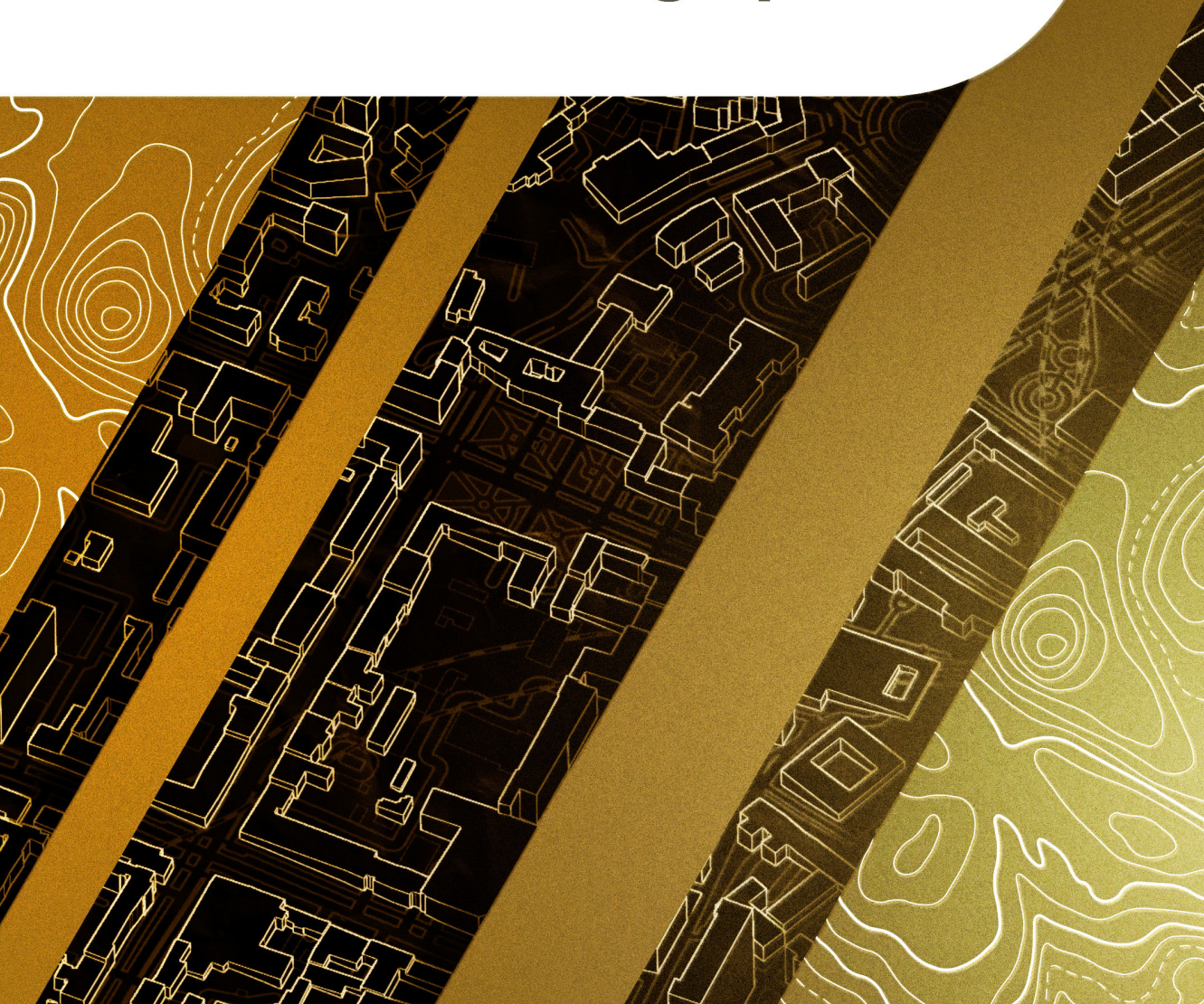


Qu Rulan

Monography

The historical journey of Ukrainian urban cartography and architectural graphics



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Edited by Prof.
Elena K. Blinova

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This monograph is devoted to Ukraine, positioned at the crossroads of the East and the West, embodies the confluence of diverse cultures and the shifting powers across the Eurasian continent. This unique positioning offers a rich tapestry for studying the integration and interaction of various civilizations. In the current international geopolitical landscape, promoting peace and prosperity through mutual learning among civilizations is crucial. This monograph aims to leverage historical experiences to support the protection of cultural heritage and the sustainable development of cities along "The Belt and Road", fostering a deeper understanding and cooperation among nations. The monograph is poised to significantly enrich China's area studies on Ukraine and other regions by providing a scientific basis for the reconstruction of Ukraine's historical cities post-war. Her work is vital for safeguarding the common cultural heritage of humanity, ensuring that the historical and architectural legacies are preserved for future generations. By examining the intricate layers of urban and architectural history, her research offers insights that are essential for both academic and practical applications in heritage conservation and urban development.

Dr. Qu Rulan is a distinguished academic with a PhD in Architecture, currently serving as a Lecturer and supervisor at the School of Architecture, Zhengzhou University. She is also engaged as a Postdoctoral Researcher in Chinese History at the same institution. Dr. Qu is a member of the International Council on Monuments and Sites (ICOMOS), reflecting her commitment to the preservation of architectural heritage. Her research primarily focuses on urban planning history and architectural heritage protection. She has an impressive publication record, including one monograph and approximately ten papers, and has presented her work at multiple international conferences. Dr. Qu's extensive academic journey includes over a decade of study in Russia and travels to 15 countries in Europe and Central Asia, which have fueled her research interest in the history of Soviet cities.

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CONTENTS

Foreword	5
Introduction.....	6
SECTION I: URBAN AND ARCHITECTURAL REPRESENTATIONS IN DRAWINGS	9
1.1 Artistic traits in Eurasian historical architectural graphics	9
1.1.1 Architectural style and drawing representation	9
1.1.2 Symbolism in Eurasian architecture	16
1.1.3 Characteristics of Ukrainian architectural graphics.....	25
1.1.4 Techniques and materials of architectural graphics	31
1.2 Kyivan Rus and the medieval period	41
1.2.1 Renaissance and Baroque.....	47
1.2.2 Classicism and Romanticism	50
1.2.3 Art Nouveau, Constructivism and Avant-Garde	52
1.3 Urban and architectural drawing in media	61
1.3.1 Architectural ouvrages and archaeological reports.....	61
1.3.2 Architecture in books and prints.....	63
1.4 The dissemination of architectural graphics in Eastern Europe	75
1.4.1 Cultural and historical conditions for the dissemination of architectural graphics in Eastern Europe	75
1.4.2 The role of Christianity and monastic centres in the dissemination of architectural knowledge	78
1.4.3 The influence of trade routes and urban centres on the development of architectural graphics.....	79
SECTION II: THE MAIN STAGES OF THE DEVELOPMENT OF UKRAINIAN HISTORICAL MAPS AND ARCHITECTURAL GRAPHICS	83
2.1 The development in the Dnipro River basin and the appearance of images of the first settlements	83
2.1.1 Geographical and historical conditions for the formation of the first settlements	86
2.1.2 First images of settlements.....	94
2.2 The development of cities and architecture in early graphics	97
2.3 Historical development of Ukrainian cities on old maps	106
2.3.1 Ukraine in old world maps	106
2.3.2 Ukrainian cities during the Kyivan Rus period (9 th -13 th century)	111
2.3.3 Ukrainian cities during the Polish-Lithuanian and Cossack periods (13 th century – 1670s).....	123
2.4 Professional activity in mapping of Ukraine during the period of the Russian Empire and Austrian rule (17th century – early 20th century)	133
2.5 Creation maps and atlas of Ukrainian cities during the survey of the Soviet territory (1917-1991)	140
2.6 Planning and architectural graphics to convey the image of the Ukrainian cities after independence (1991-)	148

SECTION III: TYPES OF GRAPHIC AND BASIC PRINCIPLES OF ARCHITECTURAL DRAWING OF UKRAINIAN HISTORIC CITIES.....	160
3.1 Topographic map of the region and city.....	160
3.2 City map	171
3.3 Urban landscape drawing.....	172
3.4 Architectural perspective drawing	178
3.5 Orthographic projection of architectural drawing	192
 SECTION IV: IMPORTANT HISTORICAL CITIES OF UKRAINE ON HISTORICAL MAPS AND ARCHITECTURAL GRAPHICS.....	 200
4.1 Kyiv	200
4.1.1 Overview of Kyiv	200
4.1.2 History of urban planning and development in Kyiv.....	204
4.1.3 Features of historical architectural in Kyiv	210
4.2 Kharkiv	218
4.2.1 Overview of Kharkiv.....	218
4.2.2 History of urban planning and development in Kharkiv	220
4.2.3 Features of historical architectural in Kharkiv.....	224
4.3 Lviv	230
4.3.1 Overview of Lviv.....	230
4.3.2 History of urban planning and development of Lviv.....	234
4.3.3 Features of historical architectural in Lviv	238
4.4 Odesa	243
4.4.1 Overview of Odesa	243
4.4.2 History of urban planning and development of Odesa.....	244
4.4.3 Features of historical architectural in Odesa	248
4.5 Dnipro	254
4.5.1 Overview of Dnipro	254
4.5.2 History of urban planning and development of Dnipro	256
4.5.3 Features of historical architectural in Dnipro	258
 Conclusions	 261
 References	 262

Foreword

This monograph presents a comprehensive analysis of the development stages of Ukrainian urban cartography and architectural graphics, set against the backdrop of historical, cultural, religious, and geopolitical transformations. It meticulously examines the visual representations of cities across various eras, from the symbolic depictions of early settlements to the detailed plans of the modernist and post-Soviet periods. The monograph delves into the artistic, technical, and material aspects of architectural graphics, exploring their symbolism and the influence of Christianity, monastic centres, and trade routes on the dissemination of visual knowledge about urban spatial organization.

The author identifies key periods in the formation of the national graphic tradition, including Kyivan Rus, the Renaissance and Baroque periods, classical and romantic styles, modernism, and the avant-garde. The study highlights the distinctive features of Ukrainian architectural graphics, such as decorativeness, a focus on religious architecture, and a tendency towards stylistic synthesis. Through cartographic analysis, the research reveals the impact of imperial administrative practices from the Russian Empire and Austria-Hungary, Soviet planning methods, and contemporary strategies of space visualization following Ukraine's independence.

The findings interpret Ukrainian architectural graphics and urban cartography as a multifaceted cultural practice in constant dialogue with European artistic and scientific traditions. These visual representations have served not only as tools for recording space but also as means of conceptualizing identity, historical memory, and urban ideals. The monograph underscores the organic connection between technical representation methods, period aesthetics, and functional tasks, ranging from sacred symbolism to engineering precision. Graphic sources are presented as crucial elements of urban knowledge that have shaped society's spatial imagination.

A detailed description of the evolution of urban imagery in key cities such as Kyiv, Kharkiv, Lviv, Odesa, and Dnipro is provided. Comparative analysis of their graphic representations reveals differences in urban development pace, architectural styles, and political and cultural influences. The monograph establishes that architectural graphics in Ukraine have played a pivotal role in shaping historical memory, identity, and narratives about urban space.

The monograph conceptualizes Ukrainian architectural graphics as an integral part of the European visual and urban planning tradition, blending local cultural codes with external stylistic influences. It also identifies gaps in the field, including insufficient digitization of sources and limited access to private collections of graphic materials. Future research could focus on the structural analysis of graphic archives, their functional role in architectural design, and the reconstruction of spatial models of historic cities based on graphic sources.

Prof. Elena K. Blinova

Introduction

The formation of Ukrainian architectural graphics and urban cartography as a separate field of historical and cultural representation was accompanied by a number of conceptual challenges related to the combination of local traditions of spatial representation with European artistic canons, technical innovations, and geopolitical transformations. The absence of a unified classification of historical sources and the fragmentation of preserved materials makes it difficult to study this heritage as a holistic phenomenon. This necessitates an interdisciplinary analysis that covers the stylistic, functional, and symbolic aspects of the graphic representation of architecture and cities in different historical epochs. The study of architectural graphics and urban imagery allows not only to reconstruct visual models of space, but also to trace the evolution of cultural identity and urban discourse in the Ukrainian lands.

The peculiarities of the formation of Ukrainian urban cartography are analysed in the study by V. Lazarenko (2020), which traces the spatial representations of Ukrainian lands in European maps of the early modern period. The author emphasizes that the cartographic representation of Ukrainian cities in most cases was created not by local but by foreign specialists, mainly German, Dutch, or Italian engravers, which led to the presence of symbolic rather than precise geographical features. The visual representation of cities became part of the geopolitical discourse, for example, through the exoticization of Ukrainian territories, the depiction of cities as military bastions or as pillars of Catholic space in the confessional struggle.

G. Brogi (2021) compares Ukrainian and Western European architectural graphics and investigates how the Italian Renaissance and later Baroque styles shaped Lviv and Kyiv architectural schools. The study traces the evolution of architectural drawings from the handwritten plans of Renaissance engineers to Baroque compositional schemes, which have been modified in Ukraine. In particular, it is pointed out that Ukrainian architects, despite the reception of pan-European canons (in particular through Polish and Austrian mediation), preserved national elements in the construction of facades, the scale of buildings, and the nature of ornamentation.

In the context of historical urbanism, the study by B. Skinner (2024) with a topographical description of Kyiv in the XVIII-XX centuries, which systematically examines the functions of cartographic documents created by military engineers of the Russian Empire. The author conducts a detailed analysis of projects, master plans, and situational drawings, considering them not only as tools of spatial planning but also as means of representing power and identity of urban space. In this context, topographic cartography is both a tool of administration and a source of reconstruction of the social and symbolic landscape of the era.

The role of architectural graphics as an instrument of representation of social status and political power is studied by B. Cherkes and I. Lytvynchuk (2020). The authors studied that the graphic materials went far beyond utilitarian architectural drawings and had a deeply symbolic function. They not only recorded the technical parameters of buildings, but also visualized claims to the legitimacy of social status, the succession of power, and belonging to a community of “lords equal to the gentry.” The drawings emphasized elements of spatial symmetry, facade stylistics, and the use of certain types of columns and portals that correlated with European representative models.

O. Bodnar's (2023) study traces the complex dynamics of the transformation of drawing practices, from the dominance of academic drawing based on the canons of Soviet engineering and architectural education to the gradual enrichment of the graphic language with new artistic means and conceptual experiments. The author analyses the formation of the author's graphics, in which the drawing ceases to be an exclusively technical document and turns into a means of spatial thinking and visual narrative. Architectural graphics of the second half of the 20th century in Ukraine appears as a hybrid form that combined elements of constructive analysis with signs of artistic expression, and also served as a mediator between the design idea and its sociocultural context.

The study by K. Pletsan *et al.* (2023) analyses a number of digital initiatives aimed at reconstructing the architectural face of Kyiv, much of which was destroyed as a result of wars, urban transformations, and political ideologies of the 20th century. The authors emphasize that visualization technologies play a role not only in preserving information about lost objects, but also in forming new forms of collective understanding of the urban past. Particular attention is paid to the interpretation of architectural heritage as a visual narrative capable of actualizing the historical continuity of urban space. Digital reconstruction appears as a tool for the medialization of memory, combining scientific accuracy and emotional involvement of the audience.

Changes in the visual representation of urban space in the context of post-Soviet transformation were analysed in the study by E.L. Leahy (2024), which considers contemporary architectural graphics not only as a tool for recording objects, but also as a means of critical reflection and visual resistance to the trends of uncontrolled development, spatial fragmentation, and loss of local identity. The author analysed examples of independent graphic practice by young Ukrainian architects that function as autonomous visual narratives. These products not only represent urban space, but also form a discursive field for criticizing established hierarchies in the urban planning environment.

In the study by E. Pietroni and D. Ferdani (2021) traces the role of architectural graphics as a tool for dialogue between historical memory and design activity. The authors thoroughly analyse examples of adaptive reinterpretation of historical objects in a graphic format, emphasizing that architectural drawings perform not only a representative or constructive function but also acquire the status of an interpretive medium between the past and the present. Within the framework of contemporary architectural practices, graphics is turning into a language of communication with the heritage, in which retrospection is not limited to formal citation of the style of past eras, but is embodied through a conceptual rethinking of the semantics of the object. Architectural graphics appear not as a fixed scheme, but as a procedural act of interaction with history.

The problem with research on the history of Ukrainian architectural graphics and urban cartography is that most works focus on the analysis of individual regions, stages, or stylistic features, leaving out the complex evolution of this phenomenon in the context of broader Eurasian cultural processes. The vast majority of historical graphic sources remain insufficiently studied in terms of technical methods, artistic traditions, and ideological content. This study partially fills this gap by systematically analysing the stylistics, symbolism, material aspects, and cultural factors that shaped architectural graphics on Ukrainian lands from the Middle Ages to the present. An analysis of the historical evolution of Ukrainian architectural graphics and urban cartography reveals the deep connections between artistic forms of spatial representation and the socio-cultural context of different eras – from Kyivan Rus to the present.

The aim of the study was to identify structural and stylistic features of architectural and cartographic visualisations of Ukrainian cities in the context of their historical development and interaction with European traditions. To achieve this goal, the following tasks were set:

1. To classify techniques and materials used in the creation of architectural graphics in different periods.
2. To analyse the role of cultural, religious, and political factors in the dissemination of architectural knowledge.
3. To study the influence of foreign (in particular, Renaissance, Baroque, and Classicist) styles on Ukrainian architectural representation.
4. To characterise the visual representation of Ukrainian cities on historical maps.

SECTION I: URBAN AND ARCHITECTURAL REPRESENTATIONS IN DRAWINGS

1.1 Artistic traits in Eurasian historical architectural graphics

1.1.1 Architectural style and drawing representation

Architectural graphics is a fundamental component of architectural design and includes the entire range of visual materials used to depict architectural ideas and concepts. It combines technical precision, artistic expression and communication ability, which is an indispensable tool for architects in all phases of the design process. The definition of architectural graphics can be seen as a comprehensive approach to creating images representing architectural objects, from general concepts to detailed drawings. It encompasses various types of drawings, such as plans, facades, sections, perspectives and axonometries. Each of these types has its own specific role in conveying information. The graphics used to represent architecture reflect not only the building itself, but also the style in which it was created. They not only define the appearance and function of buildings, but also greatly influence the artistic language of graphic representation. This influence can be traced back to different historical eras, each of which had its own unique features in architectural design and, consequently, in graphic representation.

Historically, architectural graphics emerged as a tool for communicating ideas between architects and builders. In classical civilisations, such as Ancient Egypt and Greece, architectural drawings were used for detailed planning of temples and monuments. In medieval Europe, during the Gothic period, architectural graphics helped in the construction of complex structures, such as cathedrals with their intricate vaults and stained-glass windows. One example is the drawing of Notre Dame Cathedral in Paris, which displays exquisite detailing of architectural elements.

The classical architectural style, inspired by Ancient Greece and Rome, is one of the most influential in the history of architecture. Its characteristic features, such as symmetry, proportionality, the use of columns and architraves, have greatly influenced the artistic language of graphic representation. Classical-style graphics strived for precision and symmetry, displaying clean lines and detailed ornaments. One of the most prominent examples is the architectural drawings of Vincenzo Scamozzi (Fig. 1), an Italian Renaissance architect whose work was noted for its detail and adherence to classical proportions (Tiso, 2023). His graphics demonstrate the use of clear and precise lines to emphasise the beauty and harmony of architectural forms.

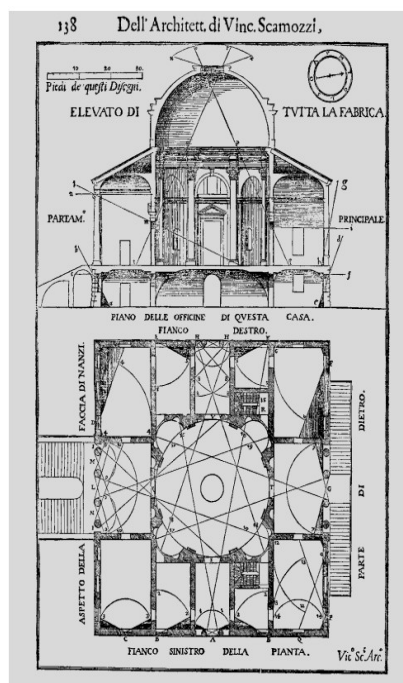


Figure 1. Villa plan and elevation with light paths (Vincenzo Scamozzi, *L'idea dell'architettura universal*, Venezia, 1615)

Source: G. Beltrami (2006).

Gothic, which dominated Europe during the Middle Ages, was a completely different architectural approach. This style is marked by height, graceful arches, stained-glass windows and rich decorative elements. The artistic language of Gothic graphic representation emphasised vertical lines and complex patterns, reflecting a sense of sublimity and spirituality. Architectural depictions of Gothic cathedrals, such as Cologne Cathedral, often include detailed drawings of stained-glass windows and ornaments. They used delicately drawn lines and complex shadows to convey depth and detail in architectural elements.

The transition from the Middle Ages to the Renaissance brought new perspectives on architecture, where classical principles were once again valued. The Renaissance emphasised harmony, proportions, and a return to ancient forms. The artistic language of graphic representation of this period included the use of perspective and careful attention to detail. Leonardo da Vinci (Fig. 2) and Albrecht Dürer (Fig. 3), for example, were masters of Renaissance architectural graphics, and their works demonstrate the use of scientific methods to create in-depth and accurate images of buildings (Cerveró-Meliá et al., 2020; Panofsky, 1955). Their drawings combine precise geometry with artistic expression, reflecting a desire for idealisation and harmony.



Figure 2. Leonardo's preparatory study for 'Adoration of the Magi' (1481), Uffizi, Florence
Source: R. Spence (2015).



Figure 3. Albrecht Dürer and others, The Triumphal Arch, c. 1515
Source: Albrecht Dürer (2024).

The Baroque, which followed the Renaissance, was a more dynamic and emotional style. Architectural depictions of Baroque buildings often show dramatic effects of light and shadow, complex elements and rich ornamentation. The works of Francesco Borromini or Guarino Guarini are prime examples of Baroque graphics, where the emphasis on movement and drama is achieved through the use of curved lines and contrasts of light and shadow.

Classicism, as well as its revived form, neoclassicism, returned to the simplicity and rationality of classical forms, contrasting them with Baroque opulence. The artistic language of graphic representation of these styles emphasised clear, simple lines and restrained elegance. Architectural drawings of this period frequently focused on symmetry and geometry, reflecting the rationality and orderliness of design. The architectural works of Carl Friedrich Schinkel are outstanding examples of Neoclassicism (Fig. 4). His drawings demonstrate a strict adherence to classical principles and the use of minimalist lines to emphasise the grandeur and harmony of architectural forms.



Figure 4. Karl Friedrich Schinkel. Perspective view of the Schauspielhaus in Berlin.

Sammlung architektonischer Entwuerfe (Berlin, 1866)

Source: K.W. Forster (2006).

At the beginning of the twentieth century, Art Nouveau and the avant-garde opened up new horizons for architectural graphics. Art Nouveau, with its desire for nature and organic forms, influenced the artistic language of graphic representation through the use of smooth, curved lines and decorative details. Antoni Gaudí's works, in particular his drawings for the Sagrada Família, demonstrate unique and complex forms that reflect the organic motifs of Art Nouveau (Fig. 5). Avant-garde movements such as constructivism, boho and futurism have influenced architectural graphics by emphasising functionality, simplicity and new materials. The graphics of these styles focus on abstract shapes, geometric lines and the use of new technologies. Vladimir Tatlin's works illustrate new approaches to architectural design and graphics (Fig. 6), where experiments with form and material were important (Nisbet, 2010).

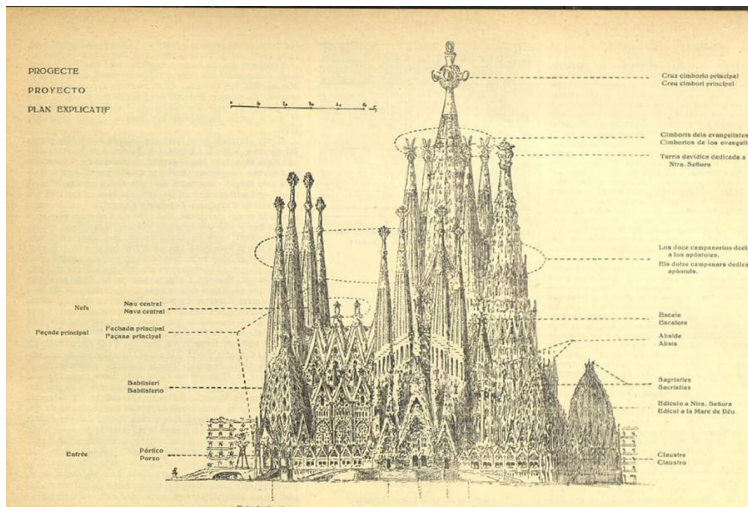


Figure 5. Plan of the Sagrada Família, published in 1929 by architect Isidre Puig Boada, a disciple of Gaudí

Source: *Sagrada Familia Plans and Gaudí's Design Explained* (2025).



Figure 6. “Monument to the Third International” model “Monument to the Third International,” model designed by Vladimir Tatlin, 1920

Source: *J. Nisbet* (2010).

Contemporary architecture, with its wealth of different styles, including high-tech, minimalism, deconstructivism and ecological design, also influences the artistic language of graphic representation. Contemporary graphics often use digital tools to create accurate and photorealistic visualisations. Architectural images now include sophisticated computer models and simulations that allow for the design and analysis of buildings in three dimensions. For example, the works of Zaha Hadid (Fig. 7) and Frank Gehry (Fig. 8) typically showcase complex, curved shapes that are created and displayed using computer graphics. Their designs require detailed digital models that can convey all aspects of the building's design and functionality. In the early stages of design, architectural sketches help architects experiment with forms and spatial concepts. These sketches may be simple, but they are critical to the development of ideas. For example, Frank Gehry's early sketches for the Guggenheim Museum in Bilbao reflect his search for dynamic forms and unusual structural solutions that became iconic for this project (Flynn, 2023) (Fig. 9). During the detailing phase of a project, architectural drawings are transformed into more precise and detailed drawings that are used to obtain building permits and ensure accurate construction work. These drawings contain precise dimensions, materials, specifications, and other critical details. They are a kind of "language" that architects use to communicate with engineers, builders, and clients. For example, Renzo Piano's detailed drawings for the Pompidou Centre in Paris illustrate the complex integration of structural elements and functional systems that allows this building to become an innovative cultural centre (Goffi, 2022) (Fig. 10).

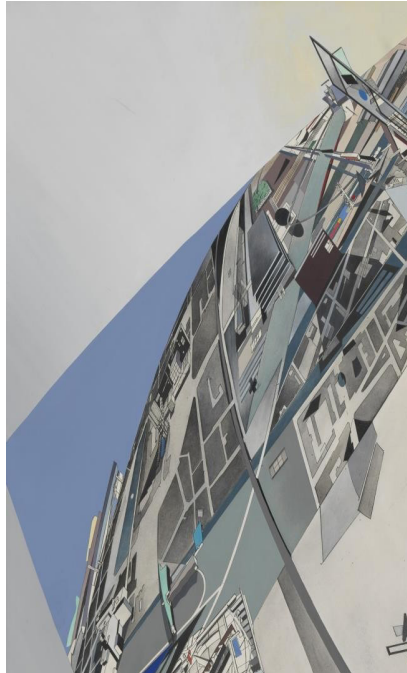


Figure 7. Zaha Hadid, "The World (89 Degrees)", 1984

Source: *F. MacLeod (2014).*



Figure 8. Frank Gehry, Steeves House, Los Angeles, California, 1958-59 perspective from valley side, reproduction of original drawing
Source: Frank Gehry Drawings (2020).

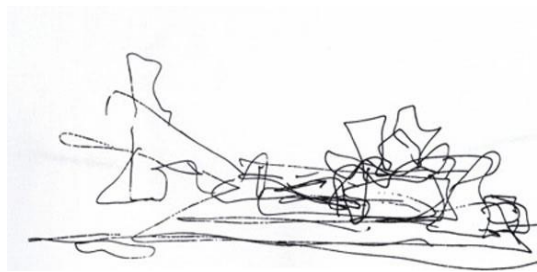


Figure 9. Guggenheim Museum Bilbao Project Sketch, Frank O Gehry, 1991

Source: C. Bardt (2022).

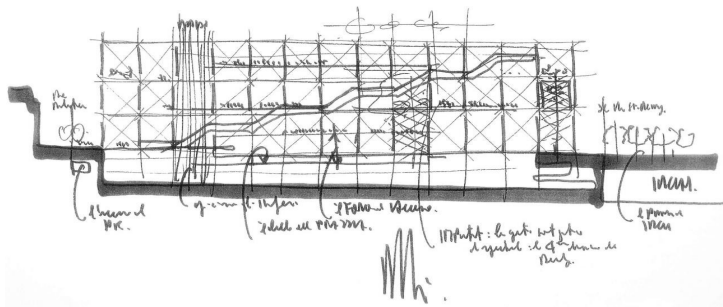


Figure 10. Drawings for the Pompidou Centre in Paris

Source: Centre Georges Pompidou (2025).

Thus, each architectural style influences the artistic language of graphic representation, reflecting the cultural and technological changes of its time. Architectural graphics, in turn, becomes a kind of mirror of the style it represents, conveying its aesthetic and functional characteristics. Architectural graphics includes a variety of techniques and methods that allow architects to visualise their projects at all stages, from concept to implementation. These methods not only ensure accuracy and detail, but also help to convey the artistic expression and aesthetic qualities of the building. It is worth having a look at the main techniques and methods used in creating architectural images (Table 1).

Table 1. Main techniques and methods used to create architectural images

Approach/Method	Description	Examples of usage
Perspective and axonometry	Perspective gives the impression of three dimensions on a two-dimensional plane. There are one-point, two-point and three-point perspectives.	Single-point perspective for interiors. Two-point perspective for depicting the corners of buildings. Axonometry for technical diagrams.
	Axonometry depicts objects without vanishing points, maintaining scale and proportions without distortion.	Sections of engineering systems without distortion.
Sections and plans	Sections show a vertical view of a building cut in half, demonstrating the structure and organisation of space.	Sections are used to analyse internal structures such as staircases or elevators.
	Plans provide a horizontal view of the building, showing the location of rooms, walls, and doors.	Floor plans for detailed room layouts and communication systems.
Techniques and materials	Traditional techniques: pencil, Indian ink, watercolour, or gouache. Each of them provides unique visual effects.	Indian ink for detailed technical drawings. Watercolour for artistic presentation drawings.
	Digital methods: use AutoCAD, Revit, SketchUp, 3Dmax to create detailed and accurate drawings.	AutoCAD for creating technical drawings. Revit for three-dimensional modelling of buildings.
Colour and lighting	Colour helps to highlight different materials, textures, or functions in a building.	Usage of different shades to indicate facade materials.
	Lighting defines how a building looks under different lighting conditions and can simulate natural and artificial light.	Visualising solar lighting to assess energy efficiency.

Source: B. Edwards (2008), P. Chlap et al., (2021), N. Kheradmandi and V. Mehranfar (2022), P.E. Debevec et al. (2023), F.D.K. Ching (2024).

1.1.2 Symbolism in Eurasian architecture

Over the centuries, European architectural graphics have been saturated with symbols and signs that conveyed deep cultural, religious and social meanings. These elements not only enhanced the aesthetic value of architectural works, but also served as keys to understanding the cultural and historical contexts of different eras. In this part, it is worth examining the use of symbols and signs in European architectural imagery, focusing on specific examples and their meanings.

Symbolism in Eurasian architectural graphics reflects the diversity of cultural, religious, and social ideas rooted in the traditions of this vast region. Architectural elements, for example, in mosques of the Muslim world not only serve practical functions but also contain deep symbolism (Astakhova, 2020). The orientation towards Mecca, which is fundamental to any mosque,

underscores the spiritual connection of Muslims with the holy city, while minarets, from which the call to prayer is sounded, reflect the aspiration towards the heavens (Fig. 11). Calligraphy and geometric ornaments have become important elements of Islamic architecture, as they convey ideas of divine wisdom and the infinity of the world. Buddhist temples in East and Southeast Asia are distinguished by architectural elements that clearly reflect the religious and philosophical concepts of Buddhism, embodying the belief in the path to enlightenment and harmony between heaven and earth. Stupas and pagodas, as iconic elements of Buddhist architecture, symbolise the process of spiritual enlightenment (Fig. 12). Each tier of a pagoda carries the idea of different stages of this path, while the pagoda's shapes embody the harmony between heaven and earth. Lions that guard the entrances to temples embody protection and strength, emphasising the importance of spiritual security in the Buddhist tradition. An important example of symbolic architecture in China is the Temple of Heaven in Beijing (Fig. 13). The round shapes of its buildings symbolise the heavens, while the square bases symbolise the earth. This architectural concept reflects the ancient Chinese cosmological view of the universe, where heaven and earth are closely connected. In addition, colours also play a significant role: red symbolises imperial power, while yellow is associated with strength and grandeur. Dragons, depicted on imperial palaces and temples, symbolise the power and divine origin of the rulers. Central Asia, particularly historic cities like Samarkand and Bukhara, is renowned for its architectural masterpieces that showcase a synthesis of the region's religious and cultural ideas. For instance, Registan in Samarkand is a complex of madrasas (Islamic schools) where intricate geometric patterns, laid out in tiles, symbolise infinity and divine harmony (Fig. 14). These patterns create an illusion of endlessness, reminiscent of the perfection of divine creation. Moreover, domes and minarets, which dominate the cityscapes, not only function as religious structures but also reflect the power and significance of Islam as an integral part of the region's social life. In Bukhara, for example, the Kalyan Mosque with its majestic minaret is also a symbol of spirituality and a cultural landmark for the Muslim world. The Kalyan minaret, standing 46 meters tall, once served as a landmark for travellers and embodied the power of Islam. Arabic calligraphy, present on the walls of many buildings, not only adds aesthetic appeal but also imparts spiritual meaning, as it contains quotes from the Quran and other religious texts, serving as reminders of Islam's spiritual values.



Figure 11. Painting of the Kaaba, Mecca

Source: *M. Gray (2025).*



Figure 12. A view of the main temple and floor plans at different levels:
a – Labrang monastery; b – Enchey monastery

Source: D.C. Rai et al. (2013).

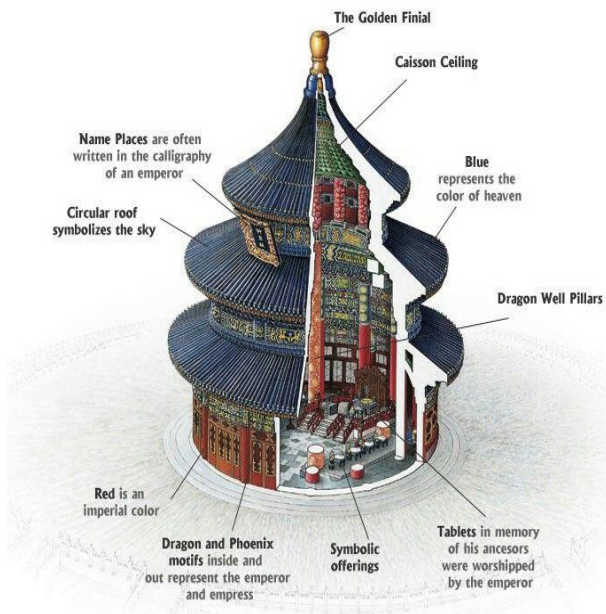


Figure 13. Temple of Heaven in Beijing

Source: Temple of Heaven, Beijing, China (1406) (2025).



Figure 14. Samarkand, Uzbekistan – The Registan – Ulugh Beg Madrasa, circa 1920
Source: K. Jambaljamts (2024).

Thus, Eurasian architectural graphics constitute a complex and multi-layered system of symbols that reflects the religious, cultural, and social aspects of various peoples and epochs of this region. It not only adorns buildings but also helps to gain a deeper understanding of the cultural and historical context in which these buildings emerged (Diesen, 2021).

