 09, 2022]. Available : https://www.facebook.com/feodosii.stavropigia/photos/?ref=page_internal.
13. Kyiv Pechersk Lyceum No. 171 "Leader" 2017. History [online]. 2017. [Accessed on December 09, 2022]. Available: <https://rb.gy/qkhvq6>.
14. Plan of a future residential zone, author's illustration, Lytvyneko, Mariia, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on October 25, 2022]. Available: <https://cadmapper.com>.
15. Negative forecasts of the residential zone in the Pechersky district, author's illustration, 2022, based on: Cadmapper [online]. Map data, OpenStreetMap contributors, 2022 [Accessed on October 25, 2022]. Available: <https://cadmapper.com>.