In medieval, architecture served not only as a place for living and worship, but also as a means of expressing spiritual ideals and social structure. Gothic architecture, which developed from the twelfth to the fifteenth century, became a true embodiment of these trends. Cathedrals, such as Notre-Dame de Paris or St Stephen's Cathedral in Vienna, are rich in symbolic elements that aim to elevate the spiritual experience of believers and reflect the cosmic order. One of the most common symbols in Gothic cathedrals is the cross. It not only serves as the basis of the architectural plan (often buildings are shaped like a Latin or Greek cross), but also decorates the interior and exterior of the buildings. Gargoyles, which adorn the roofs and facades of Gothic cathedrals such as Notre Dame, are another important symbolic element. These sculptures, depicting fantastic creatures, are frequently interpreted as guardians who ward off evil spirits, although their practical function is to drain rainwater away from the walls of the building. Stained-glass windows also play a pivotal role in conveying symbolic meanings. They not only fill the interiors of cathedrals with coloured light, but also depict biblical scenes, saints' lives and allegories (Fig. 15).

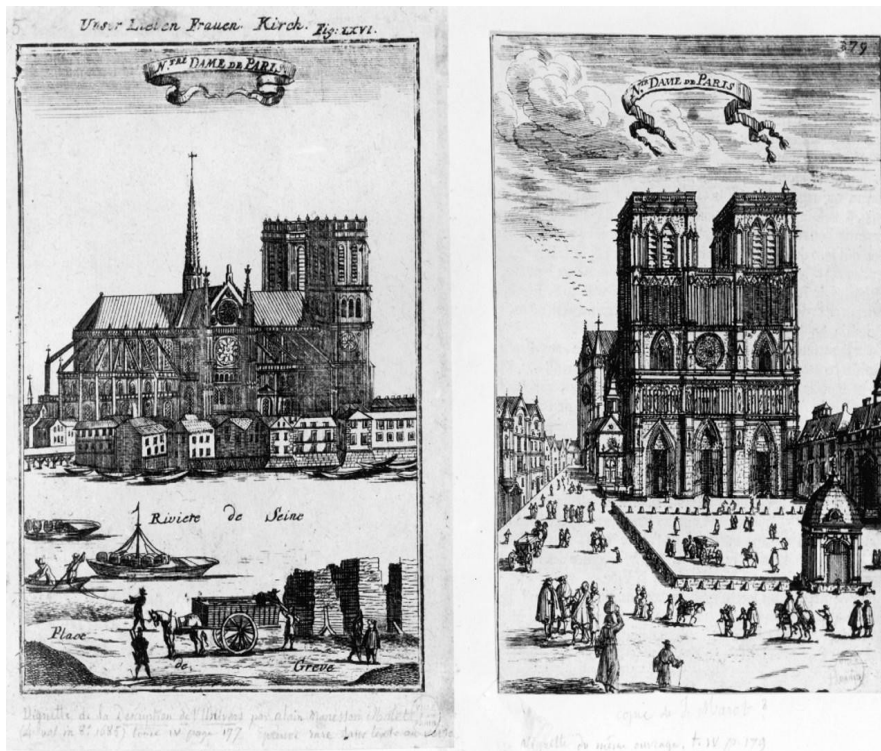


Figure 15. Notre-Dame de Paris Cathedral, 1685

Source: *Notre-Dame de Paris Cathedral* (2025).

The Renaissance, which followed the Middle Ages, brought with it a new approach to architecture and art that was deeply inspired by ancient culture. Renaissance architects and artists often incorporated mythological and cultural symbols into their work, reflecting their interest in classical heritage. The Palazzo Medici Riccardi in Florence, designed by Michelozzo di Bartolomeo, is a great example of the use of symbols in Renaissance architecture. The facade of the building is decorated with medallions depicting heroes of ancient Greek mythology, such as Hercules, who symbolised strength and courage. The motif of lions was also regularly used to symbolise protection and power. Leonardo da Vinci and Raphael, two of the most prominent Renaissance artists, also incorporated symbolism into their architectural designs and drawings. Da Vinci, for example, used perfect proportions and geometric shapes such as the circle and square in his architectural sketches to symbolise harmony and perfection. In Rome, in the Sistine Chapel, decorated by Michelangelo, numerous scenes from the Bible and ancient mythology are placed on the ceiling and walls, symbolising Christian ideas of salvation and creation.

The layout of buildings could also have a symbolic meaning. Catholic churches often had a layout in the form of a Latin cross. For example, St Peter's Basilica in Rome, one of the most famous examples of Renaissance architecture, has a cross-shaped layout that symbolises the Christian faith and the universality of the church. Palaces and residences of European nobility frequently

had a layout that emphasised their status and power (Jasieńko, 2021). For example, the layout of Versailles in the form of a branched structure, with the royal flats centrally located, symbolised the centralised power of Louis XIV and his role as an absolute monarch. In the seventeenth and eighteenth centuries, European architecture went through the Baroque and Rococo periods, which were marked by their splendour and decorativeness. During this time, symbols and signs became even more elaborate and complex, of ten reflecting the grandeur and luxury of the monarchy. The Palace of Versailles in France is a prime example of Baroque architecture rich in symbolism (Fig. 16). Louis XIV, known as the Sun King, used the sun symbol to represent his power and influence. This symbol is repeated in various parts of the palace, from frescoes to garden patterns. The sun symbol was also embodied in the central location of the Hall of Mirrors (Galerie des Glaces), which reflects the light and radiance of the king (Olivier, 2014). Heraldry has become an integral part of European architecture, especially in palaces and estates of the nobility. Heraldic symbols such as coats of arms, shields, and emblems served to emphasise the status and family history of their owners. For example, Wartburg Castle in Germany (Fig. 17), known for its heraldic symbolism, has facades decorated with the coats of arms of the Thuringian counts, who owned the castle for centuries (Bartetzky, 2015). These coats of arms include the lion, which symbolises courage and strength, as well as other heraldic figures that reflect family history and privilege.

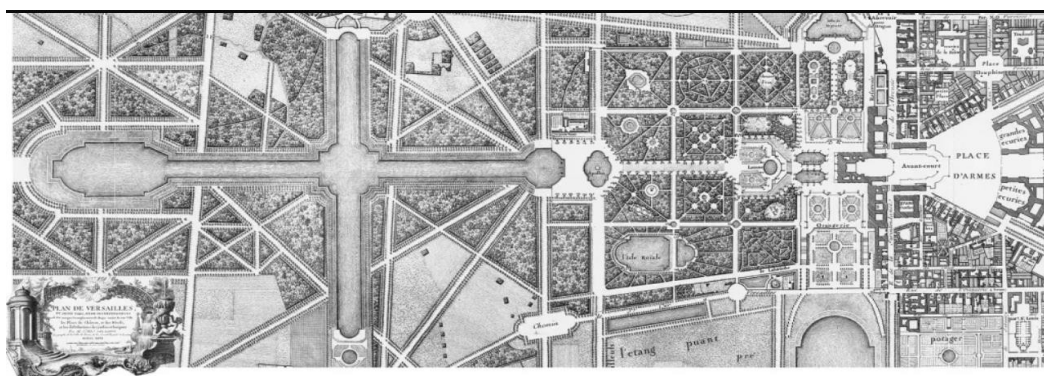


Figure 16. Plan of Versailles-both the Park and the Palace with the formal gardens c. 1746
Source: S. Somers (2021).

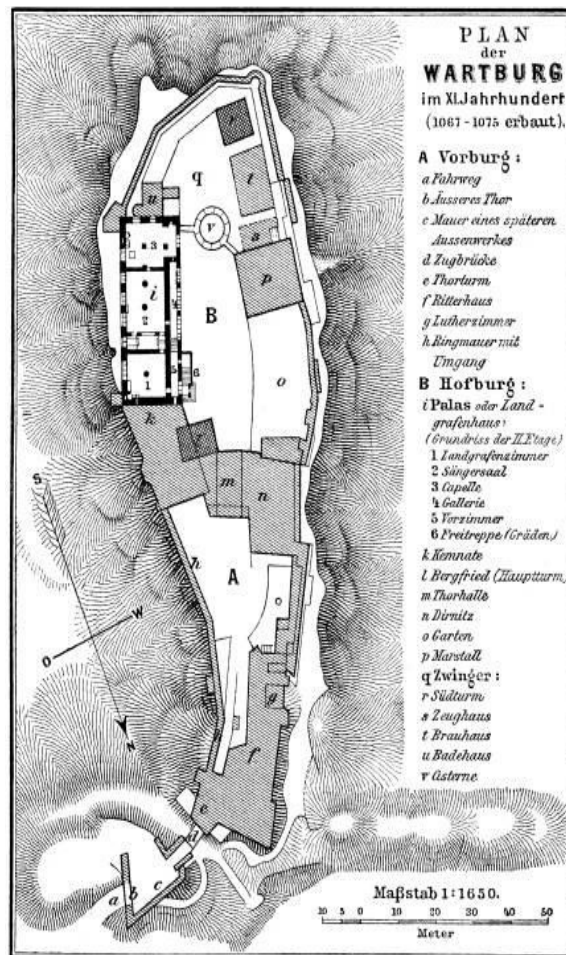


Figure 17. The plan of the castle Wartburg in Thuringia in the 11th century, Germany, digital improved reproduction of a woodcut publication in the year 1885

Source: *The plan of the castle Wartburg in Thuringia in the 11th century* (2025).

In the nineteenth century, with the development of nationalism and social change, symbols, and signs in architecture began to reflect new political and social ideas. National and political symbols became an important element of architecture, especially in public buildings and monuments. Parliamentary buildings in many European countries were designed using the neo-Gothic style, which symbolised historical grandeur and national pride. For example, the Palace of Westminster in London (Fig. 18), designed by Charles Barry and Augustus Pugin, uses neo-Gothic architecture to emphasise the tradition and permanence of the British monarchy and parliament (Schoenefeldt, 2016). The facade of the building is decorated with sculptures of kings and saints, symbolising the historical roots of the British nation. St Vitus Cathedral in Prague, also built in the neo-Gothic style, uses symbols of Czech royalty, such as the crown and sceptre (Fig. 19). These symbols reflect

the historical importance of the Czech monarchy and its role in national identity. During this period that the tradition of commemorating national heroes and historical events through monuments began. A striking example is the Arc de Triomphe in Paris (Fig. 20), built in honour of the victories of the French army, particularly after the Battle of Austerlitz in 1805. The arch was designed in 1806 as a symbol not only of military victories but also of French national identity. The arch follows the traditions of Roman triumphal arches, which symbolise the military triumphs of emperors. However, the Parisian arch, being significantly larger. It is adorned with reliefs, the most famous of which is “The Departure of the Volunteers of 1792” (often called The Marseillaise), created by the sculptor François Rude. Other reliefs depict scenes of battles, victorious returns, and other important historical events in France. From an architectural standpoint, the Arc de Triomphe embodies classical traditions with the addition of romantic motifs. Its monumental scale and strict forms reflect the influence of classicism, but at the same time, it emphasises the patriotic and heroic ideals that are characteristic of romanticism.

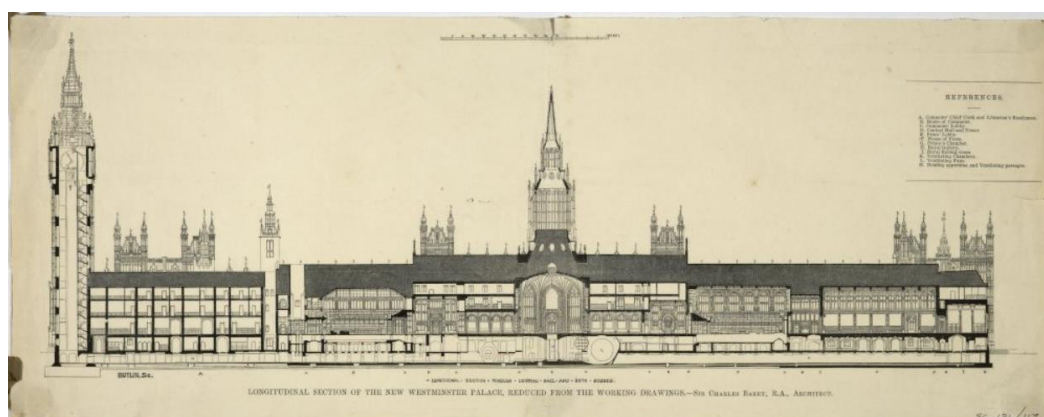


Figure 18. Houses of Parliament, Palace of Westminster, London: longitudinal section; Barry, Sir Charles, Pugin, Augustus Welby Northmore, 1850
Source: *Palace of Westminster and Westminster Abbey including Saint Margaret's Church* (2025).

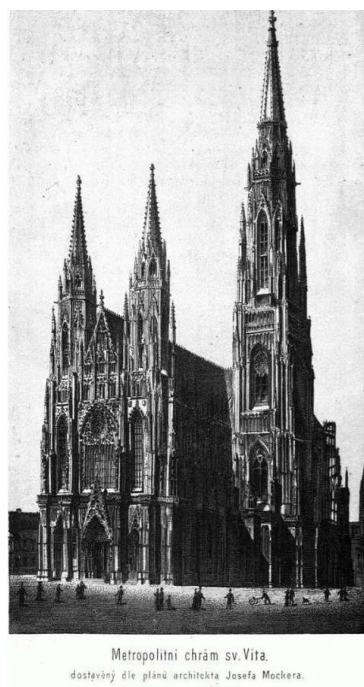


Figure 19. St Vitus project by Josef Mocker, drawing
Source: *St-Vitus project by Mocker (2025).*



Figure 20. Arc de Triomphe in Paris

Source: *l'Arc de Triomphe (2025).*

1.1.3 Characteristics of Ukrainian architectural graphics

Architectural graphics have a special place in Ukrainian culture and art. It is an integral part of architectural design and artistic interpretation of building ideas. Ukrainian architectural graphics have deep roots dating back to the Middle Ages. During this period, the first architectural traditions began to form, which were reflected in drawings and sketches of churches and monasteries. Medieval graphics preserved many valuable examples that became the basis for the further development of Ukrainian architectural art.

In the 16th and 18th centuries, under the influence of the Renaissance and Baroque, Ukrainian architectural graphics acquired new features. At this time, the construction of churches, palaces and public buildings was actively developing. The graphic representations of these buildings are distinguished by their detail and sophistication, and they have become true works of art. Artists and architects used graphics not only for designing but also for presenting their ideas to customers, which helped to improve the aesthetic level of architecture (Kolomiets, 2023). The nineteenth century was a period of significant changes in architectural graphics in Ukraine. In the era of classicism and eclecticism, architectural graphics began to use new technical possibilities. The first printed publications with architectural drawings and illustrations appeared. At this time, professional architectural education was being formed to help future architects develop their graphic skills. Prominent architects, such as Vladimir Nikolaev and Vladislav Horodetskyi (Fig. 21), used graphics to create detailed designs that became examples of architectural art. The Soviet period also had a significant impact on the development of Ukrainian architectural graphics. Socialist realism defined new aesthetic and ideological criteria for architectural creativity. The architectural graphics of this period were marked by monumentality and scale. It was used to design mass housing, industrial complexes, and public buildings. Some architects continued to develop an individual style, which was reflected in their graphic works (Fig. 22). After gaining independence, Ukraine opened a new page in the history of architectural graphics. Contemporary Ukrainian architectural graphics is marked by a variety of styles and techniques. It combines traditional methods with the latest digital technologies. Architects actively use computer programs to create three-dimensional models and visualisations. This allows them not only to accurately reproduce architectural forms, but also to convey the atmosphere and emotional impact of the building.

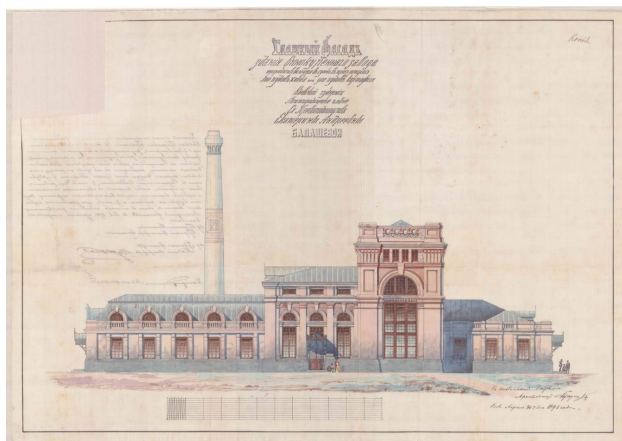


Figure 21. Drawing of the main facade of the distillery in the Moshnogorodyschensky estate by K.A. Balasheva in the village Baibuzy of the Cherkasy district of the Kyiv province, made by V.V. Horodetskyi. 30 April 1893. Derzarchiv of the Kyiv Region
Source: State Archives of Kyiv Region (2025).

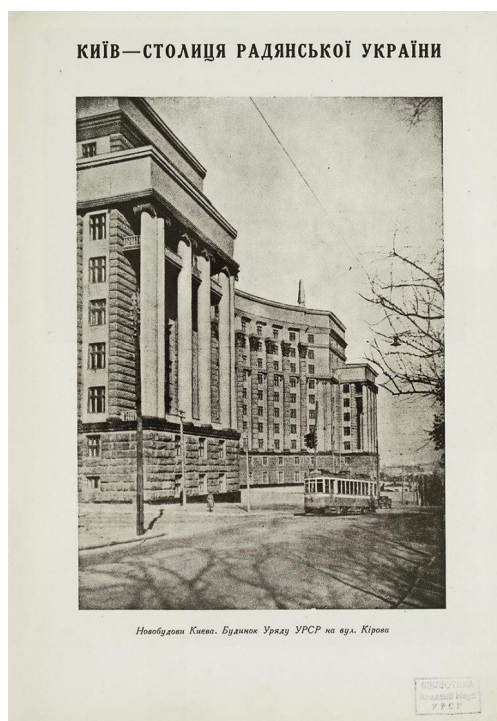


Figure 22. New buildings of Kyiv. The building of the Ukrainian SSR government on Kirov Street
Source: based on A. Bozhenko and E. Gubkina (2025).

An important feature of modern architectural graphics is its openness to international trends and influences. Ukrainian architects actively participate in international competitions and projects, which helps integrate Ukrainian architecture into the global context (Fig. 23). At the same time, they preserve their national identity by using elements of Ukrainian cultural heritage in their works. Special attention should be paid to the role of architectural graphics in shaping cultural heritage. Graphic representations of buildings from past eras are significant historical documents that allow recreating the appearance of architectural structures that have not survived to this day. They are a valuable source of information for historians, restorers, and architects involved in the reconstruction of historical objects.

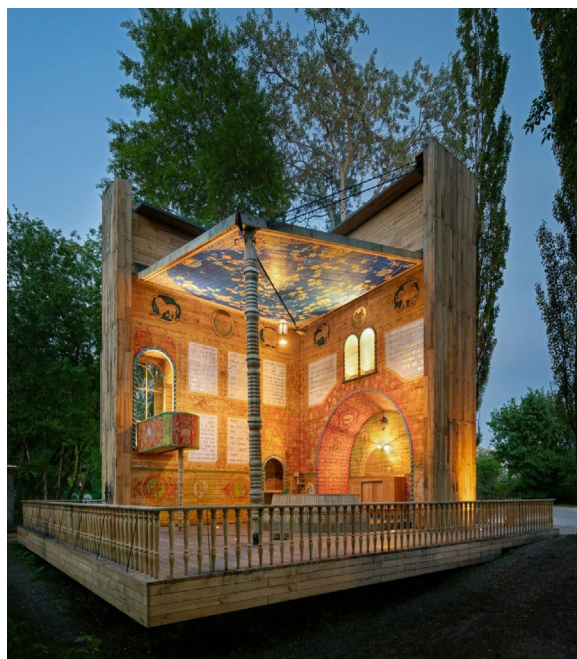


Figure 23. Synagogue Babyn Yar Holocaust Memorial Centre by Expolight
Source: *International Dezeen Awards announced longlist - Ukrainian projects got there (2022).*

Thus, architectural graphics are an essential component of Ukrainian art and culture. It reflects the evolution of architectural styles and the influence of historical and cultural factors on the development of architecture. The study of Ukrainian architectural graphics allows better understanding national identity and cultural heritage, as well as appreciating the contribution of Ukrainian architects to the world architectural heritage. In this part, it is worth looking at the specific features of Ukrainian architectural graphics and how they contribute to the formation of national identity.

Ukrainian architectural graphics have deep historical roots dating back to the period of Kyivan Rus. The influences of Byzantine architecture, which came with Christianity in 988, had a significant impact on the development of Ukrainian architecture and its graphic representation. The Byzantine tradition, with its penchant for complex geometry, rich ornamentation and symbolic

motifs, was interpreted and adapted in the Ukrainian context. These influences can be seen in architectural drawings and engravings depicting famous shrines such as St. Sophia Cathedral in Kyiv. This is one of the clearest examples of Byzantine influence in Ukrainian architecture, which in turn influenced the graphic representation of religious buildings in Ukraine (Shevtsova et al., 2020). Detailed depictions of the cathedral's frescoes and mosaics were often included in the illustrations of medieval manuscripts, which emphasised the importance of this monument in the cultural life of the country.

With the development of the Cossack state in the 17th century, Ukrainian architecture acquired a distinct national character, particularly with the emergence of the Ukrainian Baroque. This style, formed under the influence of Western European Baroque, combined elements of local traditions, making it unique to Ukrainian architecture. Ukrainian Baroque was distinguished by its restraint in the use of decorative elements compared to European examples, yet it retained the plasticity of forms and harmony of proportions (Getman, 2024). Its main features – a wealth of ornaments, symmetry, and elegance of detail – were manifested both in the architecture itself and in architectural graphics. Graphical depictions of churches and monasteries of this period, especially drawings, reflect the characteristic features of the Ukrainian Baroque (Fig. 24). Particular attention was paid to the verticality of the structures, symbolising spiritual uplift. The facades of churches were adorned with intricate carved elements such as Baroque pediments, capitals, and archivolts, giving the buildings grandeur and harmony. An important element became the domes, often multi-domed, which visually accentuated the spiritual content of the building and emphasised the national identity of Ukrainian churches.

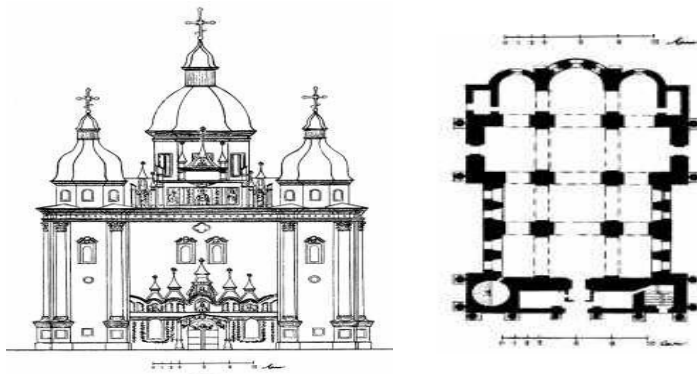


Figure 24. Western facade and plan of the St. Nicholas (Military) Cathedral in Kyiv
Source: V. Vechersky (2018).

One of the distinctive features of Ukrainian architectural graphics is its rich ornamentation. Ornaments, which are often found on building facades, in interior decorations and even in building plans, are a key element of the national style. These ornaments frequently draw inspiration from nature, using motifs of flowers, leaves, geometric patterns, and traditional folk motifs. These motifs are not only aesthetically pleasing, but also deeply rooted in folk culture and symbolism. The sunflower, for example, symbolises the sun, vitality and wealth, while the viburnum is a symbol of

beauty and youth. Graphic depictions of traditional Ukrainian huts also typically include ornamental elements that emphasise the connection between architecture and nature (Fig. 25). Huts with thatched roofs, decorated with decorative windows and doors, are regularly the subject of architectural graphics that reflect the folk aesthetics and lifestyles of Ukrainians.



Painting of facades (1 - Bershad district, Vinnytsia region, 3 - Zinkiv district, Poltava region,
4 - Novodesskyi district, Mykolaiv region)
Painting a window (2 - Kaniv district, Cherkasy region)
Painting the rosette on the gable (5 - Novodesskyi district, Mykolaiv region)

Figure 25. Ukrainian hut, 19th-20th centuries

Source: V.P. Samoilovich (1972).

Architectural plans for new public buildings, such as theatres, railway stations and government buildings, incorporated elements of Art Nouveau and Constructivism to meet new aesthetic and functional requirements.

Folk art has always been an important source of inspiration for Ukrainian architectural graphics. Traditional crafts such as wood carving, pottery, embroidery and pysanka painting reflect motifs deeply rooted in folk culture, which also find their way into architectural imagery. Decorative motifs characteristic of Ukrainian embroidery, such as geometric patterns and floral ornaments, are often integrated into the architectural details of buildings. For example, the facades of Ukrainian churches or administrative buildings may be decorated with patterns similar to those used in embroidery or carpets (Fig. 26). At the beginning of the 20th century, Ukraine began to see a revival of a national style in architecture and art known as Ukrainian Art Nouveau. This movement, which coincided with broader European trends in Art Nouveau (also known as Jugendstil or Secession),

was unique in that it merged the flowing forms and decorative motifs of the international style with distinctly Ukrainian cultural elements, folklore, and traditional craftsmanship. Ukrainian Art Nouveau emerged as part of a broader cultural awakening and national revival that sought to reaffirm Ukrainian identity during a time when the country was under imperial control—primarily by the Russian Empire in the east and Austria-Hungary in the west. Artists and architects involved in this movement aimed not only to participate in contemporary European aesthetics, but also to anchor their work in local heritage. They often drew inspiration from traditional Ukrainian wooden architecture, folk ornamentation, embroidery patterns, and baroque forms typical of historic Ukrainian churches and palaces. Ukrainian Art Nouveau was not merely an aesthetic movement—it was a cultural-political project. It expressed a vision of a modern yet independent Ukraine that embraced both innovation and tradition. Though its development was interrupted by political upheavals, wars, and Soviet centralization, the legacy of Ukrainian Art Nouveau remains visible in architecture, art collections, and cultural memory as a symbol of national expression through modern form. This movement, which combined elements of traditional folk art with modernist tendencies, was an important stage in the formation of national identity. Architects and artists of this period, such as Vasyl Krychevskyi, Oleksandr Verbytskyi, and Ivan Levynskyi, created projects that emphasised Ukrainian cultural heritage (Ukrainian architectural..., 2013). Their works incorporated decorative elements inspired by folk art and used materials and forms characteristic of Ukrainian architecture. For example, the building of the Poltava Provincial Zemstvo, designed by Vasyl Krychevsky, is a vivid example of Ukrainian Art Nouveau (Fig. 27). The facade of the building is decorated with decorative elements reminiscent of traditional ornaments of Ukrainian houses and churches. This approach to the design of architectural structures not only decorated the buildings, but also emphasised their cultural and national significance.

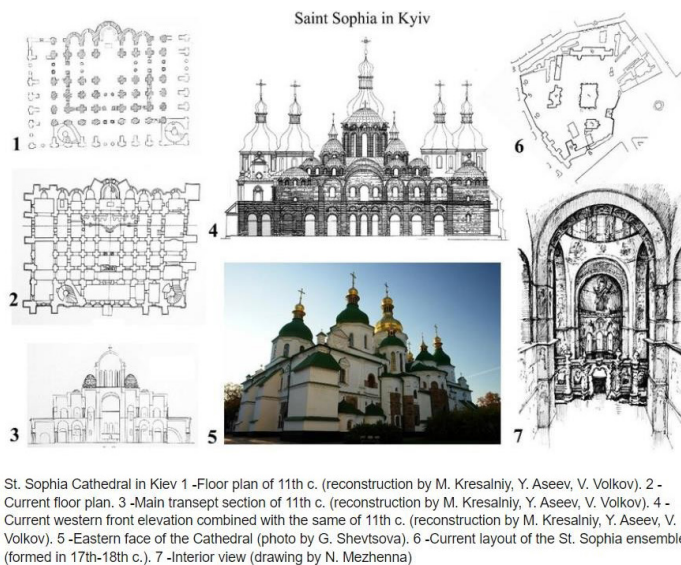


Figure 26. Saint Sophia's Cathedral in Kyiv

Source: G. Shevtsova et al. (2020).

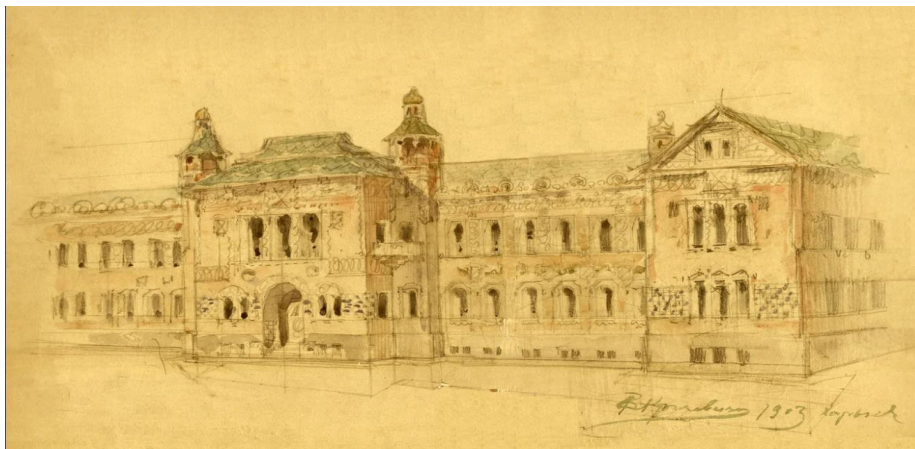


Figure 27. Poltava Governorate zemstvo building, project by Vasyl Krychevsky, 1903
Source: *The building that started the Ukrainian modern (2024).*

During the Soviet period, Ukrainian architectural graphics underwent significant changes to adapt to the new political and ideological conditions. The Soviet government actively used architecture as a propaganda tool, which was reflected in the creation of large-scale public buildings and monuments. It reflects the multifaceted history and cultural heritage of Ukraine, contributing to the formation of a unique national style that is an integral part of Ukrainian culture.

1.1.4 Techniques and materials of architectural graphics

The techniques and materials used in Ukrainian architectural graphics have changed over time, reflecting the technological innovations and artistic trends of each era. The following is an overview of the main techniques and materials used in Ukrainian architectural graphics, as well as their influence on the development of architectural culture.

In the period of Kyivan Rus (9-13 centuries), the main materials for architectural graphics were parchment and ink. Parchment was made of calf, sheep or goatskin, which allowed for the creation of durable documents. Architectural drawings of this period included plans and facades of churches, monasteries, and other buildings, executed with great precision and attention to detail. Murals and mosaics also played an important role in the architectural graphics of Kyivan Rus. They were used to decorate the interiors of churches and monasteries, depicting religious themes and symbols. St. Sophia's Cathedral in Kyiv is a vivid example of the use of frescoes and mosaics in architectural graphics of this period (Fig. 28), (Fig. 29) (Smigiel, 2021). In the Baroque period (17-18 centuries), paper and Indian ink became the main materials for architectural graphics. Engravings and etchings became important techniques in Baroque architectural graphics. Engravings were made on copper plates, and etchings were made on zinc or copper plates that were varnished. These techniques made it possible to create highly accurate and detailed images that reflected the architectural features of buildings. Geometric tools, such as compasses, rulers and protractors, became an integral part of architectural graphics in the Classicist period. They were used to create the precise geometric shapes and proportions that were characteristic of this style. The use of these tools

allowed architects to achieve high precision in their drawings and plans. In the Romantic period (19 century), hatching and shading became important elements of architectural graphics. Hatching was used to create textures and add volume to images, and shadows were used to emphasise depth and drama. The archaeological approach became an indispensable aspect of architectural graphics in the Romantic period. Architects researched historical styles and reproduced them in their designs. This included creating detailed drawings that reflected elements of the Gothic, Renaissance, and Baroque styles. The architectural graphic works of this period were marked by high precision and attention to historical details.

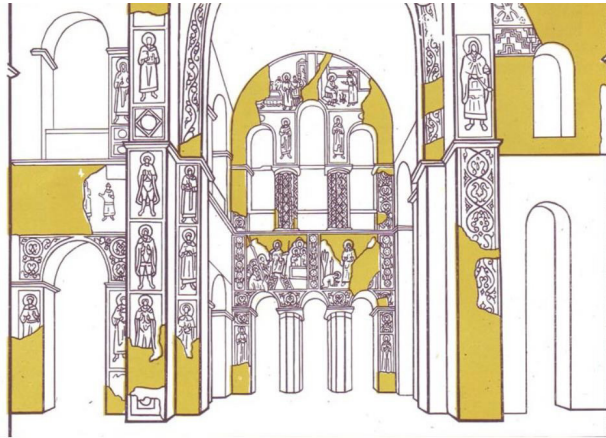


Figure 28. Scheme of the location of frescoes in the Sophia Cathedral, transept, north side
Source: *Frescoes of St. Sophia Cathedral (2025).*



Figure 29. Christ Pantocrator, mosaic image, main dome of St. Sophia in Kyiv
Source: *Sophia Cathedral. Mosaics and frescoes of St. Sophia Cathedral (2025).*

One of the main techniques in creating architectural designs is architectural graphics. Drawings are the basis of any design. For example, drawings of Roman aqueducts (Fig. 30) created by Italian architects during the Renaissance show not only the general plan of the aqueducts, but also the details of their construction, including arches and drainage channels. These drawings are important sources of information for modern engineers and architects studying ancient engineering solutions. In the 18th and 19th centuries, printmaking was widely used to create maps and plans of Ukrainian cities such as Kyiv and Lviv (Fig. 31; 32). These documents provide a unique opportunity to study the architectural development of Ukrainian cities and their urban landscape.



Figure 30. Roman aqueduct in Segovia, engraving

Source: John Robert Cozens *Baroque Arch and Roman Aqueduct Ruins* – Google Art Project (2025)



Figure 31. Plan of Kyiv, 1846, engraved at the Military Topographic Depot

Source: *Maps of Kyiv. From the beginning to the present day* (2019).

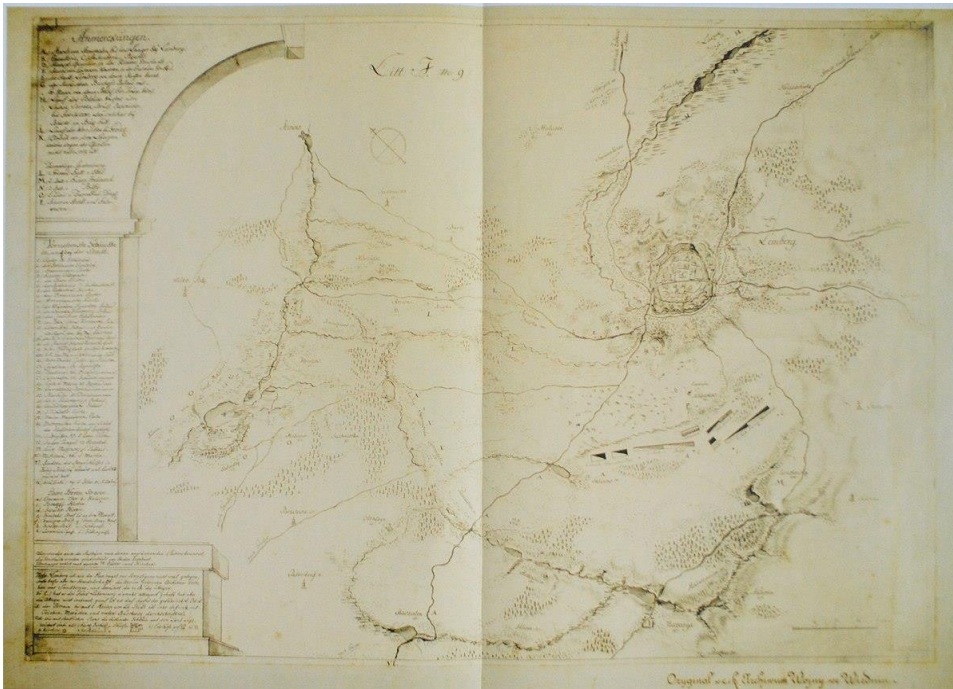


Figure 32. Plan of Lviv and its surroundings, 1772, Rudolf Otto Puttm, engraving
Source: M. Bevz (2020).

Perspective is a key element in creating three-dimensional images on two-dimensional paper. This method allows conveying the volume and depth of buildings, which is significant for a better understanding of their structural features. For example, in the 15th century, Italian architect Leon Battista Alberti developed the rules of perspective, which became the basis for creating realistic images of architectural objects (Grafton, 2020). Photogrammetry is a modern method that uses photographs to create three-dimensional models of objects. This method allows capturing all the details of buildings with high accuracy. For example, during the documentation of architectural monuments in Athens, photogrammetry helped to create accurate models of the Parthenon and other ancient buildings (Fig. 33) (Pakkanen, 2021). These models are used for research and planning restoration work. Laser scanning is another modern method used to create three-dimensional models of architectural objects. This method allows taking accurate measurements even from very complex surfaces and create detailed digital models. For example, laser scanning was used to document the Angkor Wat temple complex in Cambodia. This data helped researchers study the structure of the temples and develop plans for their restoration. The use of drones has become an important tool in creating experiences, especially for shooting from above. They allow getting images of buildings from angles that are not available from the ground. For example, drones were used to document Neuschwanstein Castle in Germany, which allowed for the creation of accurate models of the castle and its surroundings. These models are used for research and planning restoration work.



Figure 33. Acropolis laser scanning and photogrammetry orthographic results

Source: C. Wallace (2022).

Artistic techniques play a pivotal role in the creation of architectural designs, as they allow not only conveying the exact appearance of objects, but also their aesthetic value and atmosphere. They complement technical drawings and add an emotional component that makes the images more attractive and understandable to a wide audience.

Watercolour technique is one of the most common artistic techniques used in impressions. It allows conveying the colours and textures of building materials, as well as creating a chiaroscuro effect that adds volume and depth to the image. For example, the works of the British artist William Turner (Fig. 34), who used watercolours to depict architectural objects, are noted for their realism and aesthetic value (Fisher, 1996). Turner's watercolours of European cities help us to see not only architectural details, but also the atmosphere of the places he depicted. Chiaroscuro is a relevant artistic technique that helps to create the illusion of volume on a two-dimensional surface. This technique is used to emphasise structural details and create the impression of three-dimensionality. For example, in the drawings and engravings of Giovanni Battista Piranesi (Fig. 35), who explored the ruins of ancient Rome (Kantor-Kazovsky, 2006), chiaroscuro was used to create a deep impression of architectural objects and their details. Pencil sketches are often used as an initial stage in creating impressions. They allow quickly capturing the basic shapes and proportions of an object, as well as identifying key details that should be documented. For example, Leonardo da Vinci's sketches (Fig. 36) show his detailed approach to documenting architectural objects and mechanisms (Hillard, 2019).



Figure 34. Venice from the balcony of the Madonna della Salute, William Turner, 1835
Source: *Venice, from the Porch of Madonna della Salute* (2025).

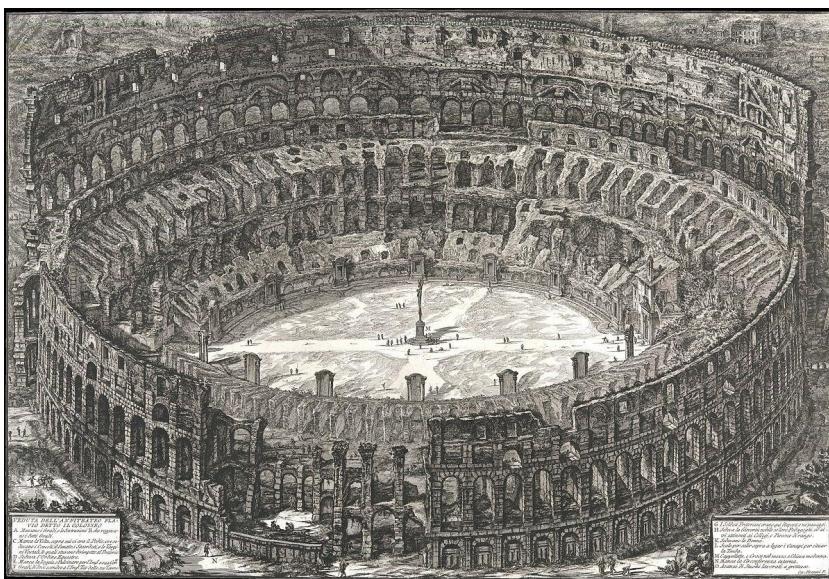


Figure 35. Veduta dell'Anfiteatro Flavio detto il Colosseo, from:
'Vedute di Roma' (Views of Rome), Giovanni Battista Piranesi, 1776
Source: *Veduta dell'Anfiteatro Flavio detto il Colosseo*, from: 'Vedute di Roma' (Views of Rome) (2025).



Figure 36. Leonardo da Vinci, Landscape Drawing for Santa Maria Della Nave, 1473

Source: H. Neuendorf (2016).

Colour is an essential element in creating artistic images of architectural ouvrages. It helps convey the realism of materials and adds aesthetic appeal to images. For example, colour illustrations by Spanish architect Antoni Gaudí (Fig. 37) showing his designs help to better understand his unique approach to the use of colour and form in architecture (Salas Mirat et al., 2018). Composition is a key element in creating any artistic image, including architectural ouvrages. It helps to organise the elements of an image in a way that makes them understandable and attractive to the viewer. For example, in the works of the French architect Eugène Viollet-le-Duc (Fig. 38), composition is used to create impressive and detailed images of medieval castles and churches (Bressani, 2014).



Figure 37. Antoni Gaudí, project for Colonia Güell, version 1908-1910,
National Museum of Art of Catalonia, Barcelona

Source: Gaudí (2022).



Figure 38. Eugène Viollet-le-Duc. Chateaux de Pierrefonds, facade drawing, 1858
Source: Ferreira (2016).

Modern technologies have greatly expanded the possibilities for creating architectural drawings. The use of computer software for three-dimensional modelling and virtual reality allows for the creation of interactive models that can be used for research, education, and promotion of architectural heritage. Three-dimensional modelling allows creating accurate digital models of architectural objects. These models can be used to study structural features and plan restoration work. For example, in the project to document Notre Dame de Paris, three-dimensional models are used to analyse structural damage and plan restoration work after the 2019 fire (Notre Dame de Paris..., 2019). Virtual reality (VR) allows creating interactive simulations of architectural objects that can be used for virtual tours and educational programmes. For example, virtual tours of the Roman catacombs created using VR allow visitors to explore these historical sites in an interactive format. The use of modern technologies further expands the possibilities for documenting and promoting architectural heritage, making it accessible for research, education and a wide audience (Table 2).

Table 2. Comparison of traditional and modern methods
of documenting architectural monuments

Aspect	Traditional methods	Contemporary methods
Basic methods	Hand drawings and sketches, photography, archaeological excavation	Laser scanning, photogrammetry, 3D modelling, use of drones
Tools	Pencils, Indian ink, watercolours, cameras, archaeological equipment	Laser scanners, digital cameras, computer software for 3D modelling, drones
Precision	Depends on the skill of the artist, can be high if properly executed	High precision due to modern technologies that allow capturing details with extreme precision
Detailing	High detailing, possible in images and drawings, but limited by individual skill	Extremely high detailing, including three-dimensional representation of complex shapes and surfaces

Table 2, Continued

Aspect	Traditional methods	Contemporary methods
Artistic value	Can include elements of artistic interpretation, high aesthetic value in traditional drawings and photographs	Usually more technical and functional, although some techniques, such as photogrammetry, can produce aesthetically pleasing images
Speed of execution	Can be a lengthy process, especially for large or complex objects	High speed of data collection and processing due to process automation
Availability of technology	Widely available, requiring minimal equipment and materials	May require expensive equipment and specialised knowledge to use and process data
Use in restoration	Important for historical context and recording architectural details	Necessary for planning and executing precise restoration works, especially for large or complex objects
Preservation of historical details	Dependent on the quality of documentation and its preservation	Ensure the preservation of high-quality digital information that can be easily stored and reproduced
Examples of use	Andrea Palladio: "Four books about architecture" Eugène Atier: photographs of historic buildings in Paris	Laser scanning of the Borobudur temple Photogrammetry of the Sphinx Three-dimensional modelling of Notre Dame de Paris
Advantages	High artistic and technical value; wide availability and low cost	High accuracy and detail; fast and efficient data collection; possibility to create interactive models
Disadvantages	Dependent on the skills and experience of the artist; lengthy process; possible limitations in accuracy and detail	High cost of hardware and software; need for specialised knowledge; sometimes difficult to process
Combining methods	Used to preserve historic detail when modern methods may not be available	Used to create accurate digital models and plan restoration work, complementing traditional methods
Use in research	Essential for archaeological and historical research, providing context and detail	Key to modern scientific research, allowing detailed analysis and digital preservation of architectural information

Source: created by the author based on G. Angjeliu et al. (2020); G. Rocha et al. (2020); M.M. Danesh et al. (2022); T. Joensuu et al. (2022); S. Linda and R. Przewłocka-Sionek (2023).

Architectural engravings are valuable artefacts that allow preserving and transmitting images of architectural monuments over the centuries. The collection of architectural prints began in the 16th century with the appearance of the first printed engravings. With the development of printing and engraving techniques, these works became popular among the aristocracy, educated citizens and collectors. In Ukraine, architectural engravings have become an important element of cultural heritage, reflecting the richness and diversity of the region's architectural traditions. Collecting and researching Ukrainian architectural prints helps preserve unique images of historic buildings that have often fallen victim to time or political change. Particularly noteworthy are the engravings that depict in detail the architecture of cities such as Lviv, Kamianets-Podilskyi, and other regions of western Ukraine (Fig. 39). Many of these engravings document architectural objects that underwent significant changes or were destroyed during the nineteenth and twentieth centuries. Collections of such engravings become the basis for the restoration and renovation of historical buildings.

The conservation of architectural prints is an important aspect of the work of museums and libraries. Restorers use various methods to protect prints from destruction. This includes controlling storage conditions such as temperature and humidity, as well as using special storage materials that protect prints from damage. Restoration can also include repairing tears and cracks, removing stains and dirt, and restoring colours that have faded over time. Innovative conservation techniques such as nanotechnology are also beginning to be used in the conservation of architectural prints. Nanomaterials can be used to stabilise and strengthen paper, as well as to protect the surface of prints from environmental influences. This allows extending the life of prints and keeping them in excellent condition. In addition, modern conservation methods include the creation of conditional modelling and simulation to predict the future condition of prints. This allows conservators to anticipate possible risks and take measures to prevent them. For example, modelling can help determine how the condition of an engraving will change under the influence of changes in temperature and humidity over time. In Ukraine, modern methods of analysing and preserving engravings, including digital scanning and spectroscopy, are actively used. For example, the Kyiv Pechersk Lavra is working to preserve ancient engravings and documents, which helps preserve knowledge about the historical objects of the Lavra and keep them in good condition. It is also important to preserve private collections of architectural engravings, which often include rare works that are not represented in public museums and libraries.

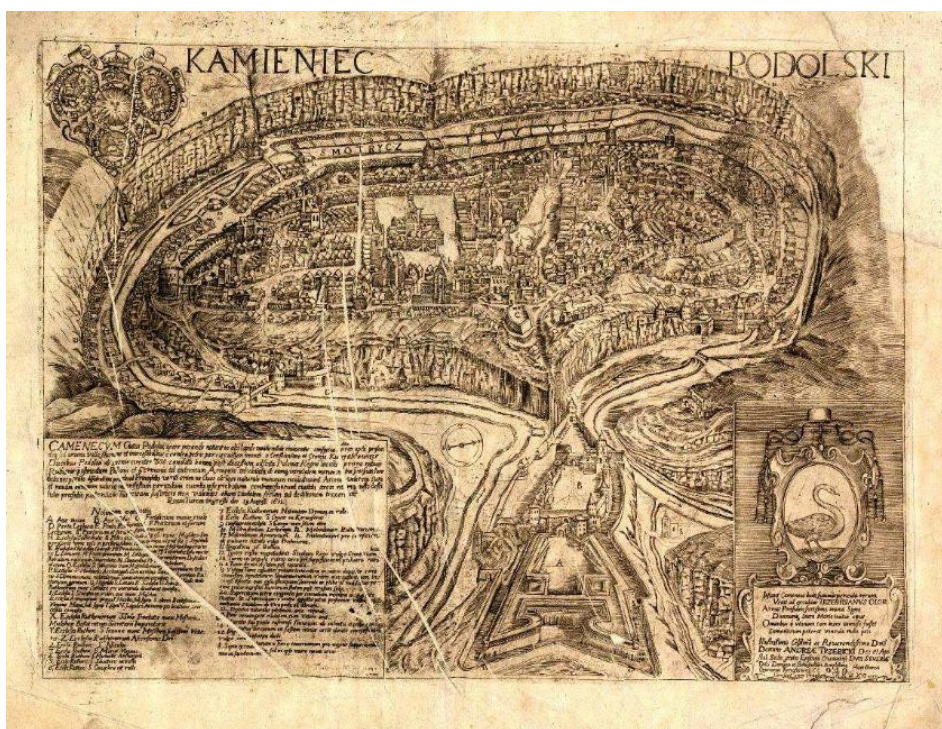


Figure 39. Plan of Kamianets-Podilskyi, engraving by Markiyan Tomashevich, 1672
Source: *Maps of Kamianets-Podilskyi* (2012).

1.2 Kyivan Rus and the medieval period

Architectural graphics play an important role in the development of architecture, serving as a tool for visualising and planning buildings. During the period of Kyivan Rus and the Middle Ages, Ukrainian architectural graphics went through a significant evolution, forming unique traditions that combine influences from different cultures and epochs. This development reflects the historical and cultural changes that took place in the region and contributed to the formation of the Ukrainian architectural heritage.

The period of Kyivan Rus (9-13 centuries) was the time when the first architectural traditions were formed on the Ukrainian lands. One of the key influences on the development of architectural graphics was the Byzantine imperial style, which came to Kyivan Rus with the adoption of Christianity in 988. Known for its majestic churches and domed structures, Byzantine architecture had a significant impact on the architectural designs of the time.

St. Sophia's Cathedral in Kyiv, built in the 11th century, is one of the most prominent examples of Byzantine influence. Architectural drawings and sketches from this period used simple lines and shapes to convey complex designs. The focus was on creating plans and sections of buildings to help understand the structure of structures. An important aspect was also the use of mosaics and frescoes to decorate interiors, reflecting the richness and spirituality of the architecture of Kyivan Rus. St. Sophia's Cathedral, built by Yaroslav the Wise in 1037, is a prime example of the influence of Byzantine architecture on Ukrainian lands (Fig. 40). Although no architectural drawings from this period have survived, the described plans and research on the restoration work allow reconstructing an idea of the graphic approaches of the time. The use of a cross-domed plan, numerous domes, and rich interior decoration testify to the high skill of the architects. The architectural sketches probably reflected the complex geometric shapes and symmetry of the building, which was characteristic of the Byzantine style.

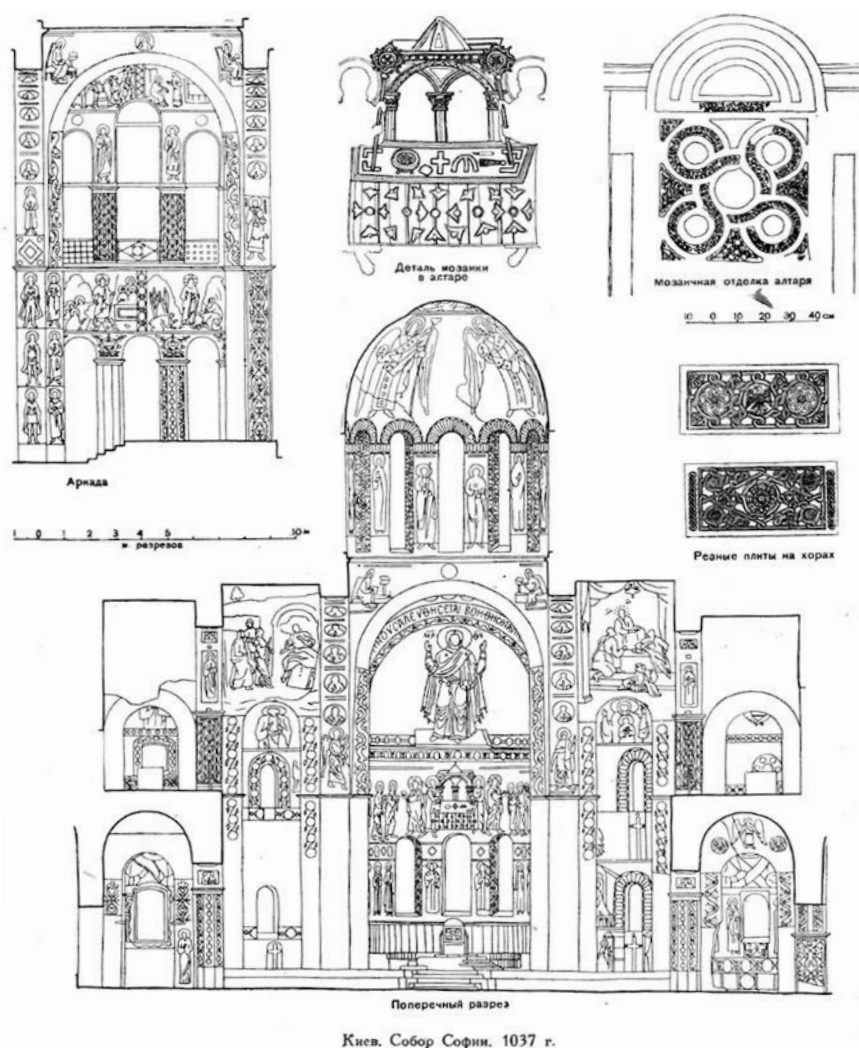


Figure 40. Saint Sophia's Cathedral in Kyiv, drawing

Source: *Sophia Cathedral in Kyiv drawing (2025).*

The Church of Tithes, built in 989-996 by Prince Volodymyr the Great, was the first stone church on the territory of Kyivan Rus. This church became a symbol of the transition from wooden to stone architecture. The architectural drawings used during the construction reflected simple yet impressive design solutions. The plan of the Church of the Tithes was based on a traditional Byzantine cross-domed plan with a central dome and four smaller domes at the corners. The present plan became the basis for the further development of church architecture in Kyivan Rus.

The monastic complexes of Kyivan Rus also played an important role in the development of architectural graphics. Founded in 1051, the Kyiv-Pechersk Lavra became a centre of spiritual and

cultural life, as well as a place of development of architectural traditions (Fig. 41). At that time, graphic works for coordinating construction and organizing space may have appeared. Monastery complexes such as the Kyiv Pechersk Monastery and Vydubychi Monastery demonstrate the use of different architectural styles and techniques, reflecting the diversity of architectural influences and innovative approaches.

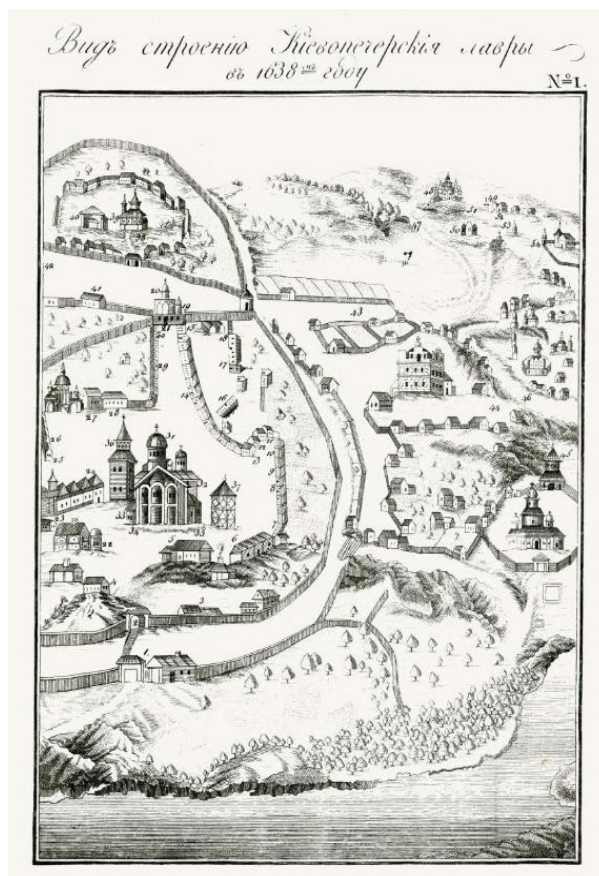


Figure 41. View of the buildings of the Kyiv Pechersk Lavra in 1638

Source: E. Bolkhovitinov (1826).

During the Middle Ages, the Galicia-Volyn principality (12th-14th centuries) became a significant centre of architectural development on the Ukrainian lands. The influences of Western European architecture became particularly prominent during this period, particularly Gothic, which came through Poland and Hungary. The architectural graphics of this period were characterised by complexity and detail, the use of vertical lines and pointed arches.

The castle in Olesko, built in the 13th century, is an example of the influence of Western European Gothic architecture (Fig. 42). Reflecting its defensive functions and architectural

complexity. The use of stone and complex structural elements was an innovative approach for the region. Architectural graphics probably included detailed sketches of towers, defensive walls and interior spaces, which helped architects to realise their designs with high precision. Volyn, located at the crossroads of cultural influences, became a place where Eastern and Western architectural traditions were combined in a unique way. The architectural graphics of this region reflected a mixture of Byzantine and Gothic elements. St. George's Cathedral in Lutsk is an example of this combination, with architectural elements reflecting both Eastern and Western influences. Graphic works of this period probably included sketches and plans that combined different styles and techniques.



Figure 42. Olesko Castle. Engraving by A. Lange. 1820s

Source: V. Prokopiv (2016).

Chernihiv, one of the oldest cities in Ukraine, boasts a rich architectural heritage that played a significant role in shaping the architectural traditions of Kyivan Rus'. The city gained particular significance due to its religious structures, among which the most notable are the Saviour-Transfiguration Cathedral and Boris and Gleb Cathedral. These churches reflect a complex synthesis of Byzantine architectural influences and local building traditions. The Saviour-Transfiguration Cathedral, built in the 11th century, is one of the oldest stone churches in the territory of modern Ukraine (Fig. 43). This structure belongs to the cross-in-square type, which was typical of Byzantine architecture, but it also exhibits unique features characteristic of the Kyiv school of construction. The verticality of forms, emphasised by massive pillars and vaults, creates an effect of spiritual uplift, symbolising the aspiration towards heaven and divine blessing. This temple demonstrates a harmony of space and light, reflecting the Byzantine tradition of emphasising the divine in material architecture.

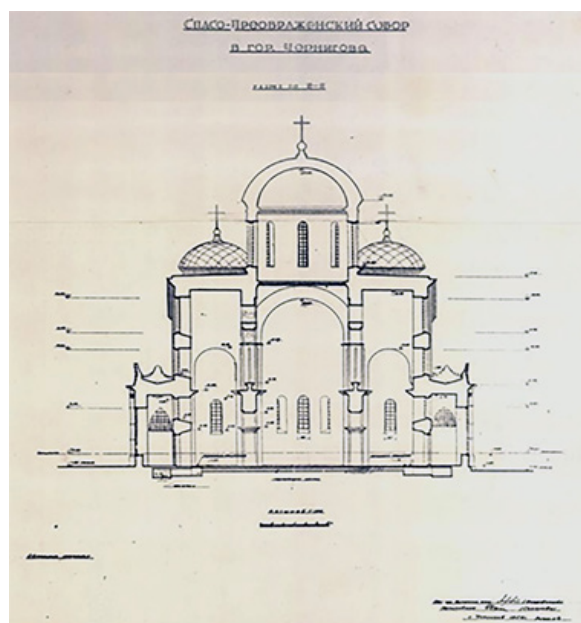


Figure 43. Saviour-Transfiguration Cathedral in Chernihiv. Measured drawings, 1956
Source: K. Hanson et al. (2024).

The Boris and Gleb Cathedral, built in the 12th century, is another significant example of the development of architecture in Chernihiv (Fig. 44). The cathedral was created during a period of significant influence from European Romanesque traditions, which manifested in complex multitiered arches, deep niches, and ornamented cornices. Its decorative elements, such as carved friezes and cornices adorned with geometric patterns, reflect a local style that actively developed under the influence of both Byzantine and Western European trends. The cathedral was part of a large monastic complex.

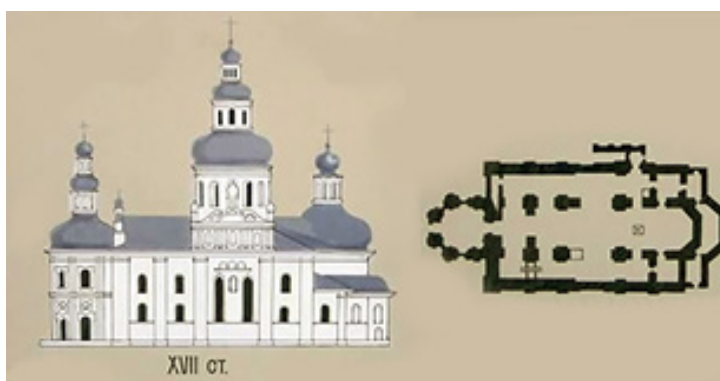


Figure 44. The Boris and Gleb Cathedral in the 17th century
Source: Borisoglebsky Cathedral (2024).

Kamianets-Podilskyi, known for its unique location and fortification architecture, became an important centre of architectural development in the medieval period. The Kamianets-Podilskyi Fortress, built in the 14th century (Fig. 45), is an example of sophisticated defensive architecture.



Figure 45. “Kamianets-Podilskyi from the North”, 1842, Museum of Ukraine (Potocki Collection)
Source: S. Bilokin (2019).

Medieval architectural graphics included complex ornamental motifs that were used to decorate the facades and interiors of buildings. The use of floral, geometric and abstract motifs was typical for graphic works of the time. Ornaments often reflected symbolic meanings and were used to emphasise architectural forms. Graphic works included detailed sketches of ornaments, which helped craftsmen create complex decorative elements. Medieval architectural graphics were marked by attention to perspective and proportions. Architects used various techniques to create visual depth and convey the scale of buildings. The use of perspective allowed for realistic depictions of buildings and helped architects plan spatial compositions. Proportions played an important role in creating harmonious and balanced architectural forms. Graphic works included precise measurements and calculations, which helped architects achieve the desired results. Architectural graphics of the medieval period used various techniques and materials to create drawings and sketches. The main materials were parchment and paper, on which architects created their graphic works. The use of ink, Indian ink, and paint allowed for detailed and vivid images. Techniques such as line drawing, hatching, and watercolour were used to convey textures, chiaroscuro, and depth in images (Carpo, 2001).

Architectural graphics of the Kyivan Rus and medieval periods had a significant impact on the further development of architectural traditions in Ukraine. It laid the foundations for the creation

of a unique architectural style that combined Byzantine, Gothic and local elements. Graphic works of that time helped preserve architectural knowledge and pass it on to future generations. The use of ornamental motifs, perspective, proportions, and techniques became an important aspect of the development of architectural graphics in Ukraine.

1.2.1 Renaissance and Baroque

The Renaissance and Baroque periods were critical stages in the development of architectural graphics in Ukraine. These periods were marked by significant changes in architecture and art, enriching the Ukrainian cultural heritage with new styles, techniques and aesthetic principles. The Renaissance brought with it a revival of ancient forms and proportions, while the Baroque was marked by dynamism, splendour and complex compositional solutions. In both periods, architectural graphics played a key role in the planning and implementation of architectural projects.

The Renaissance in Ukraine, as in other parts of Europe, was marked by a return to ancient models, an emphasis on harmony, proportions, and symmetry. The influences of the Italian Renaissance spread through Poland, Hungary and Austria, penetrating the Ukrainian lands. Renaissance architectural graphics included new techniques and methods that allowed architects to create more accurate and detailed drawings. Lviv became one of the main centres of Renaissance architecture in Ukraine. Renaissance ideas were also reflected in religious architecture. Churches and religious buildings of this period were marked by harmonious proportions, symmetry, and the use of classical orders. The Church of St Bartholomew in Drohobych (Fig. 46), built in 1392-1395, is an example of a combination of Gothic and Renaissance elements. The architectural graphics of Renaissance churches included detailed drawings of interiors and exteriors that reflected new aesthetic principles.

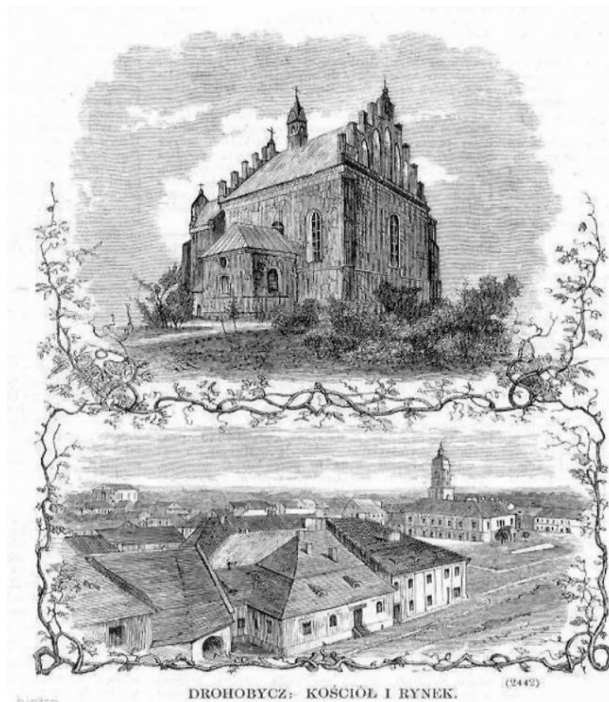


Figure 46. Sketches of the parish church of St. Bartholomew in Drohobych
Source: S. Zmerzla (2016).

The Baroque was the next major stage in the development of architectural graphics in Ukraine. This style, which originated in Italy and spread throughout Europe, was characterised by its splendour, dynamic forms and complex compositional solutions. In Ukraine, the Baroque style was particularly developed in the 17th and 18th centuries, combining Western European influences with local traditions. Architectural graphics of the Baroque period were characterised by high skill in the use of curved lines, complex shapes and rich ornaments. Architects used various techniques, such as hatching, engraving and watercolour, to create detailed and vivid depictions of buildings.

Kyiv became one of the main centres of Baroque architecture in Ukraine. St Andrew's Church (Fig. 47), designed by architect Bartolomeo Rastrelli in 1747-1754, is a prime example of Ukrainian Baroque. The drawings of St Andrew's Church demonstrate the use of curved lines, complex shapes, and rich details that are characteristic of Baroque architecture. Baroque palaces and residences, such as the Mariinsky Palace in Kyiv (Fig. 48), became symbols of opulence and grandeur. The architectural graphics of these buildings included detailed plans, facades, and sections, which helped architects to realise their designs with great precision. The Mariinsky Palace, built in 1744-1752 to a design by Bartolomeo Rastrelli, is an example of the use of complex compositional solutions, rich ornaments and decorative elements.

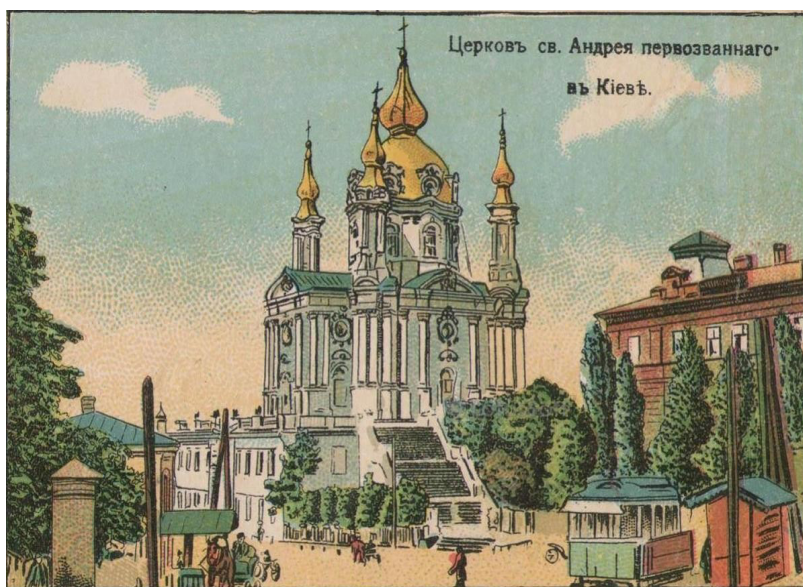


Figure 47. Postcard depicting St. Andrew's Church, early 20th century.
National Museum of the History of Ukraine

Source: O. Kucheruk (2025).



Figure 48. St. George's Church, lithograph by Karol Auer, mid-20th century
Source: 12 facts about St. George's Cathedral in Lviv (2019).

Architectural graphics of the Renaissance and Baroque periods. It laid the foundations for the creation of a unique architectural style that combined Western European and local elements.

Preserving the architectural heritage of the Renaissance and Baroque is an important task for modern architects and restorers. Restoration works, such as the reconstruction of St. Sophia Cathedral or the restoration of St Andrew's Church, include the use of detailed graphic drawings, which allows preserving the authenticity and historical value of these buildings.

1.2.2 Classicism and Romanticism

Classicism and Romanticism were important stages in the development of architectural graphics in Ukraine. Classicism brought with it a return to ancient forms and proportions, while Romanticism emphasised emotionality, historicism, and individuality. In both periods, architectural graphics played a key role in the planning and implementation of architectural projects.

Classicism in Ukraine, as in other parts of Europe, was marked by a return to ancient models, an emphasis on harmony, proportions, and symmetry. The influences of French and Italian classicism spread to Ukrainian lands through the Russian Empire. The palace of Kirill Razumovsky in Baturyn (Fig. 49), built in 1799-1803 and designed by architect Charles Cameron, is an example of the use of ancient forms and proportions (Bell, 2012). Classicist ideas were also reflected in religious architecture. The churches and religious buildings of this period were characterised by harmonious proportions, symmetry, and the use of classical orders. St Volodymyr's Cathedral in Kyiv, built in 1862-1882, is an example of a combination of classicist and romantic elements. The architectural graphics of classicist churches included detailed drawings of interiors and exteriors that reflected new aesthetic principles.

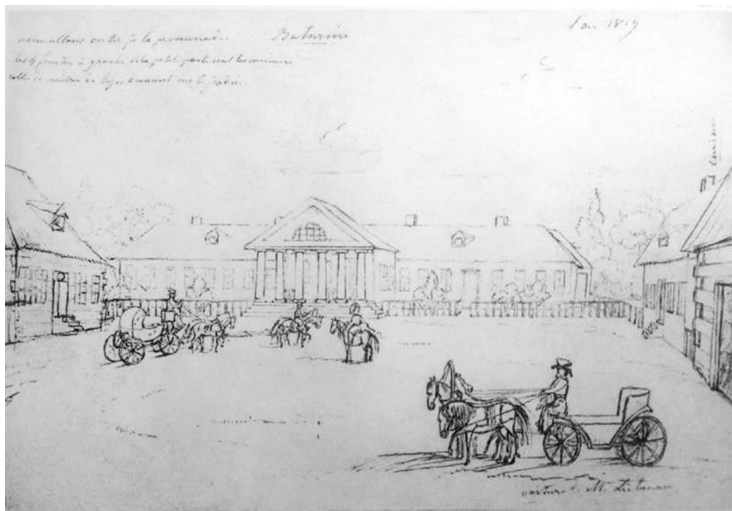


Figure 49. Old Hetman's wooden palace in Baturyn, illustration from L. Tyurgaim's book *My Life*, 1914

Source: *Participation of European architects in the reconstruction of the hetman's capital* (2023).

Romanticism in Ukraine was marked by an emphasis on emotionality, historicism, and individuality. The influence of Romanticism spread to the Ukrainian lands via Poland, Russia, and other

European countries. One of the most prominent and iconic structures of this period is the Potocki Palace (Fig. 50). Construction of the palace lasted from 1880 to 1890 under the direction of the French architect Ludvig de Verni. However, even though some elements of the building can be considered influenced by Romanticism, the palace primarily belongs to the Neo-Renaissance style, which was very popular in Europe at that time. The palace clearly exhibits features of Renaissance architecture: symmetry of forms, strictness of composition, and classical architectural details such as columns, pediments, and carved cornices. Gothic elements, sometimes pointed out, may refer to decorative details, but they do not dominate the overall architecture of the building. The palace was conceived as a luxurious residence and a symbol of the wealth of the Potocki family, and this is reflected in the exquisite interiors, where expensive materials and complex decorative elements were used (Mikrut, 2024). The drawings of the Potocki Palace have indeed been preserved and are an important testament to the architectural mastery of that time. They demonstrate the well-thought-out planning structure of the building, which combines luxury and functionality, as well as attention to the smallest details, including interior decoration. The use of elements such as reliefs, carved cornices, and ceilings with luxurious stucco is an example of the influence of the Renaissance style on Ukrainian architecture of the late 19th century. Romantic castles and mansions became symbols of the era. The Schönborn Castle in Zakarpattia (Berehvar) (Fig. 51), built in 1890-1895, is an example of the use of Romantic forms and proportions. The drawings of the castle demonstrate the use of towers, arches and decorative elements that emphasise the romantic character of the building.



Figure 50. Facade of the Potocki Palace in Lviv

Source: Pototsky palace (2025).

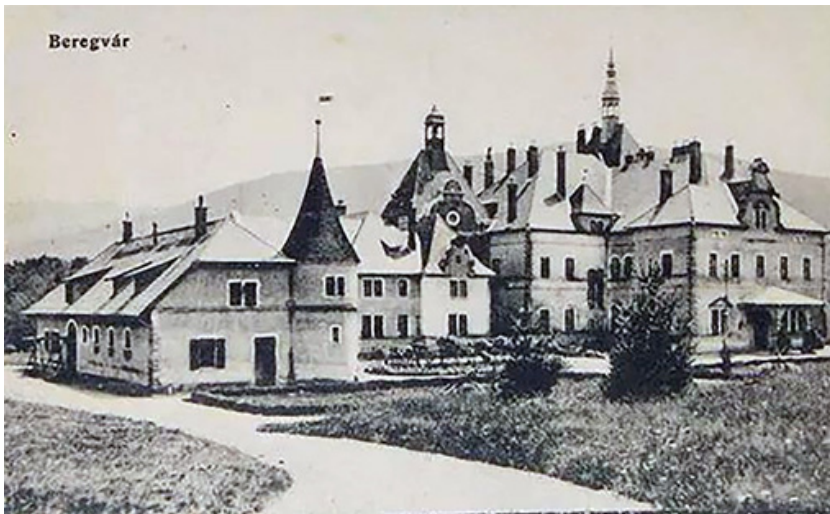


Figure 51. Schönborn Palace

Source: *The Schönborn Palace is the magic of numbers* (2020).

From the influences of French and Italian classicism to the emotional and historical forms of romanticism, architectural graphics played a key role in the development of architecture on the Ukrainian lands. Graphic works of this period not only conveyed constructive solutions but also reflected the artistic and cultural aspects of architecture.

1.2.3 Art Nouveau, Constructivism and Avant-Garde

Art Nouveau became one of the significant stages in the development of architecture in Ukraine at the turn of the 19th and 20th centuries. One of the most striking examples of this style is the House with Chimaeras (Fig. 52), built in Kyiv in 1901-1903 to the design of the renowned architect Władysław Horodecki. The building is distinguished by its innovative use of materials, particularly concrete, which enabled the architect to create unique decorative elements and complex architectural forms. This material allowed Horodecki to realise his artistic fantasies, adorning the facades and interiors of the building with sculptures of animals, fantastical creatures, and plants that have become iconic for this project. The architectural feature of the House with Chimaeras lies in the harmonious combination of decorativeness and functionality. Despite the pronounced ornamental approach, the building was designed with engineering solutions in mind and served as a residential building for Horodecki's family (Fig. 53). The use of natural motifs, which were characteristic of Modernism, reflects the desire of the architecture of this period to integrate art with nature. The decorative sculptures on the facade, made of concrete, demonstrate a high level of craftsmanship and innovative approaches to material processing.

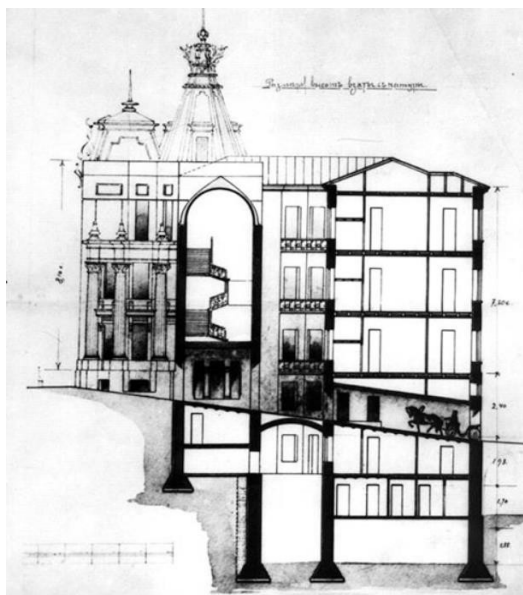


Figure 52. House with Chimaeras, original project

Source: P. Artymyshyn (2023).

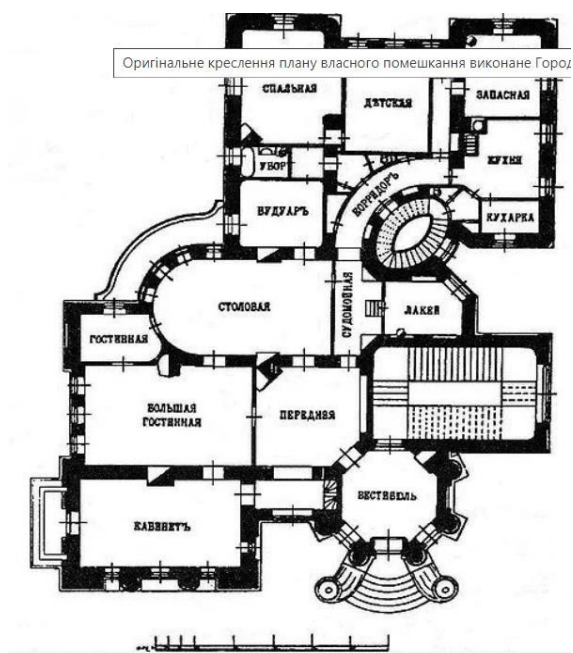


Figure 53. Original floor plan for his residence, designed by W. Horodecki

Source: P. Artymyshyn (2023).

Modern public buildings and residential buildings became symbols of the era. The avant-garde, which emerged in the early twentieth century, was a response to traditional forms and methods of architecture. It was characterised by innovations, experiments with forms and materials, and the desire to create new architectural solutions. In Ukraine, the avant-garde was influenced by Western European and Russian architecture, as well as local artistic traditions.

The Derzhprom building in Kharkiv (Fig. 54), constructed between 1925 and 1928, is an outstanding example of Constructivism in Ukraine and a symbol of the country's industrial modernisation. Its architectural features embody the core principles of this style – functionality, simplicity of form, and technological innovation. The building consists of several centripetal blocks connected by bridges and walkways at various levels, providing free access between sections and creating a dynamic appearance that was innovative for its time. The absence of ornamentation, clear geometry, and large panoramic windows emphasise the idea of openness and transparency, which corresponded to the modernist ideals of the period. The use of reinforced concrete was a innovation that allowed for the construction of large-scale, robust structures and ensured the building's longevity. Thanks to the constructive approach to planning, the interior space of Derzhprom was functionally well-thought-out and adapted to the needs of numerous workers.



Figure 54. Derzhprom building in Kharkiv, aerial view

Source: *Derzhprom (Kharkiv) (2025).*

The Slovo Building in Kharkiv (Fig. 55), constructed in 1928, was a unique project designed for Ukrainian writers, artists, and cultural figures (Didenko, 2024). It symbolised the cultural upsurge of the 1920s when Kharkiv was the capital of the Ukrainian SSR. Architects Mykhailo Dashkevych and Mykhailo Linetsky designed the building in the Constructivist style, characterised by functionality, simplicity of form, and a lack of superfluous decoration. Constructivism in this building emphasises a rational approach, where every element has a practical purpose. The building is shaped like the letter “C”, which not only creates an enclosed inner space but also symbolises collectivism – an important ideal of Soviet ideology (Fig. 56). This five-story structure with an inner courtyard provided

a private and secure space for residents, fostering a creative atmosphere. Large windows provided natural light to the apartments, which corresponded to the Constructivist principle of efficiency. The interior layout catered to the needs of creative people, with spacious apartments featuring separate work and living areas, promoting convenience and productivity. The Slovo Building became not only a symbol of the Ukrainian literary upsurge of the 1920s but also a tragic monument to the “executed renaissance”, as a significant portion of its residents suffered from Stalinist repressions in the 1930s, giving the building a special symbolism. The Slovo Building is today considered an important architectural and cultural heritage, preserving the memory of the Ukrainian intelligentsia who made a significant contribution to the development of national culture.

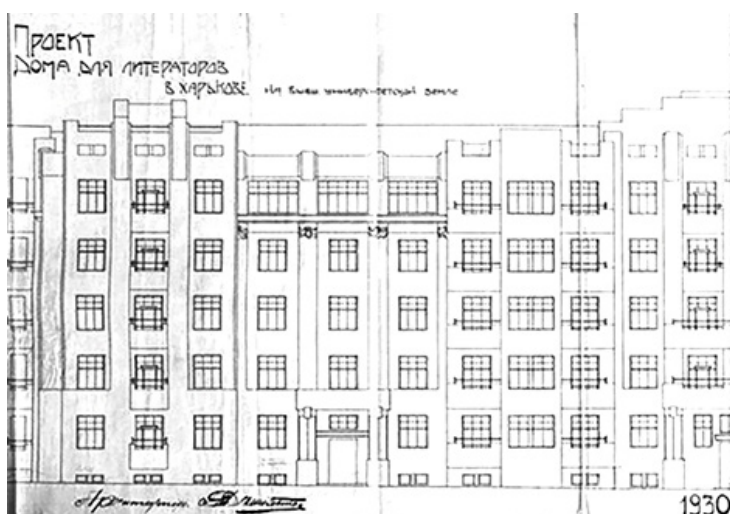


Figure 55. The Slovo Building, facade, project by M. Dashkevych, 1930

Source: *The Slovo Building* (2025).

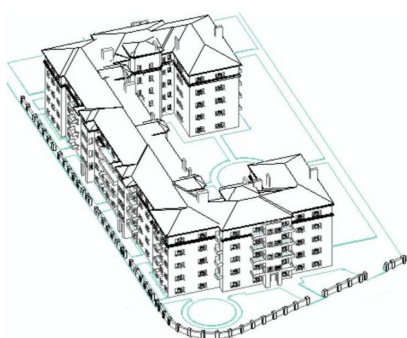


Figure 56. The Slovo Building, 3D models

Source: *The Slovo Building* (2025).



Figure 57. The Institute of information in Kyiv, 1971 (architects: F. Yuryev, L. Novikov)

Source: *The Institute of Information* (2025).

The Institute of Information in Kyiv (Fig. 57), completed in 1971, stands as a representative example of late Soviet modernist architecture. Designed by architects F. Yuryev and L. Novikov, the building reflects the ideological and technological aspirations of the Soviet state during the period of heightened attention to scientific and technical progress. Situated in a prominent area of Kyiv, this research facility was conceived as a symbol of intellectual advancement and state-led innovation in the realm of information technologies and cybernetics. Its bold, geometric forms and use of concrete are characteristic of the late modernist idiom, which prioritized structural expression and monumental scale. Large, continuous glazing on the façade provides generous natural lighting, while the massing of the structure underscores a sense of order and rationality – central tenets of Soviet architectural discourse of the 1970s. The building’s external appearance, with its rhythmic vertical elements and modular design, evokes a sense of futuristic purpose, aligning with broader architectural trends across the Soviet Union that celebrated progress through design. Today, the Institute of Information is recognized as a significant architectural and cultural artifact of its era, capturing the intersection of science, architecture, and ideology in the late Soviet context.

Florian Yuryev, an architect and artist, exemplifies an interdisciplinary identity. During this time, Yuryev was developing a “synthesis of the arts” project for a light music theatre, proposing “music of colour” as an independent art form that could physically convey sound through colour. He designed a light music orchestra and a hall with advanced sound and light transmission systems, resulting in the building nicknamed the “Kyiv flying saucer.” (Mokrousova, 2022) However, the project was ultimately realized in the late 1970s as a lecture and cinema hall for the Institute of Scientific and Technical Information, under KGB protection, rather than the intended colour-music theatre.



Figure 58. The Kyiv Crematorium

Source: *The Kyiv Crematorium: Censorship & the fight for recognition (2025).*

The Kyiv Crematorium (Fig. 58), Kyiv's sole crematorium located on the outskirts near Baikove Cemetery and built from 1968-1975, is a prominent neo-modernist concrete structure and cited example of Kyiv's modernist architecture. It was designed by lead architect Abraham Miletsky in collaboration with artist, architect duo Vladimir Melnychenko and Ada Rybachuk, and its complex includes three expressive, organic Halls of Farewell, each with a dome shaped like a burning flame (The Kyiv Crematorium..., 2025).



Figure 59. The Obolon Residential buildings

in Druhba Narov square, at No. 2 (1981) and No. 2a (1990)

Source: L. Shevchenko (2025).

Two experimental tower buildings in the second Obolon neighbourhood, known as “Romashky” (“The Chamomiles”) and “Kukuruzy” (“The Corns”) have 17 and 22 floors respectively and were built using climbing formwork and monolithic cast ferroconcrete (Fig. 59). They feature unusual circular or half-circle balconies and entire walls of glass.

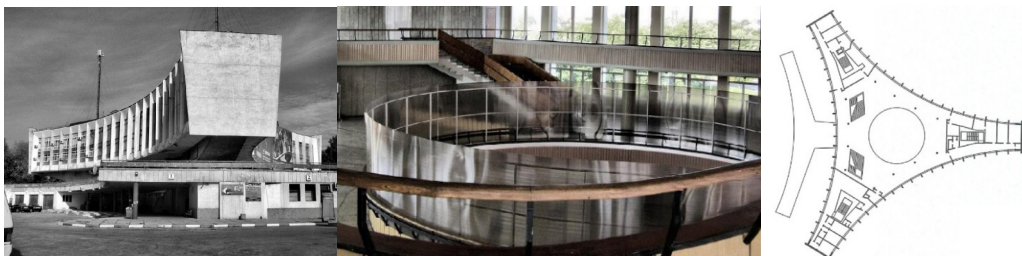


Figure 60. Bus station Stryiskyi in Lviv

Source: A. Shulyar (2025).

The Lviv Bus Terminal building (Fig. 60), located at 109 Stryiska Street, was constructed between 1976 and 1980. Its project was designed by architects V. Sahaydakivsky and V. Leokhnovsky. In a modernist style, the bus terminal has an attractive form.



Figure 61. Sumy Regional Universal Scientific Library

Source: *Lotus flower: Building of Sumy universal scientific library (2023)*

The Sumy OUNB's predecessor, the city's first public library, was founded in 1860 (Fig. 61). Architect Yuri Kobyljakov and his team began designing the new library in 1976, completing plans by 1981. Construction started in 1981 and was completed in 1986. The four-story glass and concrete building, nicknamed the "Lotus Flower" by locals, features a monolithic reinforced concrete frame with granite-clad first-floor walls and an external staircase.

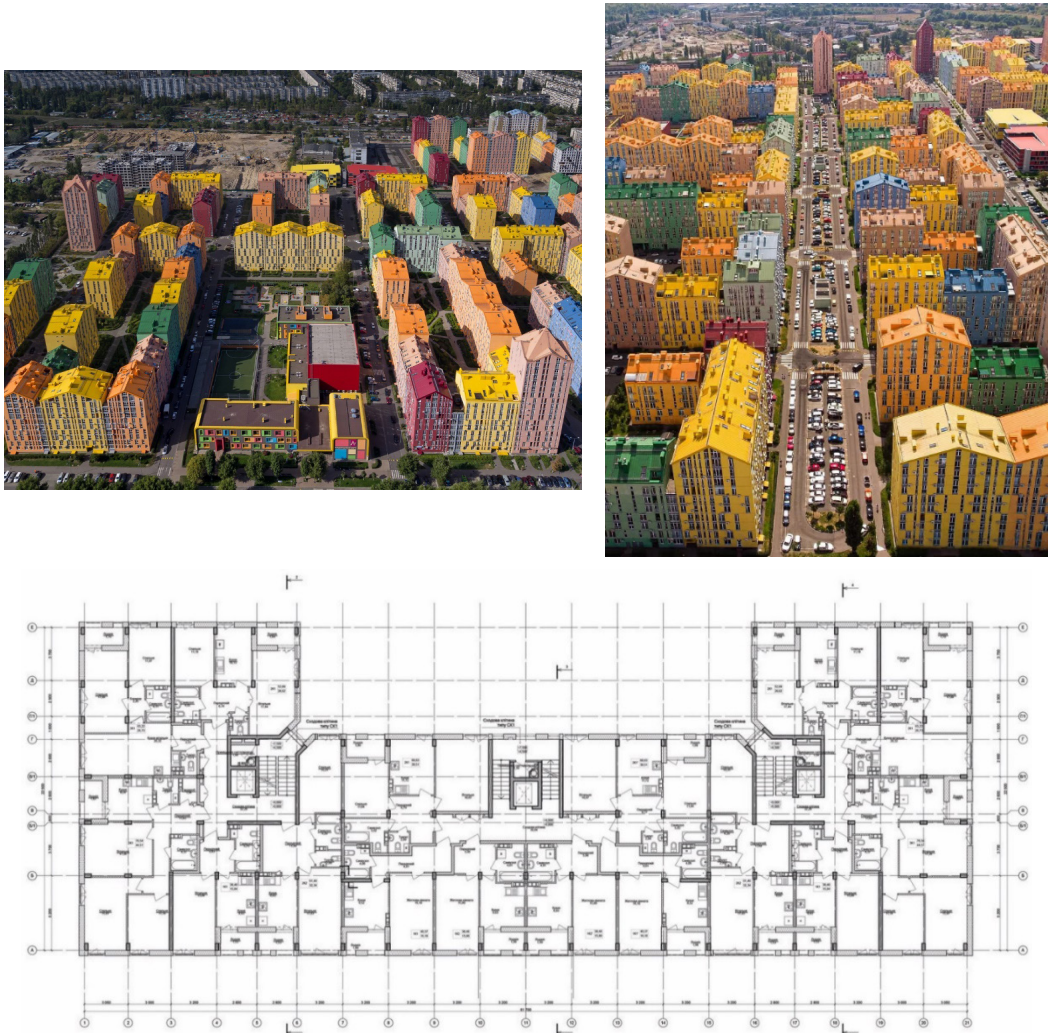


Figure 62. Comfort Town

Source: *Projects. Accommodation in Kyiv, Ukraine (2021).*

Built by Archimatika, Comfort Town (Fig. 62), sits on 90 acres and has 180 apartments. In the conditions of a limited budget, architects created sections with simple geometric shapes and made flat facades, thus excluding balconies and decorative elements. The focus was on three techniques: silhouette: different turns and height of dual-pitch roofs allowed to achieve an interesting shape; window: the first housing project in Kyiv to use the French balcony system and the window shifting system, which allowed to avoid monotonous rows; colour: the first daring colour solution for a residential neighbourhood in the country. A different number of stories of adjacent buildings (ranging

from 2 to 16 floors) forms a picturesque image of every street. There is also a restored park with perennial trees, sculptures, and a fountain. Thus, the former industrial territory turned into a good living environment and the status of the district as a whole has increased. The design inspiration for these buildings comes from children's building blocks, which is an interesting response to the traditional architectural complexes left over from the 1950s and 1960s communist era in the surrounding area. Comfort Town is the first residential area in Ukraine that focuses on neighbourhood development, moving beyond the "microraion" format commonly used during the Soviet era.

1.3 Urban and architectural drawing in media

1.3.1 Architectural ouvrages and archaeological reports

The term “ouvrages” comes from the French word “ouvrages”, which means “works” or “creations”. Initially, this term was used to refer to any literary or scientific work, but in the architectural context it acquired a special meaning. Architectural and archaeological ouvrages emerged as a result of the desire to document and analyse architectural and archaeological objects, giving them artistic and scientific value.

The first architectural and archaeological ouvrages appeared in Europe in the 17th and 18th centuries. They were a response to the growing interest in ancient ruins and medieval castles, as well as the need to record architectural objects that could serve as models for future research. One of the earliest examples is the work of the Italian architect Andrea Palladio, especially his famous book *I Quattro Libri dell'Architettura*, published in 1570 (Bürklin and Ebert, 2024). Although this work is more focused on architectural principles and styles, it also contains detailed illustrations of Palladio's ancient buildings and designs, which have become important examples for further architectural research.

The architectural and archaeological ouvrages of the eighteenth century occupy a special place in the history of archaeology and architectural graphics. This period was marked by a significant increase in interest in ancient architecture and archaeological excavations, in particular, in connection with the discovery and excavation of such famous cities as Pompeii and Herculaneum. These excavations, which began in the mid-18th century, marked a milestone in the development of archaeology and contributed to the creation of detailed ouvrages that documented the artefacts and structures found. One of the most influential and popular examples of architectural and archaeological ouvrages of that time was the series of publications “*Le Antichità di Ercolano*” (Antiquities of Herculaneum), published by the Royal Academy of Herculaneum. Founded in Naples, this academy was actively involved in the research of excavations in Herculaneum (Federico, 2020). The first volume of the series was published in 1757, and the last, the eighth, was published in 1792. The eight volumes of “*Le Antichità di Ercolano*” included detailed graphic images and descriptions of archaeological finds such as mosaics, frescoes, sculptures and architectural details (Fig. 63). These publications provided valuable information about the art and architecture of ancient Rome, as well as the techniques and styles used in these ancient cities. “*Le Antichità di Ercolano*” became the first systematic archaeological publication that combined graphic and textual documentation of excavations (Marino and Amore, 2021). They were extremely popular in Europe and significantly contributed to the popularisation of archaeology and classical culture.



Figure 63. Mosaic of Neptune and Amphitrite

Source: *Life in technicolor: Herculaneum frescoes and mosaics up close* (2025).

Since the beginning of the 20th century, ouvrages have continued to evolve, adapting to new technologies and methods of documentation. Photography, which became widely available, greatly facilitated the process of recording architectural objects. The first attempts were made to use aerial photography to document large archaeological complexes, which was also reflected in the images of that time. Modern architectural and archaeological ouvrages often use three-dimensional models and virtual reconstructions, which allow exploring objects from different angles and in an interactive format. The use of laser scanning and photogrammetry technology makes it possible to create high-precision digital models of architectural monuments. For example, well-known architectural and archaeological ouvrages of our time include the reconstruction and documentation of the Site of Daming Palace in Chang'an City of Tang Dynasty from Silk Roads: The Routes Network of Chang'an-Tianshan Corridor (Fig. 64), where digital technologies helped to preserve and restore this unique world heritage site (Angkor Wat temple..., 2025).



Figure 64. Aerial view of the Daming Palace

Source: *What Functions Did Daming Palace Bear?* (2025).

The creation of architectural and archaeological ouvrages is a complex process that requires a combination of technical and artistic techniques. These ouvrages are used to document architectural monuments and archaeological finds in detail, which allows preserving knowledge about them for future generations. The use of various methods and techniques helps to convey the exact appearance of objects, their structural complexity and aesthetic value.

1.3.2 Architecture in books and prints

During the Middle Ages and the Renaissance, manuscripts and early printed books played an important role in preserving and transmitting architectural knowledge. As architecture grew in importance in society, this knowledge became an integral part of Europe's cultural and scientific heritage. Monasteries, universities, and private libraries amassed collections of manuscripts containing valuable architectural drawings, plans, and diagrams.

One of the most indispensable sources of architectural knowledge of the ancient period was *De Architectura* by Marcus Vitruvius, written in the first century BC (Cigola and Ceccarelli, 2014). Although the original manuscripts have not survived, their copies were actively used during the Middle Ages and influenced the development of architectural thought in Europe. Vitruvius introduced the basic principles of architecture, including proportions, symmetry, and functionality of buildings. His work was rich in illustrations that detailed architectural structures and their applications (Fig. 65). Another significant example is the plan of Saint Gall Monastery (Fig. 66), preserved in the library of Saint Gall Monastery in Switzerland, which is one of the most famous architectural documents of the Early Middle Ages. Created in the 9th century, this plan depicts an ideal monastic complex, designed according to the principles of the Benedictine order. It includes drawings of various buildings, such as a basilica, dormitories, workshops, an infirmary, a kitchen, a storehouse, and gardens, which were intended to ensure the complete self-sufficiency of the monastery. From the plan, we can see that the monastery was not only to satisfy the spiritual needs of the monks but also to provide them with all the necessary resources for life, from craft workshops to agricultural land. This plan was not intended for the construction of a specific monastery; instead, it was an idealised model that demonstrated the ideal distribution of functional zones. The plan contains over 40 architectural plans, organised according to the status and functions of different groups of people. For example, sacred zones were located separately from the living quarters of laypeople. The plan is a significant architectural achievement for its time, as it demonstrates the application of concepts of spatial hierarchy and architectural organisation in an era when detailed plans were rare.

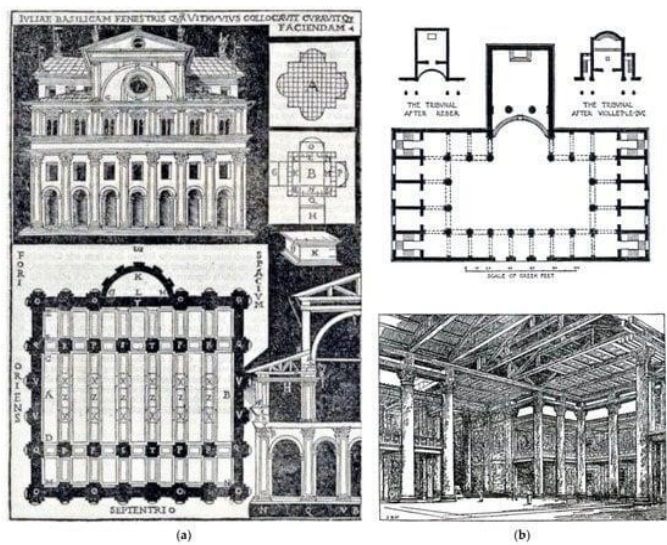


Figure 65. Reconstruction of Vitruvius’s Basilica at Fano by: Cesare Cesariano (1475-1543), the translator and illustrator of the first Italian edition of Vitruvius’s *De Architectura*
Source: *L. Bianco (2023).*

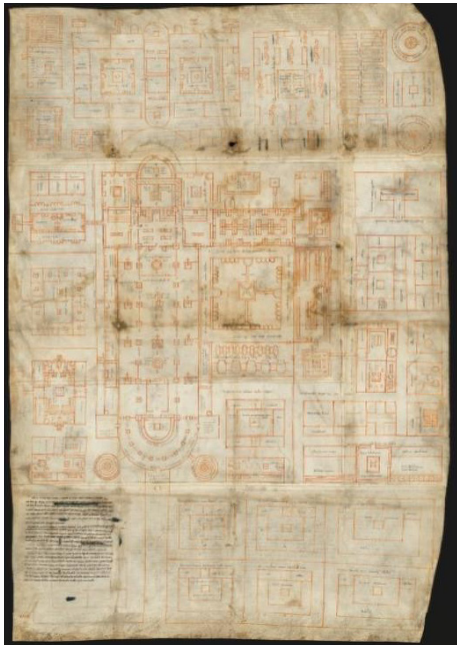


Figure 66. Plan of Saint Gall
Source: *Stiftsbibliothek (2014).*

Johannes Gutenberg's invention of the printing press in the 15th century revolutionised the dissemination of knowledge, particularly in architecture and art. Printed books with illustrations, previously accessible only to a very narrow circle of educated people, became more widely available. However, due to the high cost and novelty of the technology, access to them was primarily limited to the aristocracy and the intelligentsia. One of the early masterpieces that demonstrated the potential of the new printing technology was the book *Hypnerotomachia Poliphili* (Nygren, 2015), printed in Venice in 1499. Its publisher was Aldus Manutius, known for popularising high-quality printed editions in Europe. *Hypnerotomachia Poliphili* contained not only text but also intricate engravings depicting ancient architecture, vegetation, and mythological scenes (Fig. 67). These illustrations had a significant impact on Renaissance artists and architects, who used the ancient examples depicted in the book as inspiration for their works. The book had a profound influence on Renaissance art, as it revealed the aesthetic principles of harmony and proportion known from antiquity, popularising them among a new wave of artists.



Figure 67. A spread from the edition of *Hypnerotomachia Poliphili*

Source: C. Nygren (2015).

During the Renaissance, architectural graphics developed significantly, thanks in large part to the emergence of fundamental treatises and scholarly works that laid the foundation for Renaissance architecture. One of the most important works of this period was the treatise *De re aedificatoria* (On the Art of Building) by Leon Battista Alberti, completed around 1452 and printed posthumously in Florence in 1485. Alberti making his treatise the first systematic guide to Renaissance architecture. *De re aedificatoria* consists of ten books, in which Alberti discusses architectural proportions, harmony, and rationality in construction. Unlike many other Renaissance works, the original edition of the treatise did not contain illustrations, making it a unique textual source of knowledge, where the author describes architectural ideals in detail through text rather than images. Later editions of the treatise (in Italian translations, the treatise is known as *L'architettura* di Leon Batista Alberti) included illustrations added by other publishers to visually explain Alberti's ideas (Fig. 68).

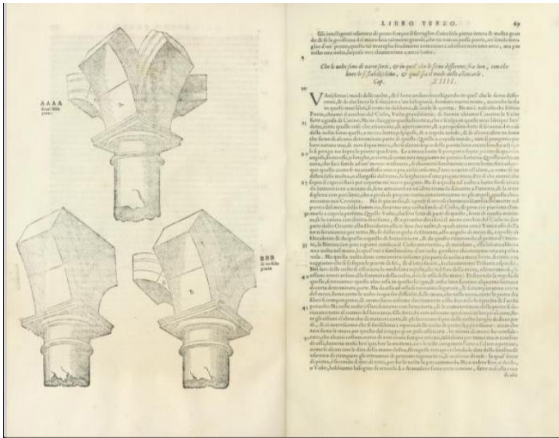


Figure 68. A spread from the treatise L'architettura di Leon Battista Alberti, 1565
Source: A. Leon Battista (1565), p. 66.

Sebastiano Serlio, an Italian architect and theorist of the 16th century, played a crucial role in disseminating architectural knowledge through his work *I sette libri dell'architettura* (Seven Books of Architecture). Parts of his treatises were published between 1537 and 1551, with the remainder issued posthumously. Serlio was one of the first to emphasise the use of illustrations in architectural treatises: he meticulously depicted architectural elements at various scales, from columns and capitals to facades and entire buildings (Fig. 69). These illustrations served not only decorative purposes but also had educational value, helping architects and craftsmen to study Renaissance architectural principles visually. Unlike the treatises of Andrea Palladio, known as *I quattro libri dell'architettura* (The Four Books of Architecture), Serlio's treatises covered a wider range of architectural styles and techniques, making them suitable for both Renaissance and Baroque architects.

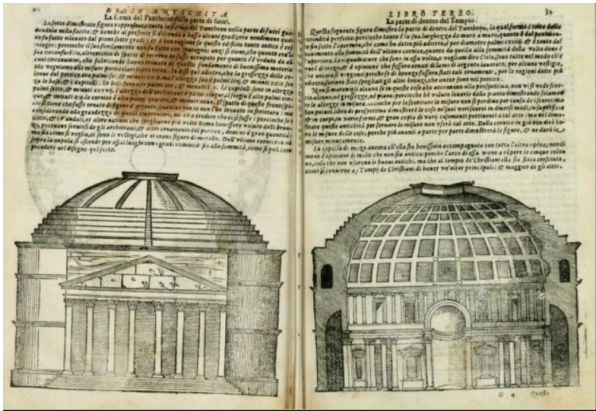


Figure 69. Tutte l'opere d'architettura, et prospetiuua, by Serlio, Sebastiano
Source: S. Serlio (1619), p. 150.

Jacques-François Blondel, a leading architectural theorist in 18th-century France, made a significant contribution to the development of Classicism through his multi-volume treatise *Cours d'architecture*, published between 1771 and 1777. This work was crucial not only for disseminating Italian classical principles but also for adapting them to the French architectural tradition, combining classical elements with local requirements and style. *Cours d'architecture* contained numerous detailed illustrations depicting facades, interiors, and elements of orders, providing practical advice for builders and architects (Fig. 70). This work became a primary textbook for architects of the time and influenced generations of students who studied at the French Royal Academy of Architecture, where Blondel was a professor.

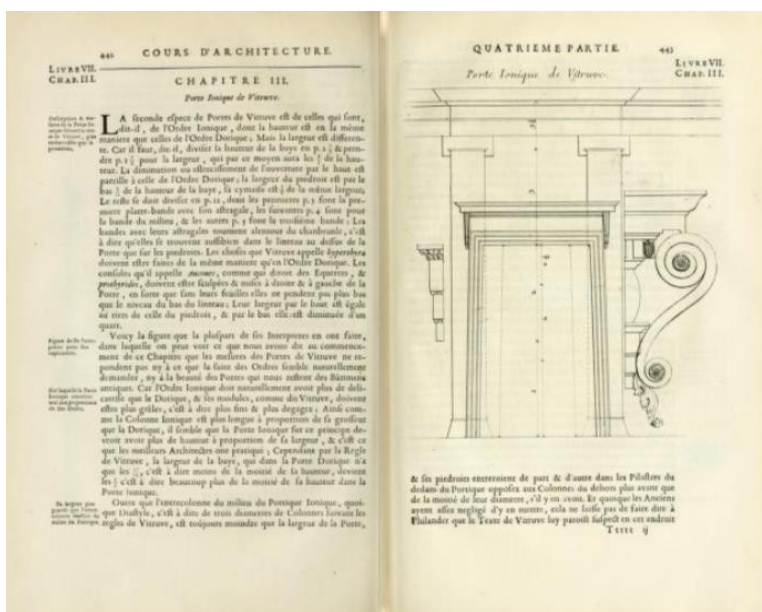


Figure 70. Cours d'architecture enseigné dans l'Academie royale d'architecture: premiere[cinquième] partie

Source: F. Blondel et al. (1675), p. 442.

In England Inigo Jones is the first English architect to disseminate the ideas of the Italian Andrea Palladio. Jones became acquainted with Palladian principles during his travels to Italy, which had a decisive impact on his work. His architectural projects, such as the Banqueting Hall in Whitehall (Fig. 71), were among the first examples of classical architecture in England.

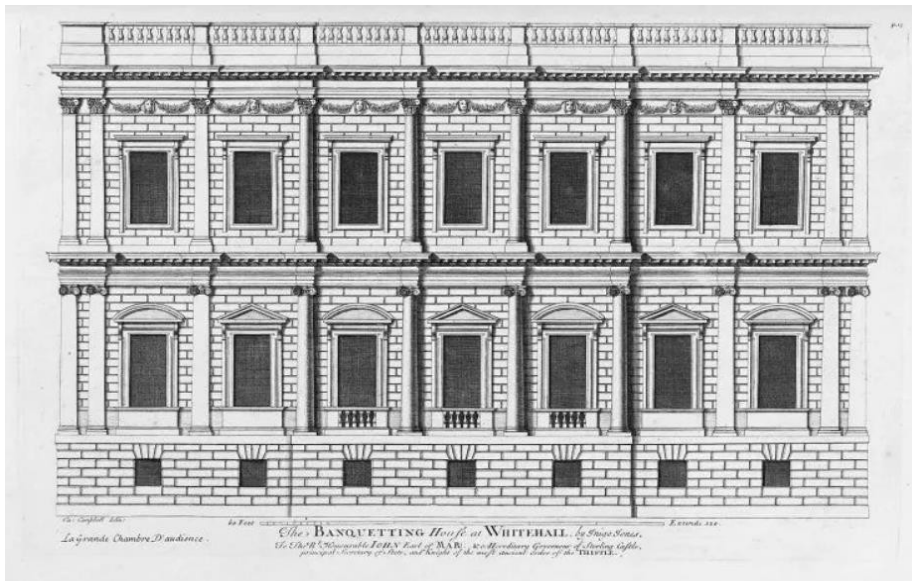


Figure 71. Inigo Jones, The Banqueting Hall, Whitehall, 1619-1622, from *Vitruvius Britannicus*, 1715, ed. Colen Campbell

Source: *The Banqueting House, Whitehall Palace (2025).*

Illustrated treatises and encyclopaedias became fundamental sources for studying architecture and stylistic ideas that shaped the architectural landscape of Europe for centuries. On the territory of Ukraine, architectural illustrations played a significant role in preserving cultural heritage and transmitting architectural knowledge. One example is Athanasius Kalnofoiyskyi's *Teraturgyma* (1638), which contained detailed images of the Kyiv-Pechersk Lavra (Fig. 72). This work helped to document the architectural style and importance of the monastery in the cultural life of Ukraine. This work not only preserved architectural knowledge, but also contributed to its dissemination beyond Ukraine, influencing the cultural landscape of Eastern Europe.



Figure 72. Kyiv Pechersk Lavra. From the book *Teraturgema* by Athanasius Kalnofoysky, 1638
Source: *B. Krupnytski (2025).*



Figure 74. The Piazza di Spagna (Veduta di Piazza di Spagna), Giovanni Battista Piranesi, c.1750
Source: *The Piazza di Spagna (Veduta di Piazza di Spagna)* (2025).

In the eighteenth and nineteenth centuries, architectural graphics developed significantly thanks to the emergence of specialised architectural magazines and albums, which played an important role in spreading architectural ideas and styles. During this period, architectural graphics became a key tool in the promotion of national styles and modernism, reflecting the cultural and aesthetic changes taking place in Europe. The Builder, founded in London in 1843, emerged as one of the most influential publications in the field (Godwin, 2023). The journal regularly featured articles on new architectural trends, innovative building materials and methods, and included detailed illustrations of projects, making it indispensable for architects and builders. Under the editorship of George Godwin, The Builder also covered topics such as urban planning, the social function of architecture, and working conditions in the construction industry. The Builder provided a platform for the exchange of ideas and discussion of current issues among architects, engineers, and builders (Fig. 75). Its articles on real-world projects helped disseminate knowledge about the latest architectural approaches, not only in Great Britain but also internationally, giving the journal a wide-ranging influence. It is also worth mentioning the album Architectural Sketches from the Continent, created by the British architect Richard Norman Shaw and first published in 1858. This publication offered a series of detailed lithographs of European architectural landmarks. The album included images of buildings in Gothic and other historical styles from countries such as France, Italy, Germany, Czechia, and Belgium. Among the subjects depicted in his works were churches, public buildings, and residential structures in cities like Amiens, Florence, Nuremberg, Prague, and others. Shaw's illustrations focused on architectural details such as facades, ornaments, and structural elements, making it a valuable resource for studying European architecture in Britain (Fig. 76).

FLINT WORK.

TO THE EDITOR.

SIR,—In my last to you, I described how walls were constructed with mud, assuming it would be interesting to those who have not seen buildings put up with any thing but stone and brick (and I know there are many); in this I am influenced by the same motives, i. e. of giving information to those who are fond of rules etc. how we construct our buildings, and the materials we use, and again, that others may do the same. What a fund of practical information might be gained by such a course, and how useful it would be to those who have to seek the country use for employment. Many will be deterred from doing so, from not using themselves to any thing of the sort, and the fear of committing mistakes; to these I would say, fear not, do your best; should we commit errors in our description, we are sure to be corrected by our editor, and how pleasant to be corrected by those who are "authoritatively bearing" for our welfare.

Flints are very plentiful in this part, the soil is thickly strewn with them; this plentiful supply no wise advantage of in constructing walls. Those found on the surface and in the soil are not so good as those got from the chalk, on account of being discoloured by some chemical action, and rather shaly, and generally too small. About two years ago a friend of mine was in search of employment, and hearing of my being in this quarter, came to see me; I was having at the time flint used in walling; not having before seen any flint but in a trader's lot or on the bank of a gas, he said, evidently with the feeling of giving me a valuable suggestion, "Mr. F. this flint appears to be a prime material for outside work, as it may be considered impervious and impervious to the weather, but I think it would be much better if you could contrive some means of getting it in large blocks, thereby avoiding so much labour in setting, and fewer joints." My friend was substantially under the impression that flint was not from quarries, the same as stone. I explained to him that flints are got when digging in the chalk; that they are found in detached pieces, and that we seldom find one when working, that would be more than six or eight inches square. When they are found, they have a sort of white matted or thin about a quarter of an inch thick, and they are in all kinds of shapes; sometimes they occur in veins or strata like a string course, six or seven feet apart, but still detached. The chalk in this neighbourhood in which they are embedded is about six hundred feet deep!

My friend seemed somewhat astonished at my explanation of how we came of our flint, then he felt somewhat curious to know how they came there; but I could not inform him. I resolved sending on my car flint, which attempted to prove that they had been dug; and have heard a geologist of some note say they have been speared; how they have originated I cannot tell.

The process of working flint, in preparing them fitted for use is simple, though it requires some practice, on account of their brittleness and liability to break in the wrong place. The first process is to break them with a large hammer, then with a smaller one to square up the pieces; the generality of the larger pieces and those that look the best are about four or five inches long, and the same in depth, so that they cover with the bricks when used. A good deal depends upon the cutter of flint, in making flint-work look well, in squaring them up well.

If these humble remarks meet your approval, I will in my next supply a sketch as they appear in the wall. I am, Sir, your obedient servant,

JAMES FRYMANTER.
Near Stockbridge, Herts, July 30th, 1843.

WARMING AND VENTILATION.

TO THE EDITOR.

SIR,—I enclose you a sketch of the building mentioned in my letter in THE BUILDER of the 6th May. A jury would certainly decide when they had so much like the building mentioned before their eyes. It is merely work-house.

Yours obediently, T. H. C.

The plan and sections of the hot bath or stove show the bottom of grate; the cold air-flue, entering into what may be called the air-chamber, and the hot-air-flue, A, passing out; the arrows the current; a brickwork casing inside the front and stove-plates and partition; the strong lines the iron-work. It will be perceived there is a plate of iron under the top, to prevent it becoming too hot. S, the smoke-flue, which passes into the gable; one hot-air flue passes under the windows in the wall at F, ground plan, and so shown in the section.

from these over the window and door, in the wall between the staircase and work-room, and back in the wall, G, and continues a separate flue up the gable. The hot air flue passes over the windows, without any outlet, into the room below, and back just over the door, with a ventilator into each small room,

and so on a separate flue up the gable. The small rooms are divided by quarter partitions, lighted each with a skylight. There are ventilators in the ceiling and roof. This, in manner, is used to ventilate the building with cold air, the drying stove not being required.

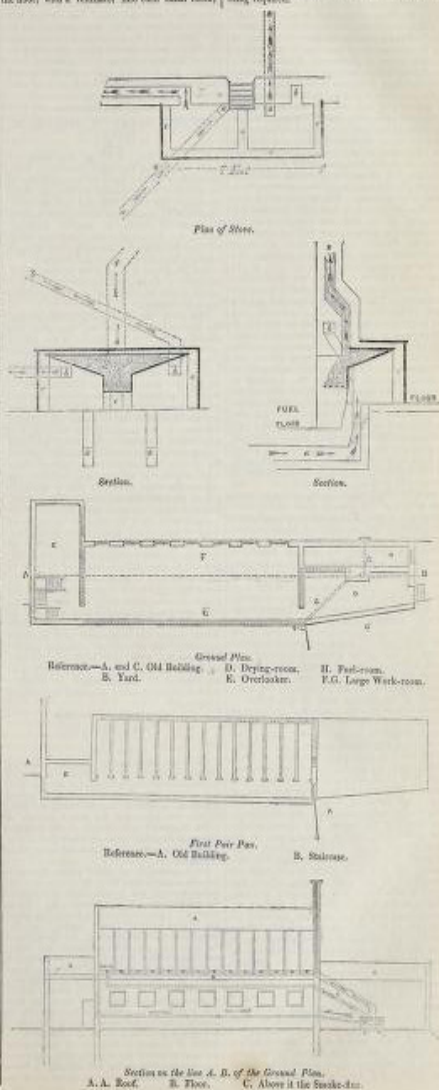


Figure 75. Page from The Builder journal, No. 1843, p. 310

Source: The builder (1842).

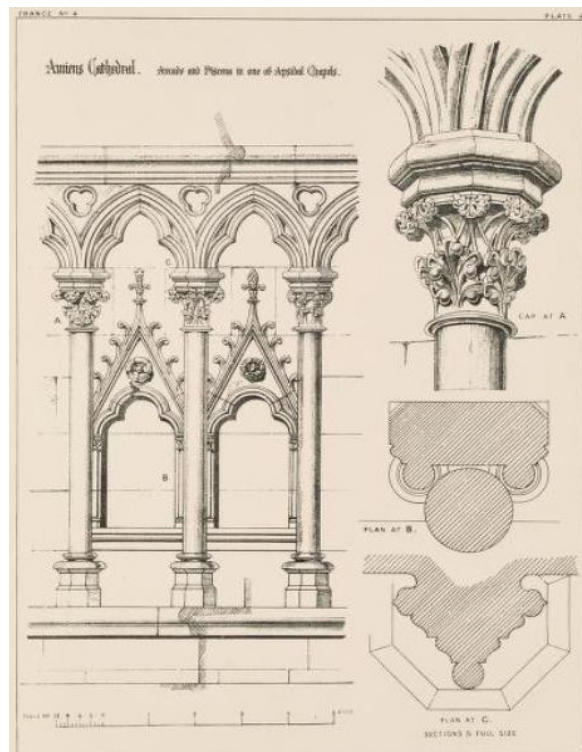


Figure 76. Page from the album *Architectural Sketches from the Continent*, 1872
Source: *R.N. Shaw (1872).*

Modernism, which emerged in the late 19th century, also received significant support from architectural publications. Hermann Muthesius, a German architect and theorist, played a pivotal role in shaping the modernist principles of early 20th-century architecture. His works, such as *Stilarchitektur und Baukunst* (1902), were instrumental in challenging the excessive ornamentation that dominated late 19th-century architecture (Schrappner, 2020). In this work, Muthesius expressed a critical view of eclecticism and stylistic excess, promoting ideas of rationality, simplicity, and functionality. This played a significant role in the shift away from traditional styles towards more streamlined forms focused on practicality and materials, which formed the basis for the later development of Functionalism and Modernism. Muthesius also supported the ideas of the English approach to architecture, which he detailed in his book *Das Englische Haus* (1904) (Fig. 77), examining the role of materials and structural solutions that served as the foundation for Modernist aesthetics. He became one of the co-founders of the German Werkbund, which had a significant influence on the development of architectural Modernism and contributed to the shift from ornamentation to simplicity and the rational use of space.

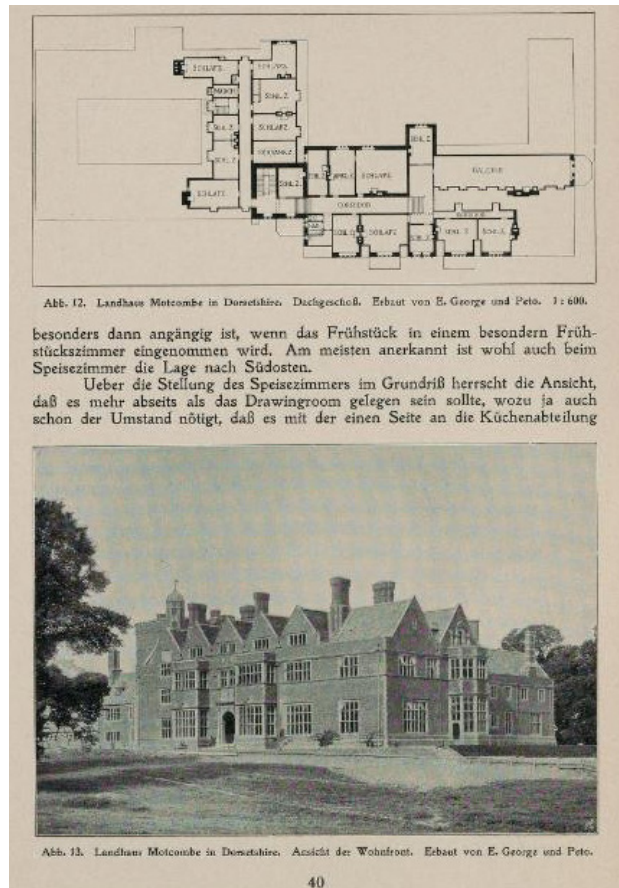


Figure 77. Page from *Das englische Haus: Entwicklung, Bedingungen, Anlage, Aufbau, Einrichtung und Innenraum*, Muthesius, Hermann, 1904

Source: *H. Muthesius (1904; p. 40).*

During this period, Ukrainian architectural graphics were actively developing, reflecting national styles and the influence of European architectural trends. One of the most significant publications of this time is “Description of Kyiv” (Fig. 78) (1820) by Maksym Berlinskyi (Petrenko, 2025). Berlinskyi was a prominent Ukrainian historian and local historian, and his work included detailed descriptions and illustrations of Kyiv’s main architectural monuments. This “Description of Kyiv” has become a valuable source for researchers and historians, providing a unique insight into the architectural development of the city. Under the influence of the Romantic movement and the revival of national identity, Ukrainian architects began to actively use elements of folk architecture in their projects. Thanks to the work of Ukrainian architects and publishers, architectural graphics of this period became an important tool in the development of architecture and the preservation of national traditions. Architecture serving not only as a backdrop for events but also as a central component that reflects the character of an era and place. In the eighteenth century, a significant

number of publications appeared documenting architectural monuments, their style, and significance. In Ukraine an essential example is the work of Anton Petrushevych, who studied the antiquities of Galicia and Volyn (Burdulaniuk, 2014). His works, although not specifically dedicated to architecture, included illustrations of architectural monuments in these regions, contributing to the preservation of knowledge about their historical and cultural heritage. In Taras Shevchenko's literary works, particularly his poetry, architectural motifs often play an important role. Descriptions of traditional Ukrainian houses and churches help to create an authentic atmosphere and emphasise the connection between the characters and their cultural environment. Thus, in the eighteenth and nineteenth centuries, architectural illustrations in fiction and history books helped to document architectural objects and emphasised their cultural significance, contributing to the formation of national identity and the preservation of cultural values.



Figure 78. Plan of Kyiv, added to M. Berlinsky's book *A Brief Description of Kyiv*, 1820
Source: *Plan of the city of Kyiv* (1820, M. Berlinsky) (2025).

1.4 The dissemination of architectural graphics in Eastern Europe

1.4.1 Cultural and historical conditions for the dissemination of architectural graphics in Eastern Europe

Architectural graphics in Eastern Europe have a rich and complex history that dates back to the early medieval period. It has evolved under the influence of many cultural and political factors, adapting various artistic traditions and technical innovations. Early medieval examples of architectural graphics in Eastern Europe, especially in the territory of Kyivan Rus, can be dated back to the 9th and 11th centuries. One of the most famous examples is the frescoes of St. Sophia of Kyiv (Fig. 79), during the reign of Prince Yaroslav the Wise. These frescoes depict not only religious subjects, but also architectural forms, such as the image of the temple, where the architectural elements used in the construction are reproduced in detail. Similar examples can be found in other churches of this period, such as the Transfiguration Cathedral in Chernihiv.



Figure 79. The Grand Prince's portrait, the southern part of St. Sophia Cathedral, fresco from the 11th century

Source: *Sophia Cathedral. Mosaics and frescoes of St. Sophia Cathedral (2025).*

The influence of Byzantium on the architectural graphics of Kyivan Rus was significant. This is especially evident in the use of symbolic iconographic elements that combine architectural details with religious imagery (Pohl & Wieser, 2022). One important example is the 12th-century icon of the Intercession of the Virgin Mary from Suzdal (Fig. 80), which combines the image of the Virgin Mary with architectural motifs such as arcades and towers. These elements not only emphasise the spiritual context, but also demonstrate the technical achievements of the architecture of the time. With the decline of Kyivan Rus and the Mongol invasion in the 13th century, architectural graphics underwent significant changes. The destruction of many cities and temples led to the loss of numerous examples of early architectural graphics. However, the surviving elements testify to the

preservation and development of graphic traditions. For example, the Radziwiłł Chronicle, created in the 15th century, is one of the most valuable visual sources about the life and architecture of Kyivan Rus'. This illustrated chronicle includes over 600 miniatures that depict scenes from history, including architectural subjects such as depictions of cities, fortifications, churches, and domestic buildings (Fig. 81). The miniatures of the chronicle have a simplified and conventionally symbolic style, characteristic of medieval iconography, which does not allow for the reproduction of precise architectural details but gives an idea of the general architectural forms and structural features of buildings of that time. Depictions of fortifications and city walls convey typical elements of defensive architecture in Kyivan Rus', such as towers and thick walls, which were key to defending cities. Church buildings often have multi-domed structures, reflecting the Byzantine architectural influences characteristic of that period.



Figure 80. The Intercession of the Virgin Mary, a 1360s icon from the Intercession Monastery in Suzdal
Source: A. Parkhomchik (2020).



Figure 81. Fragment of the Radziwiłł Chronicle
Source: Radziwiłł Chronicle (1450), p. 68.

An important stage in the history of architectural graphics in Eastern Europe began in the seventeenth century, when Baroque became the dominant style. Baroque artists actively used architectural graphics to depict complex compositions that combined architecture with decorative elements. The works of artists such as Francesco Bartolomeo Rastrelli, who created architectural designs for St. Petersburg and Kyiv, are excellent examples of Baroque graphics. His designs, such as the depiction of St Andrew's Church in Kyiv (Fig. 82), reflect the sophistication and dynamism of Baroque architecture.



Figure 82. Church of St. Andrew the First-Called. M. Sazhin, watercolour, 1840s
Source: K. Shpolyanska (2025).

Eastern European architectural graphics are closely intertwined with the political and social changes that influenced architectural styles and techniques. The transfer of territories under the control of the Polish-Lithuanian Commonwealth or the Russian Empire altered stylistic priorities in architectural design. For instance, in the 18th and 19th centuries, Classicism became the dominant style in the Russian Empire, reflected in the detailed architectural graphic depictions of cities like Saint Petersburg and Odesa. This style emphasised symmetry, proportion, and the application of classical orders, serving as a means of expressing imperial ideals and prestige. Contacts with neighbouring cultures also played a significant role in shaping the region's architectural graphics. In 18th-century Poland, architectural graphics were strongly influenced by Italian Baroque, resulting in monumental structures with

dynamic facades and rich decor. In the architectural graphics of the Crimean Khanate, Ottoman influence is evident, combining European and Asian elements. The graphic depictions of mosques and palace complexes, such as the Bakhchisaray Palace (Fig. 83), clearly utilised domes, arches, and details characteristic of Ottoman architecture.



Figure 83. Bakhchisaray Palace and Khan's Cemetery, 1830
Source: *History of Bakhchisarai* (2025).

With the spread of Christianity in Eastern Europe, the importance of ancient heritage was reinforced through Byzantium, which became a bridge between ancient culture and medieval Europe. The Byzantine Empire, with its centre in Constantinople, was the successor to the Roman Empire

and brought with it developed architectural and artistic traditions. The Byzantine style of architecture, which included the use of domes, arches and mosaics, became the model for the construction of many churches and monasteries in Kyivan Rus and other Eastern European countries.

Another important example of Byzantine influence on architectural graphics is the Church of St Panteleimon in Halych, built in the late twelfth century. The architectural reliefs and frescoes of this church clearly show Byzantine motifs, such as complex decorative patterns and scenes from religious texts, which reproduce the Byzantine style of depicting architecture and religious subjects. The development of monastic complexes also contributed to the spread of Byzantine architectural graphics. Monasteries, such as the Kyiv Pechersk Monastery, became centres of education and culture, where manuscripts with architectural images were kept and copied. Other Byzantine influences include the church architecture of Bulgaria and Serbia, which played a key role in spreading Byzantine architectural traditions in the region. For example, the St. Demetrius Cathedral in Veliko Tarnovo, Bulgaria, built in the 12th century, is a great example of the Byzantine style with its massive domes and rich decorative elements reflected in graphic representations. Byzantine influence also spread to the western territories of Eastern Europe, in particular to Transylvania and Galicia. Here, in the architectural designs of cities such as Lviv, elements of Byzantine architecture are visible, in particular in the depictions of domes and towers. For example, the Church of the Assumption in Lviv. Byzantine artists also played an important role in the development of architectural graphics in Eastern Europe. For example, the mosaics and frescoes created by Byzantine masters in the churches of Constantinople were widely known and influenced architectural graphics in the region. The famous Byzantine master Theophanes the Greek, who worked in Moscow at the end of the 14th century, contributed to the popularisation of the Byzantine style in Russian architecture and graphics with his works. After the fall of Constantinople in 1453, many Byzantine artists and architects moved to other countries, including Muscovy, where they continued their work and passed on Byzantine traditions to a new generation of masters. This period was a time of active cultural exchange, when Byzantine architectural and graphic traditions were integrated into local artistic practices.

1.4.2 The role of Christianity and monastic centres in the dissemination of architectural knowledge

Christianity and monastic centres played a crucial role in the spread of architectural knowledge in Eastern Europe. This process began with the adoption of Christianity as the state religion of Kyivan Rus in 988 by Prince Vladimir the Great, which marked a turning point in the cultural and architectural development of the region. Christian churches and monasteries became not only centres of religious life, but also centres of education, science and art, where architectural knowledge was preserved and passed on.

The adoption of Christianity contributed to a significant construction boom, particularly in the construction of churches and monasteries. Kyiv, as the capital of Kyivan Rus, became the main centre of this process. One of the first major architectural projects was St. Sophia's Cathedral, founded in 1037. It became a symbol of the new Christian era and a demonstration of the architectural capabilities of the time. The architectural knowledge needed to build such grandiose structures often came from Byzantium, where there were already developed traditions of church architecture. The Byzantine masters invited to Kyiv brought with them not only technical skills but also

knowledge of architectural styles and methods. One of the important aspects that Christianity brought to architectural graphics was the preservation and transmission of knowledge through monastic scriptoria. Monasteries, such as the Kyiv-Pechersk Lavra, became centres of intellectual life where manuscripts with architectural illustrations were created. In the scriptoria, monks copied and illustrated books, including architectural treatises and plans that served as guidelines for the construction of new churches. For example, the Kyiv Pechersk Monastery Patericon contains miniatures with detailed depictions of architectural elements, reflecting the high level of architectural knowledge and its transmission to the next generations. Monastic complexes not only preserved knowledge, but also actively disseminated it. Monks often travelled between monasteries in different regions, which facilitated the exchange of architectural ideas and techniques. For example, monks from the Kyiv-Pechersk Lavra travelled to Novhorod, Pskov, and other cities, bringing with them knowledge of construction and architectural styles, which they adapted to local conditions. Monastery schools also became centres of learning for future architects and builders, where they could obtain an education in architecture and construction.

Monasteries were also important centres for the preservation and dissemination of technical innovations in construction. For example, in the 13th and 14th centuries, with the advent of stone construction, monasteries became centres of learning new technologies such as brick making and stone processing. During this period, more complex structures appeared, including domes and arched systems, which required in-depth knowledge of geometry and engineering. Monastery craftsmen actively developed these technologies and passed them on to local builders, contributing to the spread of architectural innovation. In addition, monasteries played a pivotal role in preserving and reproducing classical architectural texts. Byzantine architectural treatises and plans were translated and copied in Eastern European monasteries, ensuring the preservation and transmission of architectural knowledge over the centuries. Christian pilgrimages also contributed to the spread of architectural knowledge. Pilgrims travelling to holy places often brought back architectural sketches and plans, which were then used as the basis for the construction of new churches and monasteries. For example, after the pilgrimage to Constantinople, many Russian princes and boyars began to order the construction of churches based on Byzantine models, which led to the emergence of new architectural styles in the region. A particularly important aspect was that monasteries frequently became places of storage for architectural archives. They kept plans and drawings, which allowed them to accumulate information about the construction of critical buildings over many generations. This was especially relevant in the case of large church centres, such as the Kyiv-Pechersk Lavra, where detailed plans for the construction and reconstruction of the Lavra's buildings were kept. In addition to this, monasteries often commissioned large architectural projects, which stimulated the development of architectural graphics.

1.4.3 The influence of trade routes and urban centres on the development of architectural graphics

Urban centres and trade routes played a key role in the development of architectural graphics in Eastern Europe. These factors not only contributed to the economic prosperity of the region, but also became important centres of cultural exchange, which significantly influenced architectural practice and its visual representation. Successful cities were often hubs on trade routes where different cultures, technologies and artistic styles met.

One of the most striking examples of the influence of trade routes on architectural graphics is the city of Lviv, located at the crossroads of critical trade routes connecting Western Europe with the Middle East. Founded in the 13th century, Lviv quickly became a centre of trade, attracting merchants from all over Europe. This city has preserved a unique architectural heritage that reflects the influences of different cultures. Architectural drawings of Lviv from that time show detailed depictions of rich facades and intricate decorative elements brought in by craftsmen from Italy, Germany, and other countries. The influence of trade routes on architectural graphics is also evident in Kyiv, which has been an important trade centre since the days of Kyivan Rus. The well-known route “from the Varangians to the Greeks”, which connected Scandinavia with Byzantium, passed through Kyiv (Bjerg et al., 2013). This route not only facilitated trade, but also cultural exchange, which was reflected in the architectural forms and styles of the city. Kyiv’s churches, such as the Church of the Tithes and St. Sophia’s Cathedral (Fig. 84), built in the 11th century, demonstrate a combination of local and Byzantine architectural traditions. The architectural plans and drawings of these structures have been preserved in chronicles and graphic representations, testifying to the richness and diversity of the architectural heritage. Novhorod, another indispensable trading centre, is known for its influence on the development of architectural graphics in the region. The Novhorod Republic, which existed from the 11th to the 15th centuries, was a significant trade and cultural hub where different cultural influences collided and interacted. Novhorod was a part of the Hanseatic League, which allowed it to become an important point on the trade routes between Western Europe and Russia. This led to the emergence of unique architectural styles, such as the Novhorod helmet dome. Odesa, founded in the late eighteenth century, is another significant example of the influence of trade routes on architectural graphics. The port city, located on the Black Sea coast, quickly became an essential centre of international trade. The architecture of Odesa reflects a mix of different styles and influences, from classical European to oriental. Detailed architectural plans and drawings of Odesa, such as the perspective drawing of the Potemkin Stairs (Fig. 85), show the high level of architectural graphics used to design and build the city. These plans demonstrate a masterful use of perspective and detailed graphic technique to create monumental cityscapes.

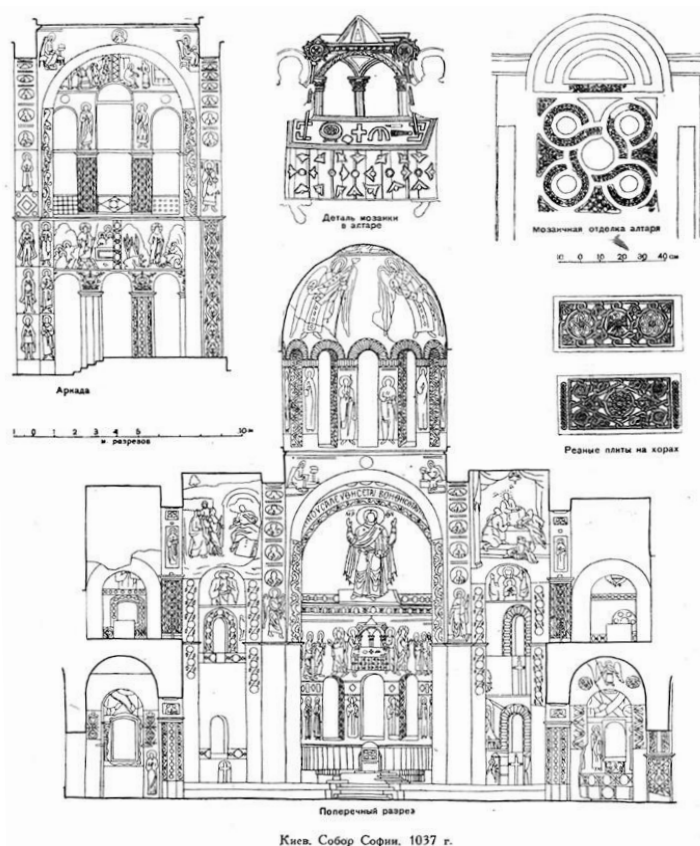


Figure 84. Saint Sophia's Cathedral in Kyiv

Source: *Sophia Cathedral in Kyiv drawing (2025).*

The Hanseatic League played a special role in the spread of architectural knowledge through trade routes. As an economic and cultural association of Northern European cities, it ensured a constant exchange of goods, ideas, and technologies. Cities within the union, such as Riga, Tallinn, and Novhorod, developed unique architectural styles that resulted from this exchange. For example, in the Gothic depictions and plans of Riga's warehouses and commercial buildings, one can see the influence of German architecture adapted to local conditions. Riga, the capital of Latvia, is another example of a city that, thanks to its position at the crossroads of trade routes, has become an important cultural and architectural centre. Being part of the Hanseatic League brought Riga significant economic growth and cultural influence from Western Europe. Riga's architectural architecture reflects the richness and diversity of styles, including Gothic, Renaissance, and Baroque. For example, the buildings on Jaunijela Street, constructed in different architectural styles, demonstrate the influences of the various European traditions that met in this shopping centre. Cultural exchange through trade routes was also a key factor in the development of architectural graphics in cities like Tallinn. As one of the critical centres of the Hanseatic League, Tallinn has preserved

many medieval buildings that reflect a mix of German, Scandinavian, and local architectural influences. Architectural graphic representations of Tallinn, such as drawings of medieval churches and defensive structures, demonstrate the city's complex structure and cultural diversity.

Trade routes not only contributed to the economic development of cities, but also stimulated cultural exchange, which is reflected in architectural graphics. For example, new ideas and technologies were brought to Eastern Europe through trade routes with the Middle East. This can be seen in architectural depictions that combine European and Oriental styles, such as the layout of caravanserais and mosques in Crimea, which show influences from Ottoman and Persian architecture.



Figure 85. Potemkin Stairs

Source: *Classicism in the architecture of Ukraine: from Kharkiv to Lviv, from Odesa to Kyiv (2025).*

SECTION II: THE MAIN STAGES OF THE DEVELOPMENT OF UKRAINIAN HISTORICAL MAPS AND ARCHITECTURAL GRAPHICS

The analysis of old maps and architectural graphic offers a better insight into the development of the urban structure and the influence of geopolitical factors on the development of the urban infrastructure of regional and capital cities. These maps are not only important sources for studying the history of urban planning and architectural, but also reflect the economic, social, and cultural dynamics of the region. They provide an opportunity to trace the evolution of cities, their strategic development and significance in the context of European history. Thanks to these maps, one can assess the role of regional and capital cities in the period and their contribution to the cultural and economic life of the region.

2.1 The development in the Dnipro River basin and the appearance of images of the first settlements

The emergence of buildings in the Dnipro River basin is an important stage in the history of Ukrainian architectural graphics. The Dnipro River basin, which stretches across the modern territory of Ukraine, has long been a centre of human activity and cultural development. Due to its natural conditions, such as fertile land and abundant water resources, the region has become an attractive place for settlement of various peoples. The first images of settlements on the territory of Ukraine were associated with Trypillian culture.

The Trypillian culture, which existed in the 6th-3rd millennia BC, was one of modern Ukraine's most significant archaeological cultures of the Eneolithic period. Its inhabitants settled vast territories from the Carpathians to the Dnipro River, creating developed agricultural communities with a unique material culture (Fig. 86). Trypillian settlements are particularly noteworthy for their scale, layout, and architectural features.

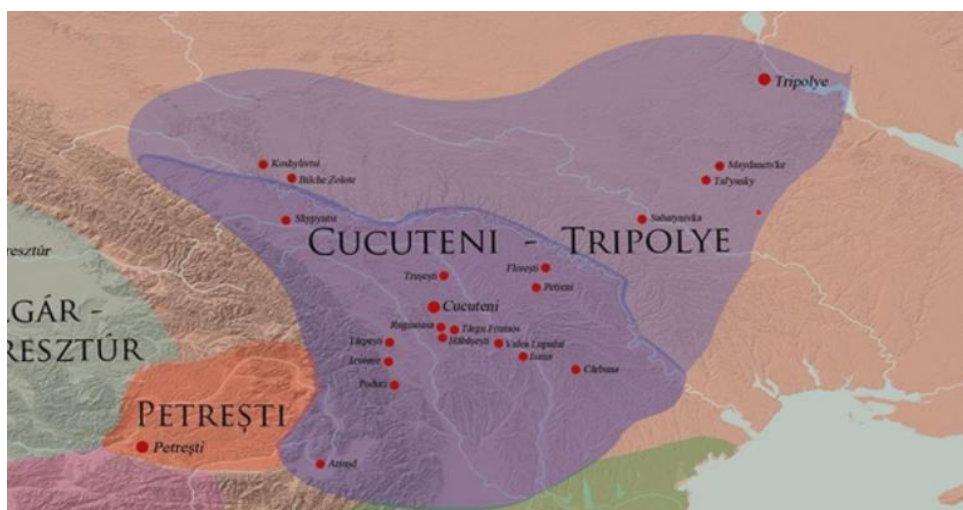


Figure 86. Map of the Trypillian culture

Source: *Trypillian culture on the lands of Ukraine (2015).*

Thanks to geomagnetic aerial photography and the research of K. Shyshkin, V. Dudkin, M. Shmahlii, K. Zinkivskiy, and other experts, the largest Trypillian settlements of the Copper Age in Europe were known. In 1981, the Institute of Archeology of the Ukrainian SSR (Kruzhutsky *et al.*, 1986) organised the Trypillia Expedition, which explored these sites for more than a decade. Geophysicists developed a methodology for detecting ancient buildings without excavation (Fig. 87).

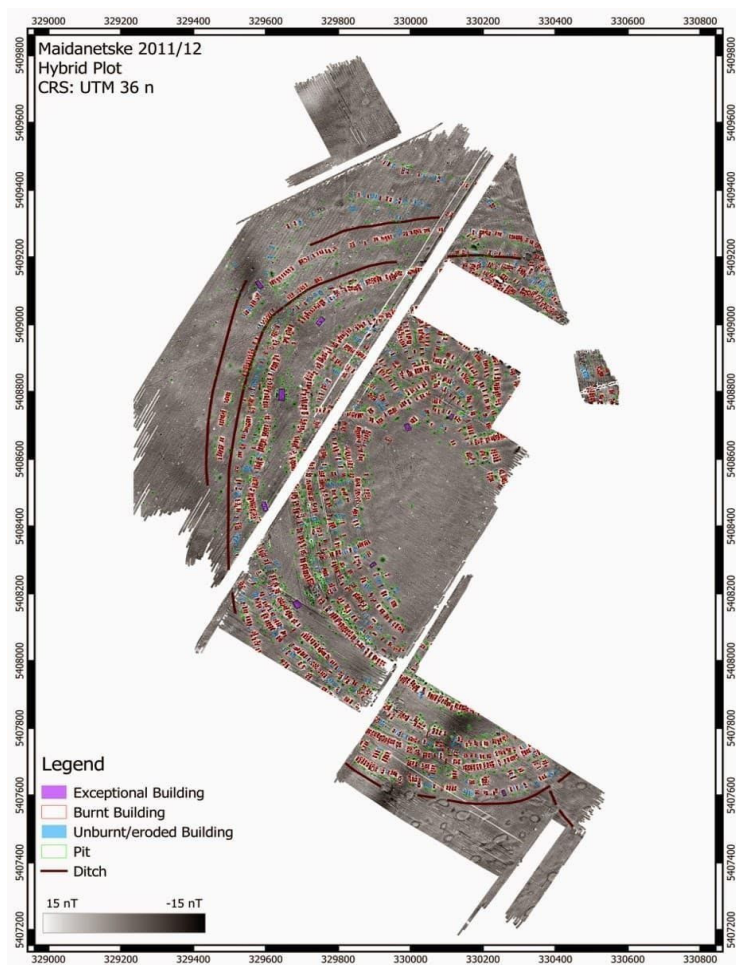


Figure 87. Geomagnetic aerial photography of Trypillian settlements

Source: *Trypillian culture on the lands of Ukraine* (2015).

Settlements were usually located on elevated areas near rivers and streams, which provided water and protection from flooding. The choice of a settlement site was determined by both economic needs and natural conditions favourable for agriculture. Settlement layout was well organised. Most of the large settlements had a concentric structure, with buildings arranged in circles or

oval rows around a central square. This approach contributed to the efficient organisation of space and probably reflected the social structure of the community. The central part may be used for public gatherings, rituals, or as an enclosure for livestock (Passek, 1941).

Trypillian settlements varied from small villages to large proto-cities. The largest of them, such as Tal'yanky, Maidanetske, and Nebelivka, covered an area of 150 to 450 hectares and included up to 2,700 houses. These “proto-cities” could accommodate between 10,000 and 15,000 inhabitants, indicating a high level of social organisation and development. In such large settlements, houses were often arranged in several concentric circles, forming a complex network of streets and passages (Fig. 88) (Kiosak, *et al.*, 2024). This indicates the existence of planning and possibly centralised construction management. In addition to residential buildings, public structures were also discovered, which may have served as gathering places or sites for religious rituals. Trypillian dwellings were mostly ground-based and rectangular. The framework of the buildings consisted of wooden posts, between which they wove walls of wicker covered with clay. This construction method, known as “wattle and daub,” provided sufficient strength and thermal insulation. The roofs were gabled, covered with straw or reeds, which protected them from precipitation. The interior space of the houses was often divided into several rooms designed for different purposes: living spaces, storage rooms for grain, and workshops. The floors were made of compacted clay, sometimes covered with wooden planks. In the centre of the dwelling, there was usually a hearth or stove for cooking and heating (Berezankaya *et al.*, 1985).



Figure 88. Digital reconstruction of the Trypillian settlement in Tal'yanky
Source: *Trypillian culture on the lands of Ukraine* (2015).

The first images of settlements found in the Dnipro basin include various forms of graphics: rock paintings, carvings on stone and ceramics. For instance, the rock paintings near Stone Grave in Zaporizhzhia (Fig. 89) date back to the Mesolithic period and represent scenes from the lives of ancient inhabitants, including hunting scenes and religious rituals. These images provide a unique opportunity to explore architectural traditions and ideas about the spatial organisation of settlements.



Figure 89. The petroglyphs of the Stone Grave

Source: *Trypillian culture on the lands of Ukraine (2015).*

The development of the first settlements in the Dnipro basin is intricately linked to the influence of natural conditions and cultural contacts. The Dnipro River served as an essential transport and trade route that connected different parts of the region and facilitated the exchange of knowledge and technology between peoples. This influenced the architectural styles and construction techniques used in the settlements.

Cultural and trade ties with neighbouring regions and peoples contributed to the emergence of unique architectural forms, which are reflected in the graphic images of the time. These images have become a valuable source for studying the development of Ukrainian architectural graphics, as they not only document architectural achievements but also reflect the evolution of the artistic vision and technical capabilities of the experts of the time. The study of these early stages of development and graphic representations provides a better insight into the processes that shaped the architectural face of Ukrainian cities in the following centuries.

2.1.1 Geographical and historical conditions for the formation of the first settlements

The Dnipro River basin, one of the largest rivers in Europe, has long played a key role in the formation of the first settlements on the territory of modern Ukraine. The Dnipro River stretches for approximately 2,200 kilometres from its source in Russia and flows into the Black Sea, covering vast areas and creating favourable conditions for the life and development of human communities. The geographical and historical conditions of the Dnipro basin made the region attractive to early settlers, fostering the development of cultures and civilisations for thousands of years. The natural conditions of the Dnipro basin, including its fertile land, rich water resources, and diverse landscapes, provided favourable conditions for agriculture, fishing, and hunting. The forest steppe and steppe zones adjacent to the Dnipro provided rich pastures and opportunities for farming. This contributed to the formation of the economic base necessary for the emergence and development of the first settlements. Archaeological finds, such as the Mizynska site in Chernihiv Oblast (Shovkoplias, 1965), suggest the existence of hunting and gathering communities here. The

Mizynska site is one of the crucial archaeological monuments of that time. The dwellings found at this site were primitive structures made of mammoth bones and skins, which served as protection from harsh climatic conditions (Fig. 90). Numerous artefacts have also been found, including bone and ivory jewellery, indicating the development of artistic skills and social organization.



Figure 90. Remains of a mammoth bone dwelling in Mizin under reconstruct

Source: *Middle Paleolithic (North) (2025).*

Archaeological excavations in Maidanetske have revealed the remains of numerous buildings, indicating a great level of architectural skill and social organisation of the Trypillians. The houses were built of wood and clay, had several rooms, and were located along clearly defined streets. Apart from residential buildings, public buildings, including sanctuaries, were discovered in the settlement, indicating a developed religious system of Trypillians (Gaydarska *et al.*, 2020). Agriculture played a significant role in the life of Trypillian culture. The Trypillians grew wheat, barley, millet, and other crops, and raised domestic animals such as cattle, pigs, and sheep. These agricultural practices ensured a stable food supply and contributed to population growth and societal development. In addition to agriculture, the Trypillian culture was known for its outstanding artisanry in ceramics. Trypillians made earthenware decorated with geometric ornaments and images of animals. These products testify to the developed aesthetic culture and artistic abilities of Trypillians. Furthermore, they were engaged in metalworking, specifically copper, which was used to make tools and jewellery.

At the end of the Neolithic period, Trypillia culture began to decline. The reasons for this decline are still the subject of scientific debate, but there are several theories. One of them is the theory of climate change, which could lead to the drying up of land and a decrease in yields. Another theory is related to internal social conflicts and attacks by neighbouring tribes. Despite its decline, the legacy of Trypillia culture has considerably affected the further development of civilisations in the region.

The Dnipro River also played a significant role as a transport and trade route connecting different parts of the region and facilitating the exchange of knowledge and technology between peoples. For instance, in the Bronze Age, approximately 2,000 BC, the Dnipro basin became a vital centre for tribes of Corded Ware cultures, which actively traded with neighbouring regions, including Central and Eastern Europe. Archaeological finds show the presence of numerous exchange items such as metalware, jewellery, and ceramics, which confirms the active trade links of these tribes. Trade routes passed through large areas, connecting the Dnipro basin with other vital Bronze Age centres in Europe (Fig. 91).

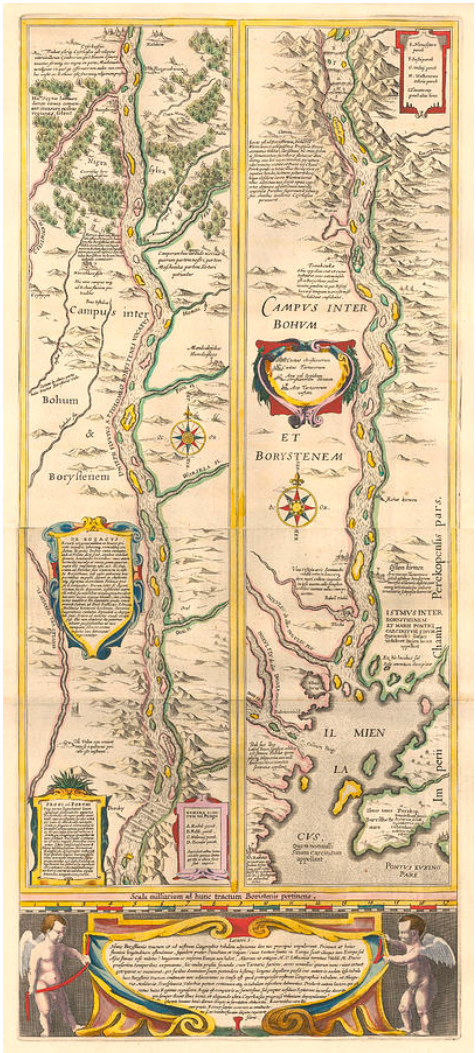


Figure 91. Tractus Borysthensis Map

Source: *Borisfensky Way in the lower reaches* (2022).

One of the key archaeological sites of the Bronze Age in the Dnipro basin is the Vysotskyi burial ground (Fig. 92), found on the territory of the modern city of Zolochiv, Lviv region. For example, objects originating from Central and Western Europe were found, knives, axes, sickles, and jewellery such as bracelets and rings were found in the cemetery. This suggests extensive trade networks that covered large areas and facilitated the exchange of technology, cultural achievements, and goods.

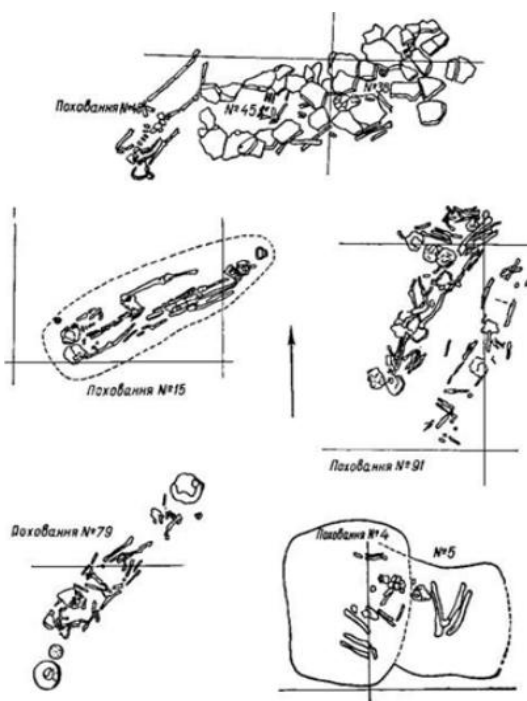


Figure 92. Plans of individual burials in the Vysotska culture cemetery in the city of Zolochiv
Source: *L.I. Krushelnytska, 1965.*

Metallurgy played a key role in the economic and social life of these tribes. Archaeological research shows that Corded Ware tribes actively used copper and tin to produce bronze, which allowed them to create high-quality products. The metallurgical workshops were located near sources of raw materials. Apart from the production of tools, Corded Ware tribes made a variety of jewellery that had both aesthetic and social significance (Kolář, 2020). Bronze bracelets, rings, fibulae, and other jewellery were often used as symbols of status and power. Finds of these objects in burials testify to the existence of a social hierarchy and a complex system of social relations (Fig. 93). Archaeological research shows that tribal leaders and the elite had access to the best resources and controlled major economic and political processes. Furthermore, archaeological evidence suggests the existence of developed religious practices and religious buildings. Corded Ware tribes had their own religious rituals and beliefs that were an important part of their social life.

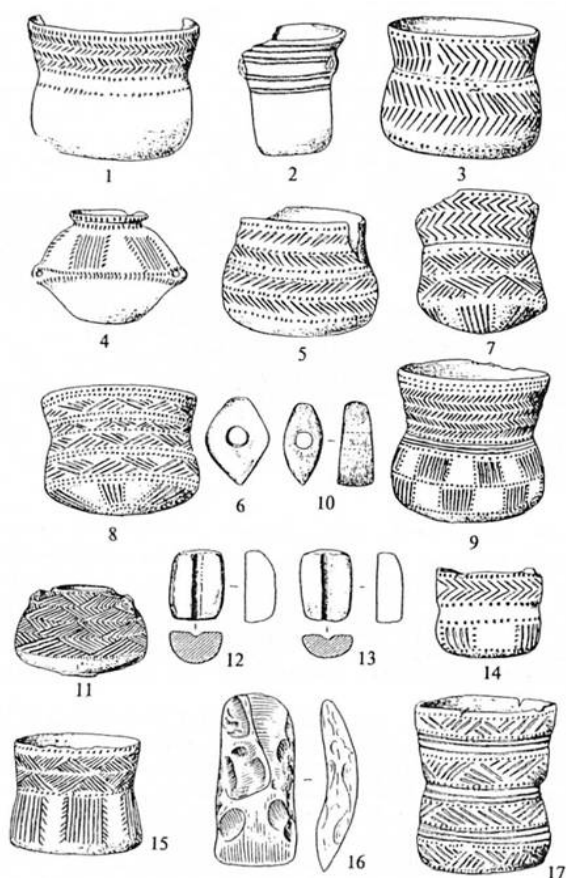


Figure 93. Elements of the material culture of the Corded Ware culture

Source: *Subcarpathian culture of cord ceramics (2015).*

In the Early Iron Age, approximately 1,000 years BC, the first large proto-state formations emerged on the territory of modern Ukraine, including the Scythian kingdom (Makhortykh, 2020). The Scythians, nomadic Iranian-speaking tribes, left a significant archaeological heritage, among which a special place is occupied by mounds with rich burials (Fig. 94). One of the most famous is the Solokha mound, located near the village of Velyka Znamianka in Zaporizhzhia, which contains rich finds of weapons, jewellery, and other material culture items.

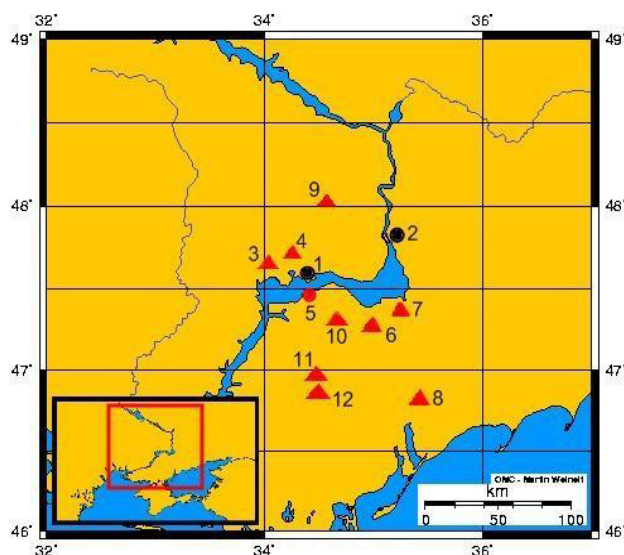


Figure 94. The Scythian archaeological heritage in the lower reaches of the Dnieper

Note: (1. Nikopol (modern city) 2. Zaporozhye (modern city) 3. Tovsta Mohyla 4. Chertomlyk 5. Kamenskoye settlement 6. Solokha 7. Gaimanova Mogila 8. Melitopol burial mound 9. Oleksandropilsky burial mound 10. Velikaya Tsimbalka 11. Kozel 12. Oguz)

Source: S.V. Makhortykh (2020).

The Solokha mound reached a height of 18 metres and its diameter was about 110 metres. The mound consisted of a densely compacted layer of soil, which provided stability and allowed it to maintain its shape for millennia. The scale of the mound made it the dominant feature of the steppe landscape. Two main burial structures were discovered beneath the mound: a central tomb and a secondary chamber added later (Topal, 2024). The central grave contained an elongated shaft leading to burial chambers. One of the chambers, looted in antiquity, still held bone fragments, ceramic vessels, a silver cup with a Greek inscription, bronze ladles, and other artefacts. The other chamber, which remained intact, preserved a rich burial inventory, including a gold comb with intricate depictions, a bronze helmet, and other valuables. These findings confirm the high social status of the buried person, probably one of the Scythian kings.

The Scythians actually appeared on the territory of modern Ukraine around the 7th century BC. They came from the east and quickly conquered the steppe regions of the Northern Black Sea, creating numerous mounds that served as burial grounds for nobility and warriors (Cernenko, 2012). One of the most famous burial mounds is Tovsta Mohyla (Fig. 95), located near the town of Nikopol. Discovered in 1971 by the Ukrainian archaeologist Borys Mozolevskyi, this mound became a sensational discovery due to the discovery of a golden pectoral (Fig. 96), which became a symbol of Scythian art and crafts. A golden pectoral weighs more than 1 kilogram and has a diameter of about 30 centimetres. The pectoral is decorated with intricate images of animals and scenes from the life of the Scythians and their close contacts with other cultures, specifically with Greek.

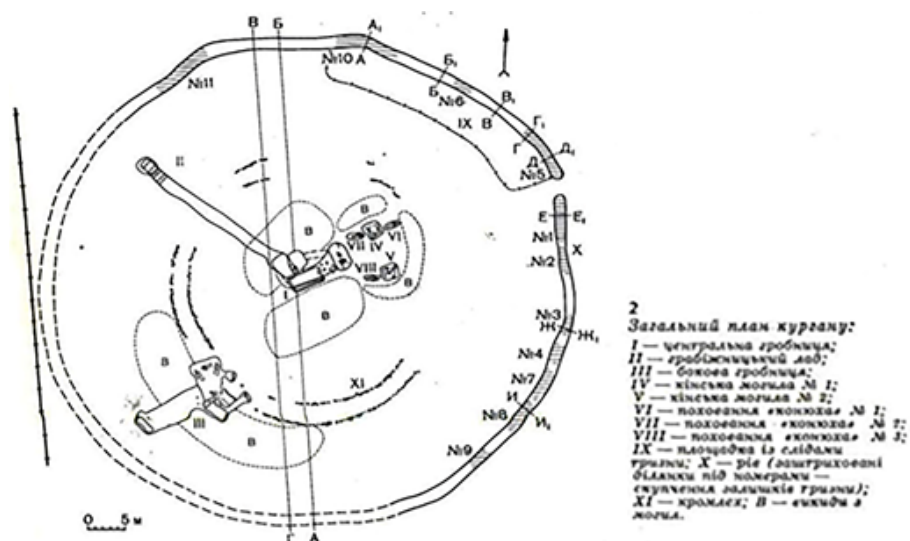


Figure 95. General plan of the Tovsta Mohyla mound

Source: *Scythian mound Thick Grave (2022).*



Figure 96. A golden pectoral found in the Tovsta Mohyla mound

Source: *Scythian Golden Pectoral from Tovsta Mohyla (2017).*

Scythian society was divided into different social strata, including noble warriors, artisans, and shepherds. Warriors held the highest positions in society, controlling political and military power. Their burials were marked by wealth and luxury, which suggests the high status and influence of these individuals (Kul Oba, 2025). For example, in the Kul-Oba mound near Kerch, numerous gold and silver items were found, indicating the prominent skill of Scythian jewellers (Fig. 97). This mound, discovered in 1830, contained the burial of a noble Scythian woman, decorated with gold jewellery and luxurious household items.



Figure 97. A goblet from the Kul-Oba mound,
4th century BC
Source: Kul Oba (2025).

Scythian religious beliefs were intricately linked to their nomadic lifestyle and nature. They worshipped various deities, among whom the goddess Tabiti (the goddess of fire) and the god Papai (the paramount god of the sky) occupied a special place. The religious rites of the Scythians included animal sacrifices and ritual feasts held in honour of gods and ancestors. These rites played a significant role in strengthening social ties and maintaining social order. The gold jewellery found in the mounds includes intricate images of animals that symbolised strength and power. These pieces were often made in a style known as the “animal style” (Fig. 98), which is characterised by realistic and dynamic depictions of animals (Sharkey, 2022). This style was widespread among many nomadic peoples of Eurasia and reflected their particular worldview.



Figure 98. Scythian “animal style”, 4th–3rd centuries BC
Source: Melyukova, A.I. (1995).

The settlements of the Scythians reflected their nomadic lifestyle and included temporary camps created during seasonal movements. These camps consisted of tents or yurts made of wooden frames and covered with animal skins. This design ensured quick installation and dismantling. The Scythians used carts to transport their yurts and property, making their settlements very mobile. Scythian settlements also had more permanent fortified centres that served as places of storage and trade. Scythian settlements were often located near rivers, which provided access to water and facilitated trade. Trade played a major role in the Scythian economy, and they actively interacted with the Greek colonies on the Black Sea. Archaeological findings confirm that the Scythians exchanged their goods for Greek wines, olive oil, and other luxury goods, as evidenced by the numerous finds of Greek amphorae and other items in Scythian mounds.

2.1.2 First images of settlements

Early images of settlements in the Dnipro basin are a valuable source of information about the history of human activity in this region. They help archaeologists and historians recreate the appearance of ancient settlements and understand their structure and functioning. The earliest images include engravings, drawings on stones and cave walls, as well as clay models created in different historical periods. One of the most impressive examples is the petroglyphs of the Stone Grave (Fig. 99), located near the village of Myrne, Melitopol district, Zaporizhzhia region. This archaeological complex includes about 65 grottoes and caves, in which numerous petroglyphs have been preserved. The formation of the Stone Grave is dated to approximately 14-12 million years ago (Encyclopedia of the History of Ukraine. Vol. 4, 2007). The drawings depict scenes from the lives of ancient people, including hunting, religious rituals, and symbolic images of animals and people. The images are made by carving or engraving on the surface of stones using hard tools such as flint. In some cases, the images may have been supplemented with paints made from minerals. The images are based on geometric shapes and stylised forms, indicating the use of primitive tools and techniques.



Figure 99. Stone Grave in Zaporizhzhia

Source: *Stone Grave – Sacred territory of the ancients (2014).*

Archaeological excavations on the territory of Kyiv have also revealed a lot of interesting information about early settlements in the Dniro basin. Specifically, in the 1930s, the remains of the Cyril's site were discovered, dating back to the Late Paleolithic (Fig. 100). The remains of dwellings built of mammoth bones and covered with skins were discovered at this site. This is one of the oldest pieces of evidence of human activity in the region. The technique of engraving with sharp silicon tools was used to create images on bones. These images usually depicted hunting scenes or schematic plans of settlements, giving an idea of the way of life and organisation of people of that time.



Figure 100. Model of the Kirillovskaya site, late 19th century
(National Museum of the History of Ukraine, Kyiv)

Source: *I.Yu. Parnikoza (2016).*

Particularly interesting are the finds from the Bilske settlement, which dates to the 7th–5th centuries BC and is considered one of the largest and oldest fortified settlements in Eastern Europe (Grechko, 2020). Archaeological research of this settlement has revealed the remains of defensive ramparts and ditches, as well as the remains of dwellings, which offers insight into the structure of the settlement. One of the most fascinating finds is the remains of round dwellings built of clay and wood with straw roofs. For example, clay tablets with images of dwellings and defensive structures have been found, suggesting that clay was used to preserve information about the layout and structure of settlements.

2.2 The development of cities and architecture in early graphics

Graphic representations play a crucial role in the study of architectural development, especially when it comes to the ancient era. Firstly, graphic images provide a visual representation of architectural structures that existed in ancient times. These can be city plans, images of individual buildings or architectural complexes, as well as reconstructions of their appearance. They help researchers to identify and analyse key architectural elements such as colonnades, arches, domes, and other characteristic details that point to the style and technical achievements of a particular period. Secondly, graphic images facilitate comparative analysis between different architectural monuments and periods. This allows identifying the evolution of architectural styles and technologies, as well as the influence of different cultures on the development of architecture. Thirdly, graphic images are indispensable in the context of archaeological research. They help to restore the appearance of destroyed or partially preserved buildings. This facilitates the reconstruction and conservation of architectural monuments, allowing them to be preserved for future generations. Finally, graphic images are important for educational activities and the promotion of architectural heritage. They allow the general public to get an idea of the architectural past, stimulating interest in history and cultural heritage. In museums, educational institutions and scientific publications, graphic materials help to visualise and explain complex architectural concepts, making them easy to understand.

Ancient cities on the territory of modern Ukraine had a considerable impact on the development of the region, leaving a rich cultural and architectural heritage. These cities emerged mainly as a result of Greek colonisation, which began in the 8th century BC and lasted until the 4th century BC. The largest and most famous ancient cities on the territory of modern Ukraine were Pontic Olbia, Chersonesus, Pantikapaion, Tyras, and Theodosia (Chobit, 2024). Each of these cities had its unique history, architectural features, and economic significance.

Pontic Olbia, located on the north-western coast of the Black Sea, was one of the most important polises founded by Milesian colonists at the end of the 7th and beginning of the 6th century BC (Bilde, 2024). Its architectural structure and urban planning demonstrate a unique combination of Western and Eastern Mediterranean traditions that distinguished this settlement from other Greek colonies. Archaeological excavations indicate that by the first half of the 6th century BC, the basic elements of urban space had formed in Olbia. The first discovered residential complexes consisted of single or multichambered structures, partially buried in the ground, arranged in rows along a formative longitudinal street. This main thoroughfare became a key element of the city's layout and stretched across the entire Upper Town, connecting its public and residential areas. The width of this street was about 10 metres, which was in line with the standards of ancient urban planning (Fig. 101).



Figure 101. A systematic plan for the development of Pontic Olbia
Source: T. Schevchenko (2020).

An essential feature of Olbia's layout was that the city area was divided into a regular grid of blocks, yet their shape adapted to the topographical conditions of the land. The blocks were trapezoidal or rectangular, and their length and width depended on the characteristics of the terrain (Fig. 102). This adaptability demonstrates a thoughtful approach to the organisation of space. In addition, the city had public areas, such as the agora, temenos, and religious buildings, which played an important role in social and religious life. The Olbian temenos, dedicated to Aphrodite and Apollo, reflect the sacred nature of the urban space (Abyzov, 2020). Located in strategically important places, they symbolised the city's connection with the divine forces and met the ritual needs of the community. For example, the Southern temenos, which emerged during the Late Archaic period, was situated on a high plateau near the entrance to the harbour, emphasising its significance for sailors.

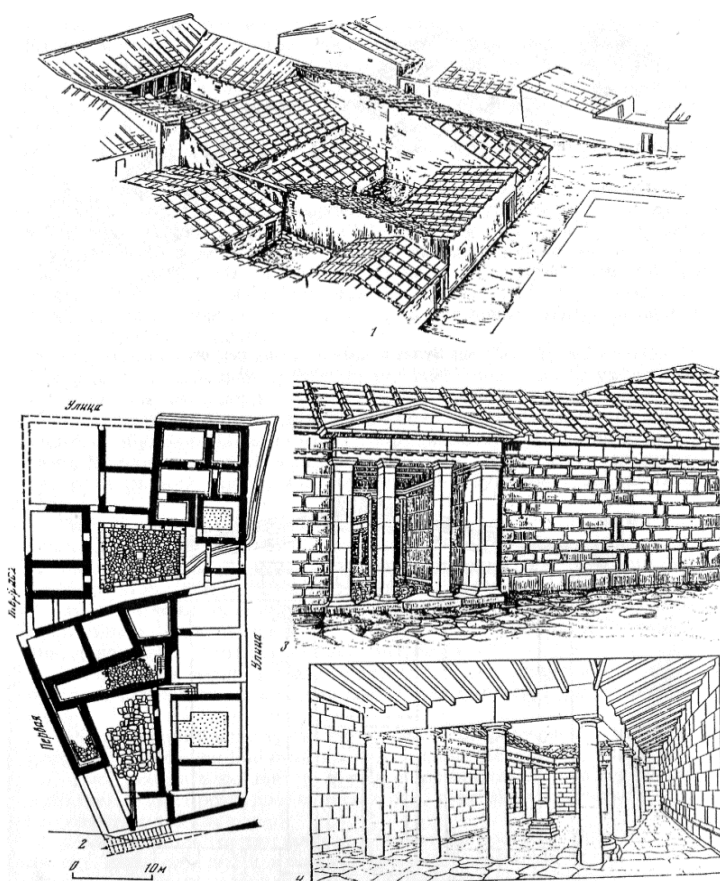


Figure 102. Olbia.

Note: Residential buildings: 1 – general view of the house, the area of the agora (reconstruction by S. Kryzhytskyi); 2 – plan of a residential quarter in the Lower Town; 3,4 – a house with an altar in the Lower Town

Source: *The architecture of ancient city-polises of the Northern Black Sea region* (2019).

The history of archaeological research in Olbia spans more than a century. The first systematic excavations were carried out in the early 20th century, when Borys Farmakovskiy discovered traces of a regular layout in the centre of the Upper Town (Fig. 103). Later research confirmed that a regular street grid emerged as early as the end of the 6th century BC. However, a fully orthogonal system was never implemented due to natural conditions. In the 20th and 21st centuries, excavations in the south-eastern part of the city revealed new details of its spatial organisation and clarified the chronology of construction periods.

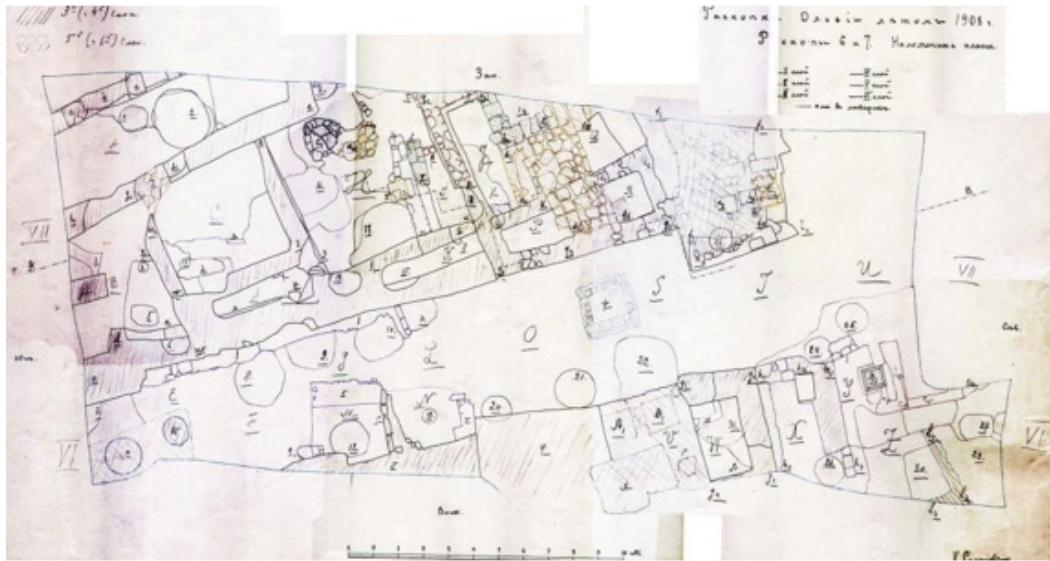


Figure 103. Excavation by B.V. Farmakovskiy, sketches

Source: O.V. Kariaka (2018).

The reconstruction of Olbia's town plan is based on archaeological data, in particular on the street network and public areas. It was found that the central thoroughfare ran through the Upper City, connecting the northern and southern city gates. Transverse streets provided access to individual neighbourhoods and community centres. On the basis of these findings, a model of the city was created, reflecting its structure in the Hellenistic period (Schevchenko, 2020).

Founded by the Greeks on the southwestern coast of Crimea in the 5th century BC, Chersonesus was another important ancient city. Situated on a picturesque promontory, it played a key role in trade between the Greeks and Scythians and later became part of the Roman Empire. The city was famous for its organised water supply system, public buildings, theatre, and Christian churches that appeared here after the adoption of Christianity. Chersonesus is an example of a city that has managed to maintain its significance for several centuries despite changing political and cultural conditions (Fig. 104). Graphic works depicting the architectural features of Chersonesus often focus on its landmark buildings, such as the ancient theatre, basilicas, Byzantine churches, and fortifications.



Figure 104. Plan of the ancient city of Chersonesos-Taurica with indication of its excavated sections in different years (M.I. Skubetov-Skubentov)

Source: Skubentov (Skubetov) Martyn (Martin) Ivanovich (2025).

The capital of the Bosphorus Kingdom, Pantikapaion, was located on the site of modern Kerch. Founded in the late 7th century BC, Pantikapaion quickly became the main political and economic centre of eastern Crimea. The city was known for its fortresses, monumental buildings, and a developed system of trade with other cities of the Northern Black Sea and Mediterranean (Petropoulos, 2021).

The ancient city of Tira, located on the territory of the modern-day city of BilhorodDnistrovskiy, is an important archaeological site. Founded in the 6th century BC by Greek colonists, the city became one of the centres of trade and culture in the Black Sea region. The name “Tira” probably comes from the Dnister River, which in ancient times was called Tiras (Saveliev, 2021). Archaeological research of the city has made it possible to reconstruct a significant part of its history and architectural structure. The remains of the defensive walls surrounding the city, residential neighbourhoods, public buildings, and sanctuaries were discovered. Among the most important finds are fragments of temples dedicated to the ancient Greek gods, which testify to the city’s sacred significance.

The urban planning of Tira had a clear regular character, reflecting the influence of the Greek tradition of urbanism. The central part of the city included the agora: a square for gatherings and trade, around which administrative buildings and temples were located. Residential neighbourhoods were organised in rectangular plots separated by narrow streets. Excavations show that the city had a well-designed water supply and sewerage system, which was atypical for many settlements of the time (Fig. 105).

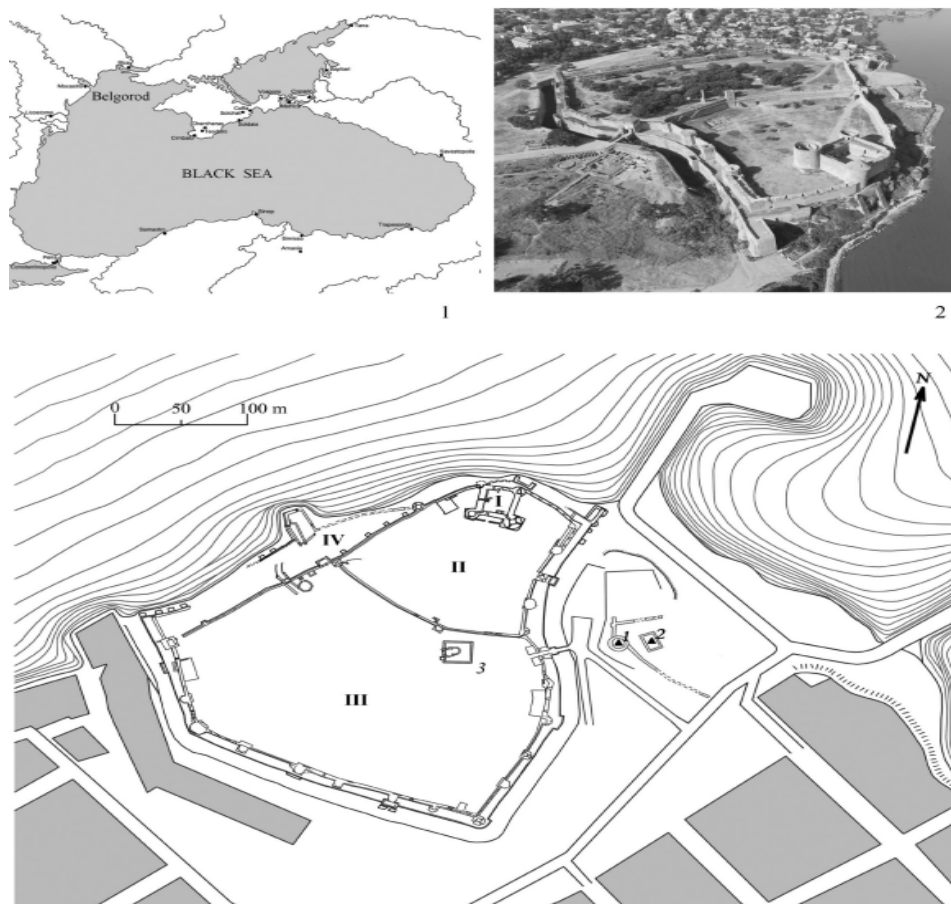


Figure 105. Bilhorod-Dnistrovskiy fortress and ancient Tiras,
Bilhorod-Dnistrovskiy, Odesa region, Ukraine

Source: I. Teslenko and L. Myronenko (2022).

Tira was actively developed in the Hellenistic and Roman periods, as evidenced by numerous artefacts such as ceramics, coins, jewellery, and statue remain. In the Roman period, the city was part of the province of Mezia, retaining its importance as an important port and trading centre. Archaeological research continues today, revealing new aspects of the history of this remarkable city. Founded in the 6th century BC, Theodosia was one of the oldest Greek settlements on the Crimean Peninsula (Mielczarek, 2021). Due to its favourable location on the Black Sea coast, Theodosia quickly became a prominent centre of trade and crafts (Fig. 106). The city was known for its harbours, which welcomed ships from all over the Mediterranean, which contributed to the development of the economy and cultural exchange. Archaeological excavations have uncovered numerous artefacts in Theodosia, including ceramics, sculptures, and coins, which testify to the richness and diversity of the city's cultural life.



Figure 106. Feodosia (Carlo Bossoli)

Source: *Occupations and life of Crimean Tatars* (2025).

The historical context of the emergence and development of ancient cities on the territory of modern Ukraine is linked to the general process of Greek colonisation, which was aimed at finding new lands and trade routes. By founding cities on the Black Sea coast, the Greeks sought to expand their trade ties and strengthen their political influence in the region. An important role in this process was played by the natural factor, specifically the availability of convenient harbours and fertile land, which contributed to the development of agriculture and trade. Ancient cities on the territory of Ukraine not only ensured the economic well-being of their inhabitants, but also became centres of cultural exchange and artistic development. Graphic images found during archaeological excavations help modern researchers recreate the appearance of ancient cities and understand the specific features of their layout and construction. Ancient cities on the territory of modern Ukraine have left a significant architectural heritage, which testifies to the multifaceted influence of Greek and Roman cultures on the development of local architecture and urban planning. The architectural features of these towns, located mainly in the south of Ukraine, are marked by a variety of styles and forms that were embodied in churches, theatres, agoras, houses, and other structures.

One of the key cities of this period was Pontic Olbia, founded by the Greeks in the 6th century BC. Pontic Olbia had a well-developed infrastructure, which included an agora, theatres, temples, residential areas, and defensive walls. The city was planned according to the hippodrome system, which provided for a clear arrangement of streets and neighbourhoods in a grid. This system, developed by the Greek architect Hippodamus of Miletus, became the basis for many ancient cities, including those in Ukraine (Braund, 2024). One of the crucial architectural styles that influenced the construction of ancient cities in Ukraine is the Doric style. This style, which originated in Greece, is characterised by simple, massive, and austere forms. Doric temples usually had thick, smooth columns without a base, supporting simple architraves and a frieze decorated with triglyphs and metopes. An example is the prytaneion at Pantikapaion (Fig. 107). One of the most striking

examples of Ionic architecture in Ukraine is the Temple of Apollo in Pontic Olbia (Fig. 108). This temple is noted for its elegance and harmonious proportions. The Corinthian style, which developed later and is a variation of the Ionic style, was used less frequently but also left its mark on the architecture of ancient Ukrainian cities. The Corinthian columns feature rich capitals decorated with stylised acanthus leaves. Examples of Corinthian architecture include some elements of temples and public buildings found in Chersonesus and other ancient cities of the Black Sea region.



Figure 107. The prytaneion of Pantikapaion, 2nd century BC

Source: E. Petropoulos, 2021

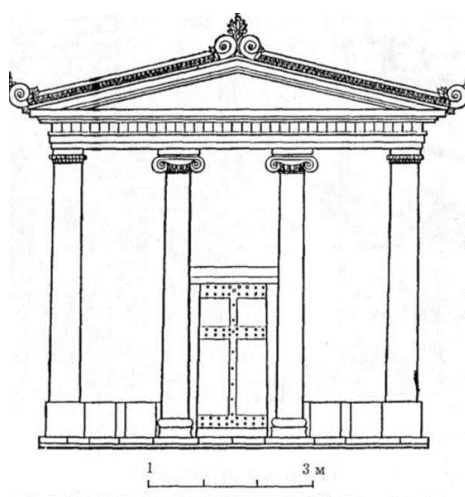


Figure 108. Olbia. Facade of the Temple of Apollo Delphinium (reconstruction by I. Pichikian)

Source: *The architecture of ancient city-polises of the Northern Black Sea region* (2019).

Roman influence on the architecture of ancient Ukrainian cities began to be felt after the Roman Empire conquered the region in the 1st century BC. The Romans brought their architectural technologies and styles, which considerably influenced the development of urban planning. Roman architecture was notable for its scale and monumentality. One of the most striking examples of Roman influence is the city of Tyras, located on the territory of modern-day Bilhorod-Dnistrovskyi. Tyras had a well-developed infrastructure, including public buildings, thermae, forums, and aqueducts. One of the most remarkable architectural objects of the Roman period is the fortress in Chersonesus. Chersonesus, founded by Greek colonists in the 5th century BC, later became an important centre of Roman culture on the northern Black Sea coast. The Romans rebuilt and expanded the city, including building new city walls, public buildings, and temples.

2.3 Historical development of Ukrainian cities on old maps

2.3.1 Ukraine in old world maps

Maps of the medieval period can be classified into several main types, among which the most famous are portolan charts, cartographic atlases, T-O maps, and mundi maps. The creation of medieval maps required the use of various tools and methods. The mapping methods were based on the observations and records of sailors, travellers, and geographers. The mapmakers used data on distances between ports, the location of objects and their coordinates. An essential element was also the use of written sources, such as geographical descriptions and chronicles.

Portolan charts (from Latin *portus* – port) are one of the most famous and accurate maps of the medieval period, used by sailors for navigation. These maps appeared around the 13th century and were widespread until the end of the 16th century. The main purpose of the portolan chart was to depict coastlines, ports, sea routes, and places dangerous for sailors. The maps often contained numerous markings of ports, harbours, reefs, and other important objects for sailors (Marelić, 2025). The *Carte Pisane* (Fig. 109, a), created between 1275 and 1300, is considered to be the oldest surviving portolan chart. *Carte Pisane* covers the western and central coasts of the Mediterranean Sea, including Italy, the Adriatic Sea, and part of the northern coast of Africa. Cartographic atlases of the medieval period are collections of maps created for various purposes, including navigation, geography, and political administration. They could contain world maps, regional maps, maps of cities and fortresses. One of the most famous medieval atlases is the *Catalan Atlas* (Fig. 109, b), created in 1375. T-O maps (from Latin *Orbis Terrarum*) depict the world as a circle divided into three parts (Fig. 109, c). These maps were popular in Europe from the 7th to the 15th centuries and reflected the medieval view of the world. *Mappa mundi* (from Latin *Mappa Mundi* – map of the world) are large medieval maps depicting the entire known world. They combined geographical knowledge with myths, legends, and religious beliefs. One of the most famous *mappae mundi* is the *Ebstorf map* (Fig. 109, d), created in the 13th century.



Figure 109, Continued

**Figure 109.** Important Medieval maps, 1235

Note: a – Carte Pisane; b – A fragment of the Catalan Atlas; c – The Novissima-totius-terrarumorbis-tabula map, 1683, C. Allard; d – The Ebstorf map of the world (original title: Monialium Ebstorfensium Mappa Mundi).

Source: Carte Pisane (2025), Novissima totius terrarum orbis tabula (2025), the Ebstorf Mappa Mundi – 13th Century World Map (2025), the Catalan Atlas (2025).

One of the oldest maps that contains references to the territory of modern Ukraine is the map of Claudius Ptolemy. Although it was created in the 2nd century AD, its influence can be traced back to the Middle Ages. On Ptolemy's map, one can find references to Scythian tribes that lived on the territory of modern Ukraine (Shamey, 2020). The Scythians were nomadic peoples who inhabited the steppes of the Northern Black Sea. Ptolemy described their settlements and important geographical features, such as rivers and mountain ranges. Specifically, the map mentions rivers such as the Borysthenes (Dnipro), Tyras (Dniester), and Tanais (Don), which were vital waterways for trade and travel. Ptolemy's map (Fig. 110) also contains information about Greek colonies on the Black Sea coast, such as Pontic Olbia, Tyras, and Chersonesus. These cities were important trade and cultural centres that connected the ancient world with local tribes. As a result, Ptolemy's map not only depicted geography, but also provided valuable information about economic and cultural ties between different regions. It stayed an authoritative source of information about the world until the Age of Discovery in the 15th and 16th centuries, when Europeans began to actively explore new lands and create more accurate maps. It was republished and supplemented by many famous cartographers, such as Al-Idrisi, who created his "Tabula Rogeriana" based on Ptolemy's data. Ptolemy, thanks to his coordinate system and mapping methods, became the founder of scientific cartography, which eventually developed into the modern geographical science.



Figure 110. Ptolemy's map of the world, reconstituted from Ptolemy's Geography (circa 150) in the 15th century

Source: *Ptolemy's Map* (2025).

The next important document is the map “Tabula Rogeriana”, created by the Arab geographer Al-Idrisi in 1154. This map was made for King Roger II of Sicily. The map Tabula Rogeriana shows the Dniro River, which Al-Idrisi calls “Don”. This may seem like a mistake, but it is important to understand that in those days, the names of rivers and geographical objects could vary depending on the source of information (Kainz, 2020). Al-Idrisi also mentions the tribes that inhabited these territories, specifically the Ruses who lived along the Dniro. Although the map was oriented south, as was traditional in Arabic cartography, it provides vital information about the medieval geography of the region. Al-Idrisi described in detail the territories of Europe, Asia, and Africa, including numerous rivers, mountains, cities, and trade routes. The Tabula Rogeriana map consists of ten sections and covers the entire world known at the time (Fig. 111). It was made in the form of a silver plate and was accompanied by a textual description known as the Book of Roger or Nuzhat al-Mushtaq. In this description, Al-Idrisi provided detailed information about the climatic conditions, resources, culture and way of life of the peoples who inhabited different regions. The map shows the main trade routes that passed through Ukrainian lands, including the “from the Varangians to the Greeks” route that connected Scandinavia with the Byzantine Empire through the territory of Kyivan Rus. This confirms the significance of Ukrainian lands as an essential transit corridor between different parts of the world.



Figure 111. Tabula Rogeriana, 1154

Source: *Tabula Rogeriana* (2021).

Heinrich Martell's map of 1489 is a valuable source for studying medieval cartography (Fig. 112). It was created at a time when geographical conceptions of the world were based on ancient knowledge, early travelling, and trading. Although it lacks the detail of modern topographic maps, it provides important information about regions, including the territory of modern Ukraine. Heinrich Martell's map depicts the territory of Ukraine within the boundaries that corresponded to the ideas of the time about the Black Sea region and the Eastern European steppes (Edson, 2019). Particular attention was paid to the Black Sea, which was marked as an important trade and cultural centre. The map includes references to the region's key rivers, including the Dnipro (Borysthenes), which was one of the most important transport routes, as well as the Crimean Peninsula.



Figure 112. The map by Heinrich Martell, 1489-1490

Source: *World map by Henricus Martellus* (2025).

The map, created by the Venetian monk Fra Mauro around 1450s, is one of the most detailed medieval maps (Fig. 113). It includes information on many regions of the world, including the territory of modern Ukraine. Fra Mauro used data collected from travellers, merchants, and sailors, making his map perfectly accurate for its time.



Figure 113. The Fra Mauro Map of the world

Source: *Fra Mauro Map* (2025).

2.3.2 Ukrainian cities during the Kyivan Rus period (9th-13th century)

The formation of the cities of Kyivan Rus (9th-13th centuries) (Fig. 114) was determined by a complex of historical and geographical factors, among which the key role was played by geographical location, natural conditions, trade routes, and the political and cultural context of the era.

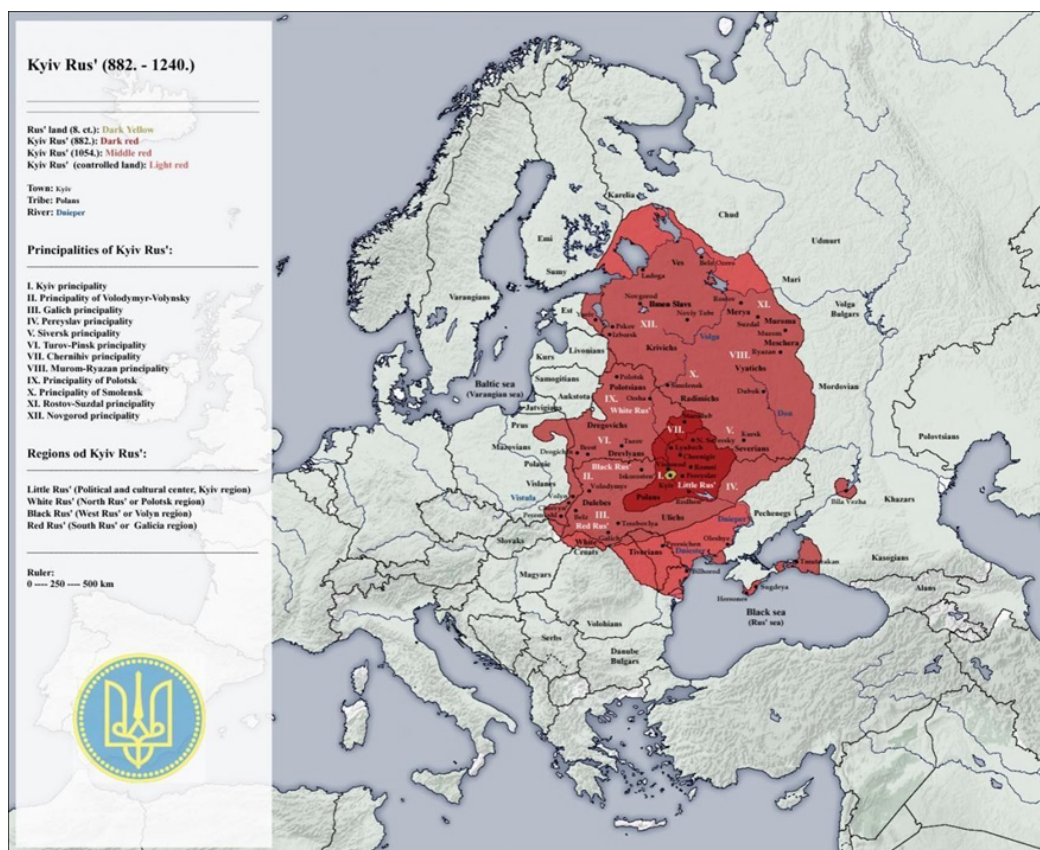


Figure 114. Overview of the principalities of Kyivan Rus

Source: *Kyivan Rus (2025).*

The cities of Kyivan Rus usually originated in places with favourable natural conditions that ensured their economic development and defence capability. Most cities were located on high river banks, which provided natural protection and access to water resources. For example, Kyiv (Fig. 115) was founded on the high slopes of the Dniro River, which allowed it to control the surrounding area and provided a strategic superiority. Rivers played a crucial role not only as sources of water but also as transport arteries connecting different parts of the state and enhancing trade. In addition to the Dniro, other important waterways were the Volha, the Western Dvina, and others. The fertile soils in the basins of these rivers fostered the development of agriculture, which provided cities with food and raw materials for crafts. Moreover, natural resources, such as forests rich in game and timber, and mineral deposits, particularly iron, fostered the development of crafts and trade. For example, there were significant deposits of iron ore in the area of current-day Novgorod, which stimulated the development of metallurgy and blacksmithing.

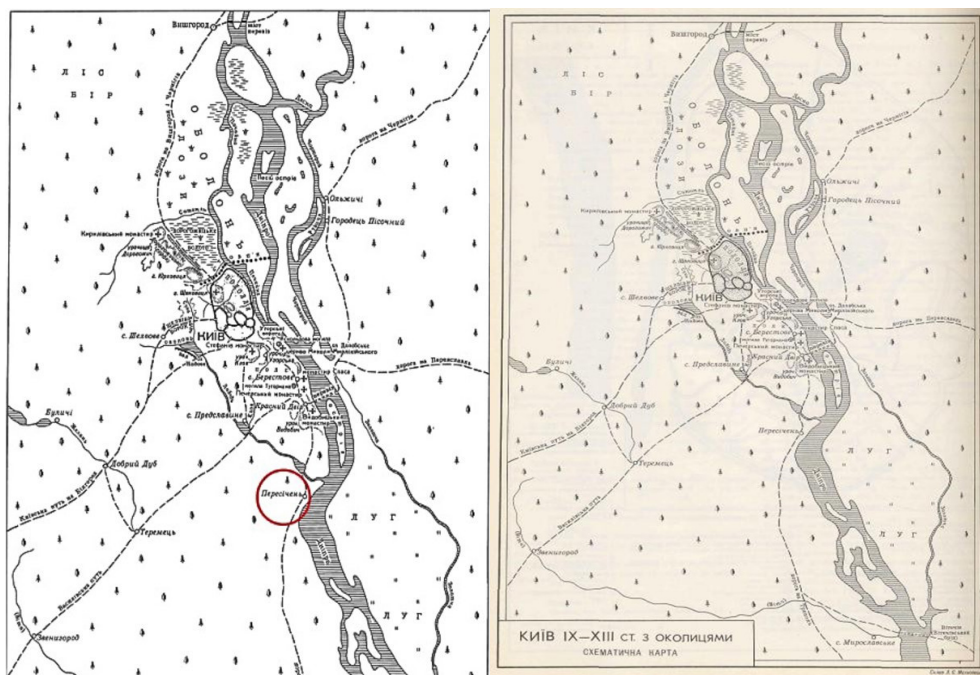


Figure 115. Schematic map of Kyiv and its surroundings (9th-13th centuries)

Source: *Maps of Kyiv and Kyiv region* (2025).

Trade was one of the main factors in the development of the cities of Kyivan Rus. The most famous trade route was the “Route from the Varangians to the Greeks” (Fig. 116), which connected the Baltic Sea to the Black Sea, passing through rivers and dragways. This route provided a link between Scandinavia and the Byzantine Empire, facilitating cultural and economic exchange. In addition, cities were centres of handicraft production and trade (Jakobsson, 2020). Craftsmen were united in workshops on the basis of their profession, which contributed to the enhancement of product quality and the development of specialisation. Trade ties with Byzantine Empire, Scandinavia, Eastern and Western Europe provided an inflow of new technologies, goods and ideas, which promoted the overall development of cities.



Figure 116. Schematic image of the “Route from the Varangians to the Greeks”
Source: S. Jakobsson (2020).

The political structure of Kyivan Rus was based on a system of principalities united under the rule of the Grand Duke of Kyiv. Cities functioned as administrative centres, housing princely residences, boyar estates, and military garrisons. This contributed to the concentration of political power and resources in urban areas, stimulating their development. The acceptance of Christianity in 988 under Prince Volodymyr the Great had a significant impact on the cultural development of cities (Poppe, 2016). The active construction of churches, monasteries, and other religious buildings began, which not only changed the architectural record of cities but also contributed to the development of education, art, and writing. For example, in Kyiv, St Sophia Cathedral was built (Fig. 117), which became the centre of spiritual life and a symbol of the state’s power.

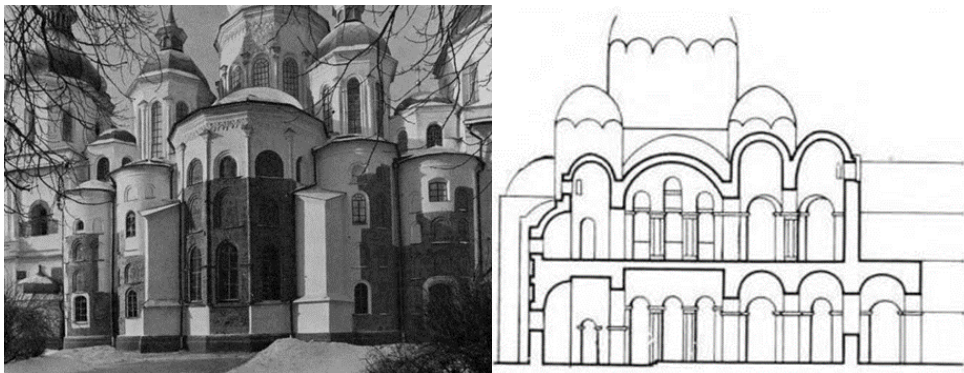


Figure 117. St Sophia Cathedral, general view from the east and longitudinal section
Source: O. Powstenko (1954).

One of the most famous medieval maps depicting the territory of Kyivan Rus is the Ebstorf map, created around 1235 (Fig. 118). This map, measuring 3580 x 3560 mm, was sewn together from 30 fragments of goatskin and contained about 1600 legends, as well as information on geography, minerals, plants, animals, and ancient and Christian mythology. It depicts Kyiv (labelled “Kiwen”) and other cities of Russia, such as Polotsk (“Plosceke”), Smolensk (“Smalentike”) and Novgorod (“Novgardus”).



Figure 118. A fragment of the Ebstorf map showing Ukrainian lands

Source: *The Ebstorf Mappa Mundi -- 13th Century World Map (2025).*

The urban planning features of the cities of Kyivan Rus (9th–13th centuries) reflect the complex process of socio-economic, political and cultural development of the state. The structure of medieval cities, architectural dominants, defensive structures, and the influence of cultural and religious factors formed a unique urban landscape that differed from their Western European equivalents (Ward and Thompson, 2021). The cities of Kyivan Rus had a distinct structure consisting of several main elements: a detinets, a posad, and a suburb (Fig. 119). The detinets (or kremlin) was the central-fortified part of the city, where the prince’s residence, boyar courts, main churches, and administrative buildings were located. The detinets were usually located on a hill or in a place with natural defensive advantages, which provided better protection against attacks. For example, in Kyiv, the detinets was located on Starokyivska Hill, which allowed for control of the surrounding areas and river routes.



Figure 119. Kyiv (10th-13th centuries), part of the hill with a view of Podil

Source: *City of the 10th-13th centuries. Part of the mountain with a view of Podil. City of Volodymyr. Fragment of the model D. Mazyukevich. 1968 (2025).*

The Posad surrounded the dytynets and was a less fortified part of the city where craftsmen, traders, and other residents lived. Workshops, markets, residential buildings, and small temples were located here. Posad often had an irregular planning structure with narrow streets, reflecting the spontaneous nature of its development. In Kyiv, the Posad occupied a large area around the dytynets, including Podil, the city's commercial and craft district. The outskirts (suburbs) included agricultural land, villages, and monasteries that provided the city with food and other resources. The suburbs were important for the economic life of the city, as they provided its inhabitants with the necessary goods and products. Defensive structures played a key role in ensuring the city's security. City fortifications consisted of ramparts, ditches, wooden or stone walls, and towers. Most of the defences were made of wood, due to the availability of the material and the speed of construction. For example, the Golden Gate in Kyiv, built in 1037 by order of Prince Yaroslav the Wise, was the main gate of the city and symbolised its power (Fig. 120). It had a complex construction of wooden and stone elements and served both defensive and representative functions.



Figure 120. The Golden Gate and Yaroslav's, historical reconstruction

Source: *History of the symbol of the capital (2025).*

The study of the depiction of Kyivan Rus cities on ancient maps is an important aspect of the study of historical cartography and the development of medieval cities on the territory of modern Ukraine. Despite the limited number of surviving cartographic materials of that period, the existing sources provide valuable information about the geographical representations of medieval cartographers and the peculiarities of depicting key cities of Kyivan Rus. During the period of Kyivan Rus (9th-13th centuries), key urban centres were formed on the territory of modern Ukraine, each of which played a unique role in the political, economic, cultural, and religious life of the state.

Kyiv, located on the banks of the Dnipro River, was the capital of Kyivan Rus and its most important political, economic, and cultural centre. Due to its favourable geographical location at the crossroads of trade routes between Scandinavia and the Byzantine Empire, the city became a key hub in the international trade system. In the 10th century, Prince Volodymyr Sviatoslavych christened Rus, choosing Christianity as the state religion, contributing to Kyiv's cultural and spiritual rise. During the reign of Yaroslav the Wise (1019-1054), the city reached its prime: St Sophia Cathedral was built, the first library was founded, and the *Russkaya Pravda*, the first code of laws, was compiled. Kyiv was also a centre of chronicling and education. Here, the Primary Chronicle was created, the main source of the history of early Rus. The city attracted artists, craftsmen, and scientists, promoting the development of architecture, art, and science.

Chernihiv, located on the Desna River (Fig. 121), was the second most important city after Kyiv. It served as the administrative centre of the Chernihiv principality and played an important role in the political life of Rus. The city was known for its powerful fortifications that protected against attacks by nomadic tribes. The economic development of Chernihiv was based on crafts and trade. Archaeological finds show a high level of jewellery development, pottery and blacksmithing. Chernihiv has preserved architectural monuments, including the Transfiguration Cathedral (11th century) (Fig. 122; 123) and the Borys and Gleb Cathedral (12th century), which testify to the high level of construction craftsmanship of the time.

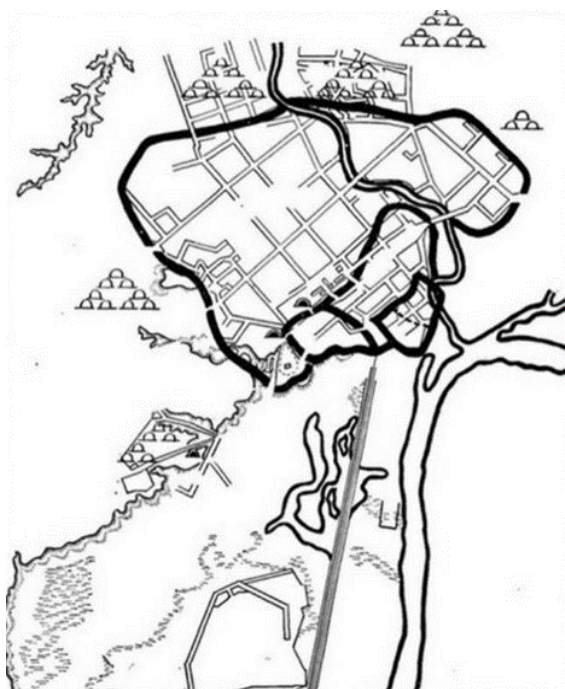


Figure 121. The map of ancient Chernihiv according to B.A. Rybakov

Source: based on I. Artemenko et al. (1986).



Figure 122. The Transfiguration Cathedral, general view

Source: O. Powstenko (1954).

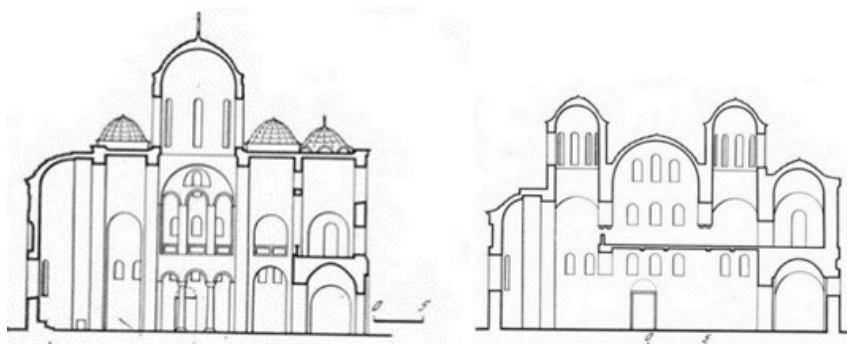


Figure 123. The Transfiguration Cathedral (1030-1040), schematic section
Source: O. Powstenko (1954).

Pereiaslav, located on the left bank of the Dnipro River, was an important strategic point on the southeastern borders of Rus. The city served as an outpost, protecting the state from attacks by nomadic tribes, in particular the Cumans (Fig. 124). Pereiaslav was also a significant religious centre. In 1089, a bishop's chair was established here, which contributed to the development of spiritual life and education. The city was famous for its churches and monasteries, among which St Michael's Cathedral (11th century) stands out. Due to its strategic location, Pereiaslav controlled important trade routes, which contributed to its economic development. The city was known for its handicrafts and was actively involved in domestic and foreign trade.

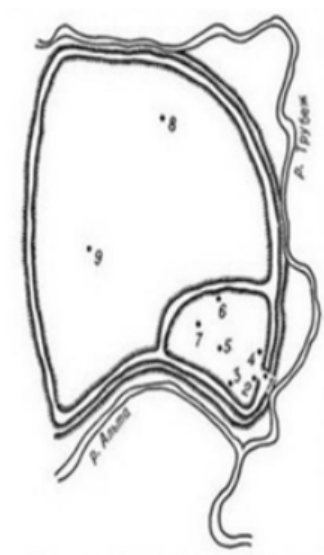


Figure 124. A plan of the fortifications of ancient Pereiaslav
Source: Archaeology of the Ukrainian SSR (1986).

Novhorod-Siverskyi, located on the Desna River, was the centre of the Novhorod-Siverskyi principality (Fig. 125). The city is known as the seat of Prince Ihor Sviatoslavych, whose unsuccessful campaign against the Cumans in 1185 became the basis for the epic poem “The Tale of Igor’s Campaign”. NovhorodSiverskyi was an essential centre of crafts and trade, maintaining links with other Rus cities and neighbouring states. The city has preserved architectural monuments, including the Transfiguration Monastery, founded in the 11th century, which played an important role in the spiritual life of the region.



Figure 125. Map of Novhorod-Siverskyi in the times of Kyivan Rus

Source: *Archaeology of the Ukrainian SSR (1986).*

Bilhorod, located near Kyiv, played an extremely important role in supplying the capital with food. The city was known for its agricultural lands and craft activities, including pottery and the production of tools. Bilhorod also served as a defensive outpost, protecting the approaches to Kyiv from enemies (Fig. 126). Chronicles show that Bilhorod had its own water supply thanks to a unique system of wells and underground reservoirs. This made it one of the most water-supplied cities in Kyivan Rus.

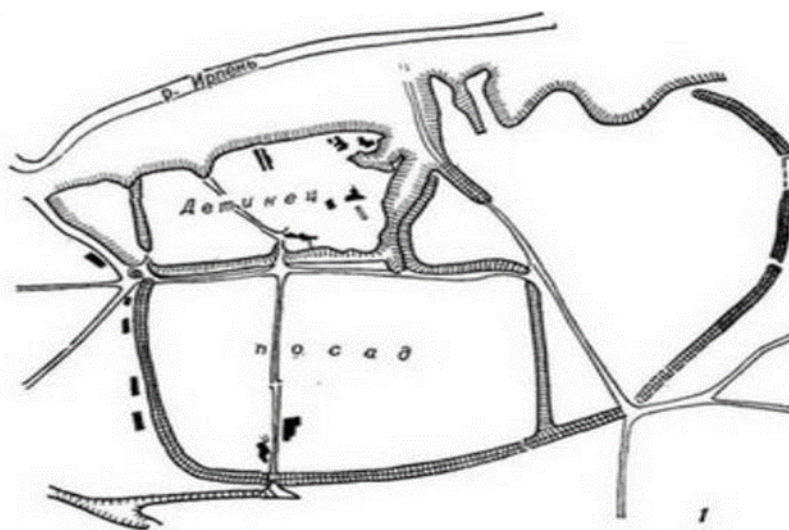


Figure 126. Bilhorod, fortification plan

Source: *Archaeology of the Ukrainian SSR* (1986).

Halych, located on the Dnister River, was the key administrative and cultural centre of the Principality of Halych (Fig. 127). Its strategic location at the crossroads of trade routes ensured close ties between Kyivan Rus and Western Europe and the Balkans. Halych played an important role in international trade, serving as a transit point for goods such as salt, furs, metal products, fabrics, and jewellery. It also played an active defensive role (Fig. 128). The city had a well-developed craft industry, with jewellery and fabric production being particularly prominent. Halych was also known for its cultural life: chroniclers, artists, and craftsmen worked here, which contributed to the enrichment of the region's spiritual heritage. The religious sphere of the city occupied a special place. The most famous architectural monument is the 12th-century Dormition Cathedral, which served not only as a centre of Christian life but also as a symbol of the principality's power. Monasteries functioned next to the cathedral and played an integral role in spreading literacy and education. Chronicles mention Halych as a place of important political events. It was the place where the boyars met to make decisions about the governance of the principality. The political influence of Halych on Rus and neighbouring states was significant, especially during the periods of strengthening of the Kingdom of Galicia-Volhynia.

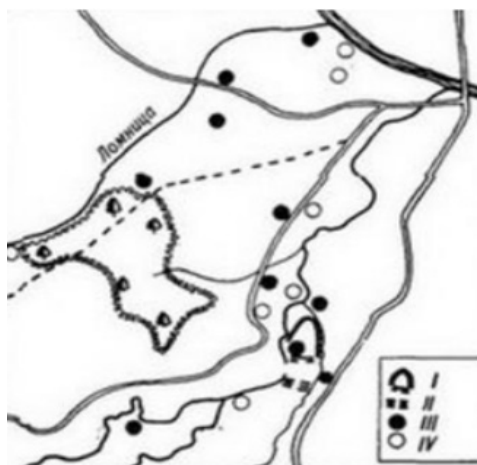


Figure 127. Map of ancient Halych

Source: *Archaeology of the Ukrainian SSR (1986).*

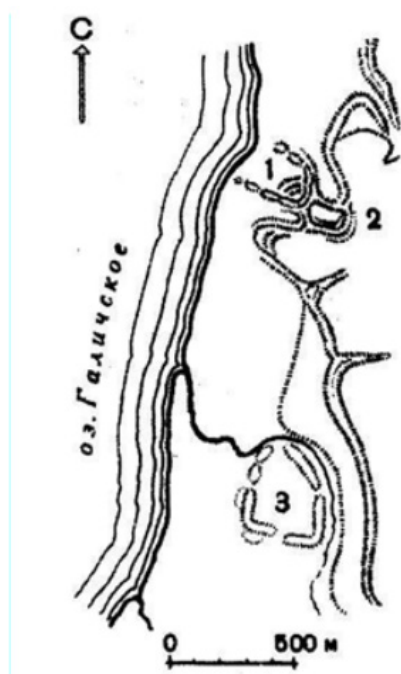


Figure 128. Layout of defensive structure of ancient Halych:

Note: 1 – Fortifications of the mid-12th century Halych Mersky; 2 – Fortifications of the late 14th – early 15th centuries; 3 – Fortifications of the second half of the 15th century

Source: *Archaeology of the Ukrainian SSR (1986).*

Volodymyr-Volynskyi was the main city of the Volyn principality (Fig. 129). The city was famous for its fortifications, among which stood out the castle with its powerful walls and moats. Volodymyr-Volynskyi was also an important centre of religious life, as evidenced by its numerous churches, including the 12th-century Dormition Cathedral.

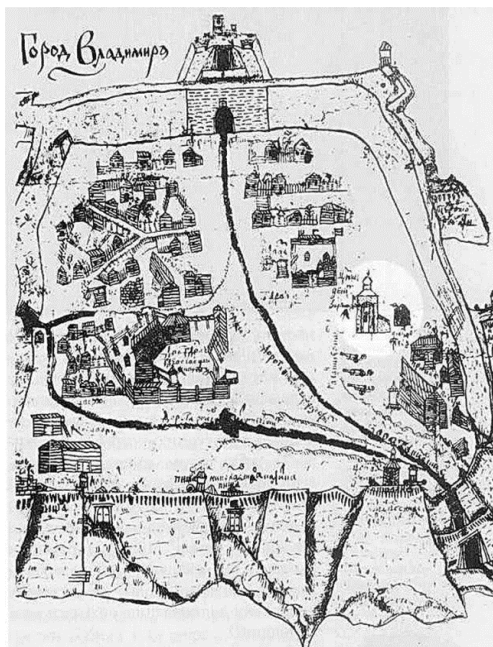


Figure 129. The city of Volodymyr-Volynskyi in the times of the Kingdom of Galicia-Volhynia
Source: T. Izotova (2014).

2.3.3 Ukrainian cities during the Polish-Lithuanian and Cossack periods (13th century – 1670s)

After the collapse of Kyivan Rus, the Dnipro basin stayed a vital region for the development of various state entities, such as the Principality of Galicia-Volhynia, the Grand Duchy of Lithuania, and the Polish-Lithuanian Commonwealth. The Duchy of Lithuania began its expansion into Rus' as early as the period of the first Lithuanian king Mindaugas (1253-1263). The main purpose of this expansion was the western Rus' (Belarusian) territories. It was followed by the incorporation of southwestern Rus' (Ukrainian) lands into Lithuania. One of the clear evidences of the strengthening of Lithuanian positions in this region was the fact that after the sudden death of Yuri II Boleslav, Grand Duke Gediminas of Lithuania forced the local boyars to elect his son Lubart as the Prince of the Kingdom of Galicia-Volhynia. As a result of the Polish-Hungarian-Lithuanian conflict over the ownership of the Galicia-Volhynia inheritance, which began in 1340, Poland received Galicia and Lithuania received the Volyn region. During this period, new cities were formed, and existing ones were strengthened. Political and social conditions have had a considerable impact on the research and mapping of Ukrainian cities. In the period, the territory of Ukraine was constantly

at the centre of geopolitical interests of various states, which influenced the nature and focus of cartographic research. Fortifications and military installations were of immense importance, which was reflected in the diagrams and maps.

Since the 14th century, Ukrainian lands have been part of the Grand Duchy of Lithuania. The Lithuanian princes promoted urban development by granting cities the Magdeburg Law (Kobyletskyi, 2019), which ensured city self-government and stimulated economic development. Lviv, KamianetsPodilskyi, Kyiv, and other cities received privileges and developed as vital trade and cultural centres. During this period, the architecture of cities was influenced by the Gothic style, particularly in Lviv, where numerous Gothic churches and the town hall were built.

Lviv became a prominent important centre for craftsmen and traders, and its urban structures were modelled on European cities. Lviv became an important political and economic centre in the late Middle Ages. Founded in the mid-13th century by Prince Danylo Romanovych (Alexandrovych *et al.*, 2017), the city quickly gained importance due to its location at the crossroads of trade routes. Lviv became the capital of the Principality of Galicia–Volhynia and retained its significance even after becoming part of the Kingdom of Poland. The city was known for its multinational community, active trade, and developed crafts. In the late 15th and early 16th centuries, is associated with the expansion and fortification of existing cities, as well as the emergence of new settlements. At this time, the cities were being actively developed with the support of local nobility and royalty. For instance, Kyiv, which was an important political and cultural centre. Specifically, in the 16th century, a new fortress was built, which considerably strengthened the city's defensive capabilities. The development of Lviv included not only residential buildings, but also public buildings such as churches, monasteries, and the town hall.

From the middle of the 16th to the early 17th centuries when Ukraine was undergoing significant political and social changes. This period is marked by the active construction of fortresses and fortified cities, which was associated with constant threats from Tatar and Turkish raids. An example is Kamianets-Podilskyi (Fig. 130), which has become one of the critical defensive points on the southwestern border. The city was surrounded by powerful masonry walls and had numerous towers and bastions. These fortifications provided protection not only for the city's residents, but also for the surrounding villages and towns.

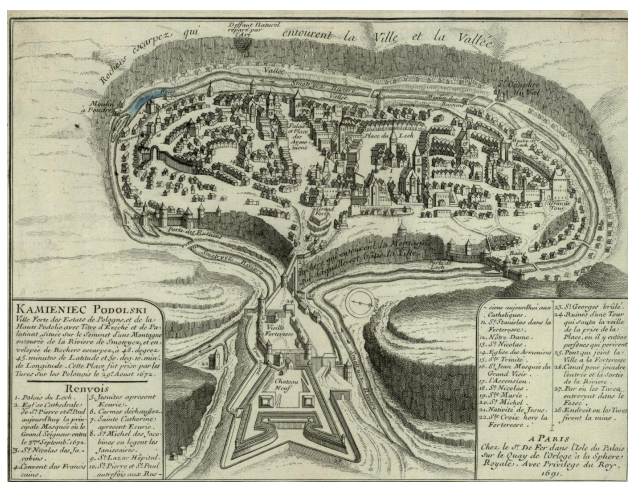


Figure 130. Map of Kamianets-Podilskyi, 1691

Source: *Maps of Kamianets-Podilskyi* (2012).

In the 16th century, the Zaporozhian Sich appeared on the banks of the Dniro River and became an important military and political centre of the Cossacks (Fig. 131). The Sich was located on the islands and rapids of the Dniro, which provided it with natural protection and strategic advantages. The Cossacks built powerful fortifications, including earthen ramparts, wooden walls, and moats (Taranenko, 2013). The Zaporozhian Sich was not only a military but also an economic centre. Cossacks were engaged in fishing, beekeeping, farming, and crafts. They also actively traded with neighbouring regions, providing themselves with the necessary goods. The Zaporozhian Sich had its own system of governance, including elected elders and councils, which suggests a prominent level of self-government and democratic principles in the organisation of the Cossacks.

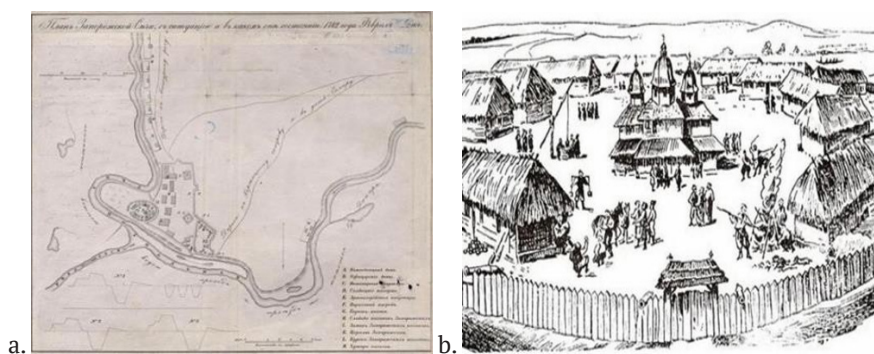


Figure 131. Zaporizhian Sich.

Note: a. – Plan of the Zaporizhian Sich in 1742. Engraving from the early 19th century; b. – Drawing of Zaporizhian Sich

Source: M.G. Taranenko (2013).

In the period of the Polish-Lithuanian Commonwealth (1569-1795). At that time, Ukrainian cities were developing under the influence of Polish culture. Lviv was becoming one of the key shopping centres in Central Europe. During this period, Renaissance and Baroque elements appeared in urban planning, reflecting European architectural trends (Chwalba and Zamorski, 2020). Specifically, numerous Renaissance tenements were built in Lviv, as well as Baroque churches and monasteries, such as the Jesuit Church. The Ottoman Empire also influenced the development of urban planning in Ukraine, particularly in the southern lands that came under Turkish rule. Southern towns such as Ochakiv, BilhorodDnistrovskiy, and Izmail became important military and commercial centres. Turkish architecture has brought new elements to urban planning, such as mosques, hammams, and caravanserais. They considerably changed the appearance of cities by adding oriental architectural elements to traditional Ukrainian buildings.

The Orthodox clergy was also a principal factor in the development of cities in medieval Ukraine. Monasteries and churches became centres of culture, education, and crafts. Monasteries such as the Kyiv-Pechersk Lavra (Fig. 132) and Sviatohirsk Monastery (Fig. 133) became not only religious but also economic centres. They contributed to the development of urban development around them, creating new settlements, trade routes, and cultural centres.

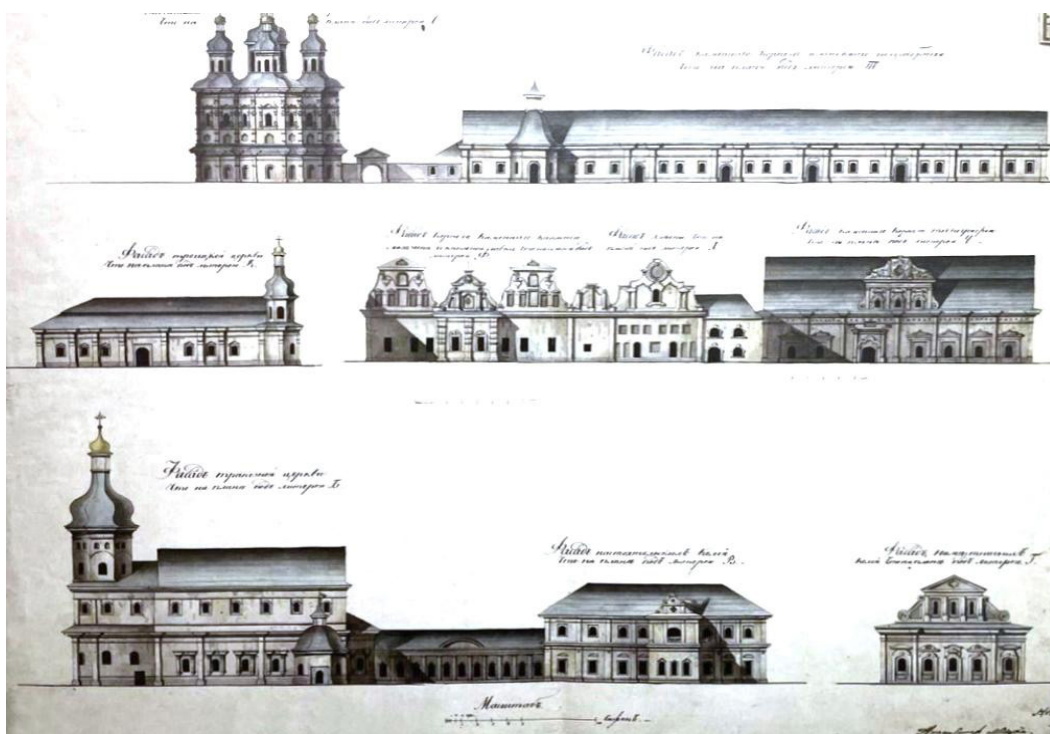


Figure 132. Buildings of the Kyiv-Pechersk Lavra in drawings by A. Melenskyi

Source: R. Khotyn (2023).

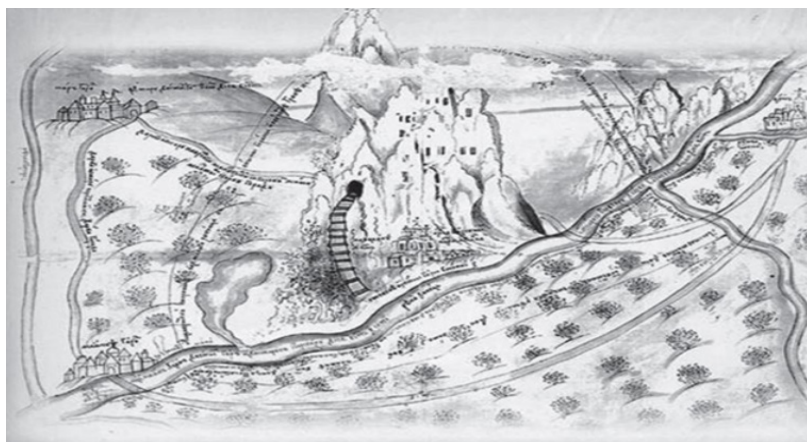


Figure 133. Sviatohirsk Monastery, image of 1679

Source: S. Hvadchenya (2009).

Furthermore, influences from other states and cultures played a significant role in the development of urban planning. For example, Polish architects and engineers introduced European construction technologies, which influenced the appearance and structure of Ukrainian cities. The impact was particularly noticeable in the western regions of Ukraine, where cities had more pronounced European features. The urban planning of medieval Ukraine can also trace the influence of Tatar culture. For example, in the territories of modern Eastern Ukraine that were under the control of the Golden Horde, elements of oriental architecture and planning appeared (Fig. 134).



Figure 134. Entrance to Kamianets-Podilskyi Castle via the Turkish Bridge

Source: V. Vecherski (2022).

The development of mapping technologies and methods in modern times was largely associated with great geographical discoveries. One of the crucial technological innovations of the time was the use of astronomical observations to determine coordinates. The invention of the nautical sextant, which allowed measuring the angles between the stars and the horizon, substantially improved the precision of latitude and longitude determination. One of the most outstanding achievements was the creation of world maps by Gerard Mercator, a Flemish cartographer who in 1569 developed the famous projection that allowed him to depict the earth’s surface on a plane with minimal distortion of the shapes of objects. Mercator also developed a unified coordinate system, which greatly facilitated navigation and geographical research. Furthermore, topographic mapping methods have undergone significant development in modern times (Gravon, 2024). The use of field measurements, such as triangulation, has made it possible to create more accurate land maps. The development of nautical charts in modern times is worth mentioning separately. Portuguese, Spanish, Dutch, and English cartographers created detailed nautical atlases that included not only maps of the coastline but also information about depths, currents, and hazards to navigation. The development of printing also substantially affected the spread of cartographic knowledge. The invention of the printing press by Johannes Gutenberg in the 15th century made it possible to greatly simplify the production and distribution of maps. This contributed to the emergence of cartographic atlases that became available to the general public. One of the most famous atlases of that time was Abraham Ortelius’ Theatrum Orbis Terrarum (Fig. 135), published in 1570, which included maps of all parts of the world known at that time. One of Gerard Mercator’s most famous cartographic works is his map of the world, created in 1595 (Burnette, 2018). Mercator’s map shows the names of many cities, rivers, and regions of Ukraine, making it a prominent source for studying the geography of the time (Fig. 136). Lviv had the status of a free royal city and was one of the largest cities in the Polish-Lithuanian Commonwealth. The map also shows important cities such as Chernihiv and Przemyśl.



Figure 135. Map of Eastern Europe by Abraham Ortelius, 1570
(from the atlas Theatrum Orbis Terrarum)

Source: *Historical maps, Eastern Europe* (2025).



Figure 136. Mercator Map of the Black Sea Coast of Russia, 1595

Source: D. Gravon (2024).

The maps of Guillaume Levasseur de Boplan (1650) and Johann Blau (1665) are two of the most important maps of the territory of modern Ukraine created in the 17th century. Apart from geographical and economic aspects, Beauplan and Blaeu's maps also reflect the cultural characteristics of Ukrainian cities. For instance, on the map of Beauplan one can see numerous churches and monasteries that were important cultural centres (Shcherbak, 2023).

The French engineer and cartographer Guillaume Le Vasseur de Beauplan created his map, *A Description of Ukraine*, in 1650 (Fig. 137). Beauplan served in the Polish army and spent many years on Ukrainian lands, which allowed him to collect detailed data on the geography, economy, and culture of the region. His map includes images of rivers, cities, fortresses, and ethnographic data on the population. Due to its precision and detail, it is an important source for studying the history and geography of Ukraine in the 17th century. Beauplan's map shows many Ukrainian cities that played a vital role in the region at the time. For instance, he noted the existence of numerous Cossack settlements, which were important centres of Ukrainian culture and military affairs.



Figure 137. Map of Ukraine by Guillaume de Beauplan, 1650

Source: *Historical maps* (2025).

In 1665, the Dutch cartographer Jan Blaeu created his map of Ukraine, which became part of the great *Atlas Maior* (Fig. 138). This atlas included detailed images of many regions of the world. On the map of Ukraine, Blaeu depicted the main rivers, cities, and regions using data collected from travellers and merchants. Blaeu noted its strategic location on the banks of the Vorskla River. Another important city depicted on the Blaeu map is Odesa. Although the city of Odesa was officially founded later, there were ancient settlements and fortresses on the site of modern Odesa that were important for controlling the Black Sea coast.

Source: Richly embellished map of Europe from the Golden age of Dutch cartography (2025).

2.4 Professional activity in mapping of Ukraine during the period of the Russian Empire and Austrian rule (17th century – early 20th century)

In this times, methods of thematic mapping were also developed. This included the creation of maps showing various aspects of natural and social phenomena, such as climatic zones, population distribution, economic activity, etc. One example is the maps created by Alexander von Humboldt, a German geographer and explorer.

Government agencies and scientific societies also played a vital role in the development of mapping in modern times. In many European countries, special institutions have been established to carry out cartographic research and publish maps. For instance, in the UK, the Royal Geographical Society was founded (Cantor, 1962). These institutions not only created maps, but also promoted the standardisation of cartographic methods and the exchange of knowledge between specialists. The invention of new instruments, the development of field measurement methods, the spread of printing and the establishment of state cartographic institutions contributed to considerable progress in this field.

Guillaume Delisle was a French cartographer who created detailed maps of Ukraine in the first half of the 18th century. His work has greatly improved the understanding of the region's geography through new data collected during his travels and research. One of his most famous works is the map "Carte de la Pologne et des pays voisins" (Fig. 140), published in 1706, which included a detailed image of Ukraine. On the map, Delisle depicted in detail the main rivers of Ukraine, including the Dnipro, Dniester, and Southern Bug. Delisle also included numerous tributaries of the Dnipro River on the map, which helped to more accurately reflect the hydrographic system of the region. The details of the cities on the maps of Delisle deserve special attention. For example, Kyiv, the capital of Ukraine, was depicted with great accuracy. Delisle noted the main fortresses, monasteries, and churches that were important religious and cultural centres.

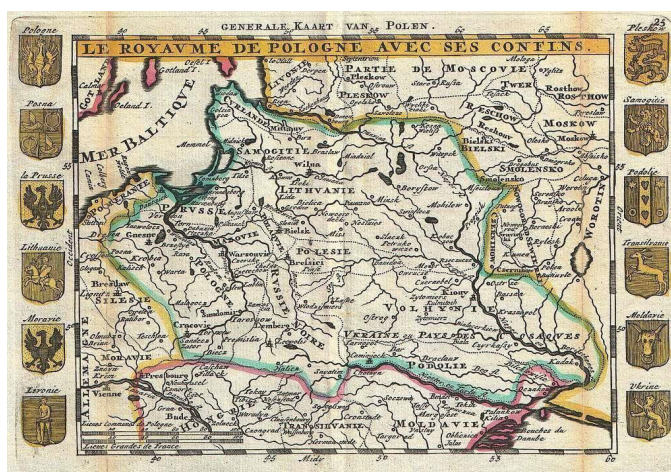


Figure 140. Carte de la Pologne et des pays voisins Paul de la Feuille's 1747 Réédition de son père Daniel's 1706 carte

Source: 1711 D. Feuille „Le Royavme de Pologne avec ses confins” 5/2 (2025).

Furthermore, the map of Delisle shows such cities as Chernihiv, Poltava, and Kamianets-Podilskyi. Delisle has included detailed images of the fortress walls, towers, and other fortifications, which helps to understand its defensive significance. Apart from geographical aspects, Delisle's maps also reflect the economic situation in Ukraine at the time. He identified the main trade routes that passed through the region, as well as mining sites and craft centres. For example, on the map one can find salt mines in the Solotvyno area, which were an essential source of salt for the entire region. The political situation is also reflected in the maps of Delisle (In-Chul Jung, 2024). It clearly showed the boundaries between different administrative units, such as voivodeships, provinces, and other regional structures. This helps to understand how political power was organised in Ukraine in the 18th century, and how different parts of the country interacted with each other and with neighbouring states.

Tobias Conrad Lotter was an 18th-century German cartographer. He was the son-in-law of the famous German cartographer and publisher Mateus Seiter, and Lotter developed his cartographic skills while studying under him. The map of Ukraine created by Lotter in second half of the 18th century is an impressive example of cartographic skill. One important aspect of Lotter's map is the depiction of Ukrainian cities (Fig. 141). Lotter noted the main fortresses, monasteries, and churches that were significant religious and cultural centres. Other cities, such as Lviv, Chernihiv, and Kamianets-Podilskyi, were also depicted with great attention to detail, which helps to understand their strategic and economic significance at the time. The political situation is also reflected in Lotter's map. It clearly showed the boundaries between different administrative units, such as voivodeships, provinces, and other regional structures. This helps to understand how political power was organised in Ukraine in the 18th century, and how different parts of the country interacted with each other and with neighbouring states. Furthermore, Lotter's maps show the ethnographic features of the region. He identified the main ethnic groups that inhabited the Ukrainian lands, including Ukrainians, Poles, Russians, Jews, etc. This allows assessing the ethnic diversity of the region and understanding how different peoples coexisted on the same territory. Thanks to his maps, one can better understand the history of Ukrainian cities and their significance in the context of European history.

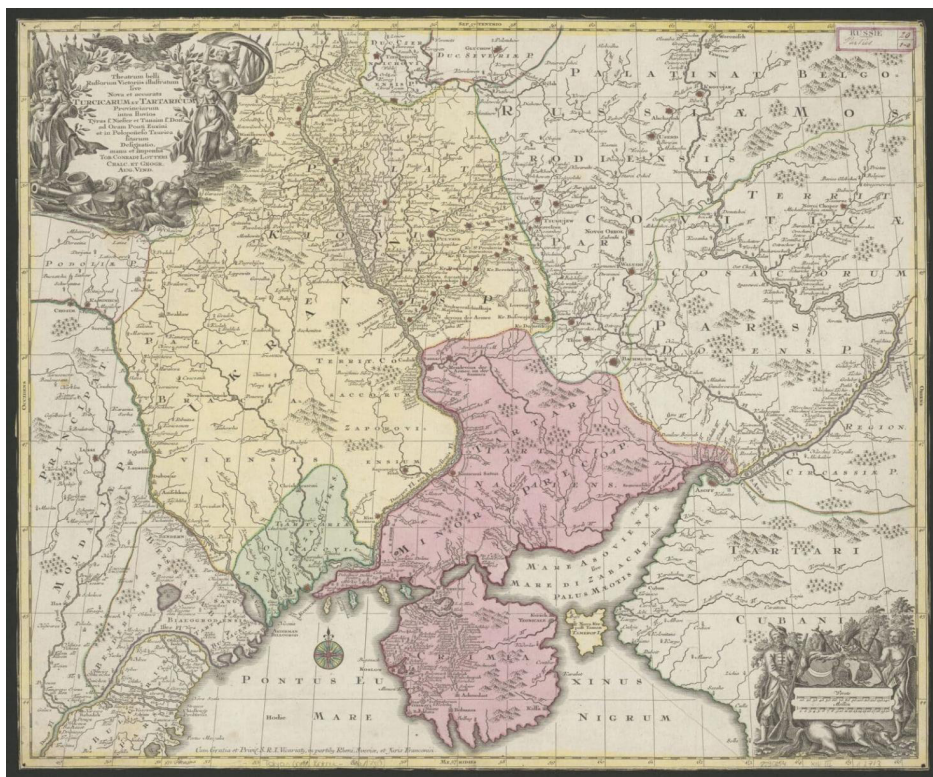


Figure 141. The theatre of war illustrated by the victories of the Russians, or a new and accurate account of the Turkish and Tartar provinces (...) by Tobias Conrad Lotter
Source: Lotter Tobias Conrad (2025).

In the 18th century, German travellers Johann Gottlieb Georgi and Peter Simon Pallas made a valuable contribution to the mapping of Ukrainian territories, exploring natural resources and settlements on behalf of the Russian government. Their detailed descriptions of towns and settlements, including graphic representations, contributed to a more accurate representation of the territory. In the 19th century, the development of science and technology contributed to the creation of more accurate and detailed maps.

In the early stages of cartography, hand drawing was the main method of creating the first maps and city plans. For example, the detailed city plans created by Guillaume le Vasseur de Beauplan in the 17th century were made by engraving copper plates. Engraving allowed creating high-quality prints (Fig. 142). With the development of art during the Renaissance and Baroque periods, artists began to use watercolours and oil paints to create more realistic and aesthetically pleasing depictions of cities (Morgan, 2022). Watercolour allowed to convey the atmosphere, shades of light and colour, which gave maps and plans greater artistic value. Famous Ukrainian artists, such as Taras Shevchenko, used watercolours to create images of Ukrainian cities that were distinguished by their high artistic skill and detail. In the 19th century, lithography appeared, a new printing technique

that used special stone or metal plates. This technique became popular among cartographers and publishers because it combined the high detail of hand-drawn maps with the possibility of mass reproduction. Photography made it possible to reproduce architectural details with high precision, which was impossible with hand drawings. Photolithography, which combined photography with lithography, became a popular technique for creating graphic views. For example, the works of Fedor Solntsev, who used photolithography to create the *Album of Ancient Monuments*, were noted for their high realism and detail. Cartographers used a variety of tools, such as theodolite and planimeter, to accurately measure and reproduce urban infrastructure. The theodolite allowed measuring angles on the ground, which was important for creating accurate plans and maps. The planimeter was used to measure the area on maps, which made it possible to determine the size of city blocks, parks, and other objects.



Figure 142. Cathedral of St. Alexander of Kyiv, 1846, paper, watercolour (Taras Shevchenko)
Source: K.V. Bondarchuk (2021).

In the middle of the 18th century, urban planning in Ukraine continued to develop. After the annexation of Right-Bank Ukraine to the Russian Empire, many cities such as Kyiv, Chernihiv, and Poltava underwent significant changes. For example, numerous administrative buildings, churches, and monasteries were built in Kyiv, which contributed to its development as an important cultural and spiritual centre. Poltava, after the Battle of Poltava in 1709 (Shevtsova, 2021), became a prominent military and administrative centre, where new fortifications and public buildings were erected. Mapping also played a vital role in the development of the cities of western Ukraine after they were annexed to the Austrian Empire in the late 18th century. Lviv, as the administrative centre of Galicia, has undergone considerable changes in its planning and site development. In 1770 the Austrian authorities began creating detailed maps of Lviv (Fig. 143), which included not only the location of existing buildings but also plans for new streets, squares, and public buildings. At the

same time, in the South of Ukraine, after the annexation of these lands to the Russian Empire as a result of the Russian-Turkish wars, active development of new territories began. Numerous new cities were founded, such as Odesa, Mykolaiv, and Kherson, which became important commercial and industrial centres. Founded in 1794, Odesa quickly became one of the largest ports on the Black Sea, which contributed to its economic growth and development.

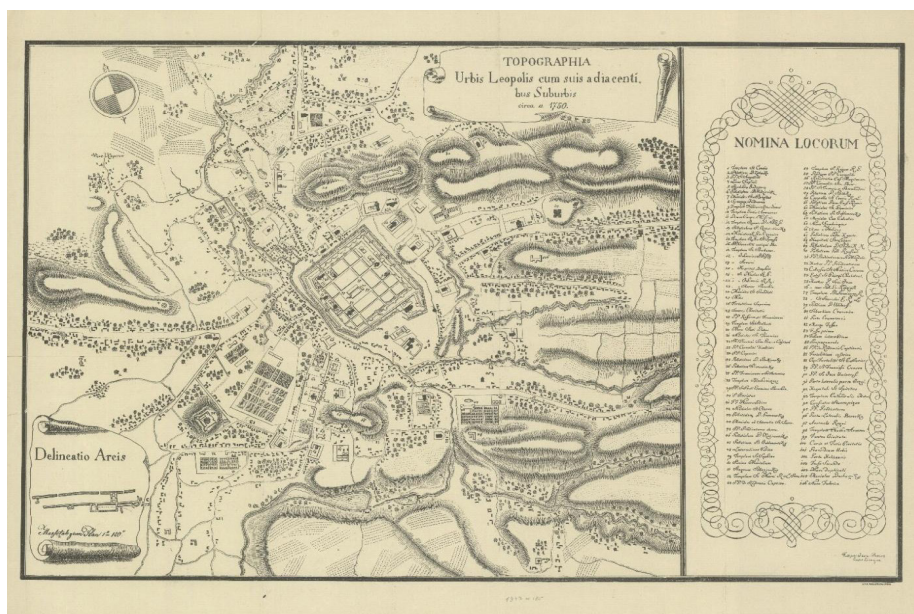


Figure 143. Map of the city of Leopoldis (Lviv) with surrounding suburbs, 1770, from the college of the Austrian Military Archives

Source: *Topography of Leopoldis with surrounding suburbs* (2025).

One of the important achievements of the masterplan was the improvement of transport infrastructure. For example, new bridges across the Dniro River were planned, providing convenient access to different parts of the city and promoting trade and economic development (Hlushchenko, 2024). Thanks to the introduction of new planning, the creation of new public buildings, improved infrastructure, and the preservation of cultural heritage, Kyiv became a modern city with a well-developed infrastructure and comfortable living conditions. In modern times, Ukraine has experienced a significant development in urban planning, which has resulted in numerous successful projects that have contributed to the economic, social, and cultural development of cities. Apart from the Kyiv masterplan, it is worth mentioning other prominent examples of urban planning projects that have had a significant impact on the country's urban landscape.

The first half of the 18th century was an important stage in the development of Khadjibey (future Odesa), which became part of the Russian Empire after it was annexed in 1792. By that time, Khadjibey was a small settlement, but its strategic location on the Black Sea coast was of great importance for the city's development. In the late 1790s, large-scale construction began,

including the creation of port and trading areas, as well as fortifications to ensure security (Fig. 144). An eventual transformation of Khadjibey into a city was marked in 1795 when it was renamed Odesa. This occurred against the backdrop of significant growth of the city, which became an important administrative, economic and commercial centre. The ports and infrastructure provided Odesa with a strategic position in the Russian Empire's trade system, while the development of urban planning and the reconstruction of fortifications helped to create comfortable conditions for residents and traders. In the early 19th century economic and cultural importance of Odesa was crucial for the southern borders of the empire, it quickly became one of the largest ports in the Russian Empire and an important trading centre. Odesa was designed with a regular layout of streets and neighbourhoods, which ensured easy navigation and efficient use of the territory. Odesa also received modern port facilities, warehouses, and infrastructure to service merchant ships, which contributed to its rapid economic growth and international recognition.



Figure 144. Map of the city of Khadjibet (Odesa)

Source: Catherine II - the founder of Odesa or the occupier Hadzhibey? (2022).

Another important example is the city of Poltava, which underwent considerable changes after the Battle of Poltava in 1709. The victory of the Russian troops under the command of Peter the Great was crucial for the further development of the city. Poltava was transformed into an important military and administrative centre (Fig. 145). One of the key aspects of Poltava's urban planning project was the creation of a new fortress to protect the city from possible attacks. The fortress was designed according to all modern standards of fortification art of the time, including bastions, moats, and fortified ramparts. Apart from the fortifications, new administrative buildings, churches, educational institutions, and hospitals were designed and built in Poltava (Fig. 146).

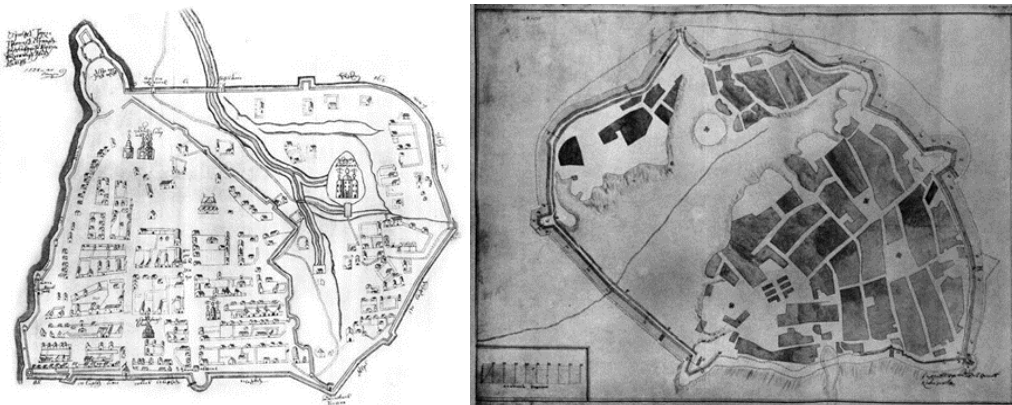


Figure 145. Poltava plan (1722) and a map of the Poltava fortress (1732)
Source: *The battle of Poltava (2025).*

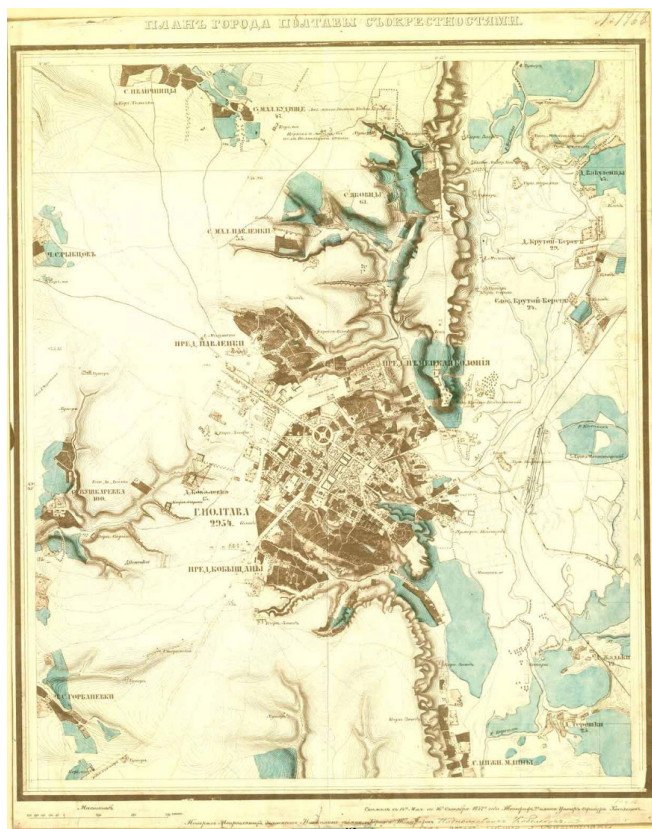


Figure 146. Poltava plan, after 1857
Source: *The battle of Poltava (2025).*

2.5 Creation maps and atlas of Ukrainian cities during the survey of the Soviet territory (1917-1991)

In the Soviet period, the graphic representation of Ukrainian cities underwent significant transformations due to the development of architectural graphics, cartography, and the influence of state ideology. In the 1920s and 1930s, architectural graphics were dominated by constructivism, which reflected the desire for functionality and simplicity of form. This was reflected in the creation of laconic drawings and diagrams that focused on the rational use of space and materials. Later, in the 1940s and 1950s, under the influence of the Stalinist Empire style, architectural graphics became more decorative, with an emphasis on the monumentality and grandeur of buildings. During this period, detailed watercolour perspectives and sketches appeared, emphasising the ideological significance of architectural objects. Cartography of that time was also developed under the influence of state policy. Detailed city plans were created that reflected not only topographical features but also socio-economic aspects, such as the location of industrial zones, residential areas, and cultural sites. These maps were used as a tool for planning and controlling the development of urban areas. Graphic materials, such as master plans and detailed development schemes, were the basis of urban planning in the USSR. They provided visualisation of future projects and served as a guide for construction organisations. The state ideology of the USSR had a significant impact on the graphic representation of cities. Architectural designs and plans had to reflect socialist ideals and demonstrate the benefits of the Soviet system. This was manifested in the creation of monumental buildings, wide avenues and spacious squares that symbolised the power and progress of the state. Graphic materials were often used as a means of propaganda, demonstrating the achievements of socialist construction and the prospects for future development.

During the Soviet period, Kyiv became the centre of large-scale urban planning projects and architectural experiments that significantly influenced its modern appearance. After the capital of the Ukrainian SSR was moved to Kyiv in 1934, there was a need to upgrade the city's infrastructure and create a new government centre. In 1936, the General Plan for the Reconstruction of Kyiv was developed under the leadership of architect Pavlo Haustov (Fig. 147). This plan envisaged a significant expansion of the city's territory, the development of industrial zones, and the creation of new residential areas. In particular, it was planned to develop the left-bank part of the city, which was to ensure a balanced development of both banks of the Dnipro River. After the Second World War, in 1947, a new General Plan was approved, focusing on the restoration of destroyed areas and further development of the city (Fig. 148). This plan envisaged the reconstruction of the central part of Kyiv, in particular Khreshchatyk Street, and the creation of new transport routes.



Figure 147. General plan of development of the city of Kyiv, 1936

Source: A. Ponomaryova and B.D. Ryan (2020).



Figure 148. General plan of Kyiv, 1947

Source: Old general plans of Kyiv (2014).

The post-war reconstruction of Kyiv required detailed architectural and cartographic materials. Significant attention was paid to the restoration of central streets and squares. In particular, Khreshchatyk Street, which had suffered significant damage during the war, was completely rebuilt in the style of Stalinist neoclassicism. Architectural plans and drawings from this period demonstrate the monumentality and grandeur of the new buildings, which symbolised the city's revival. As part of the post-war reconstruction, detailed graphic materials were developed for the development of Khreshchatyk and the creation of the government quarter. In particular, new administrative buildings appeared on the site of destroyed buildings, such as the Trade Union Building with a clock tower, built in 1975-1980 by architects O. Malynovskyi and O. Komarovskiyi (Fig. 149).



Figure 149. The Trade Union Building in 1980s

Source: *In memory of the house of trade unions (2014).*

During the Soviet period, Odesa experienced significant urban planning changes aimed at reconstructing the city, modernising the port area, developing residential areas and health resort infrastructure. The city's general plans envisaged the expansion of port capacities, construction of new berths and warehouses, and modernisation of the existing infrastructure to meet the growing volume of cargo traffic. In particular, the collection "Five Largest Cities of the Soviet Union" (Fig. 150) presents a detailed plan of Odesa, illustrating the planned changes in the port area and surrounding areas. This plan reflects not only the technical aspects of modernisation, but also the overall concept of the city's development as an important industrial and transport centre.



Figure 150. A map of Odesa from the collection “Five Largest Cities of the Soviet Union”, 1925
Source: A map of Odesa from the collection Five Largest Cities of the Soviet Union. 1925 (2024).

The Potemkin Stairs were a key object in Soviet urban planning plans for Odesa, connecting the historic centre with the port (Fig. 151). In graphic materials from the 1940s and 1970s, the stairs were depicted as an important element of the coastal infrastructure and a navigational landmark. They were also actively used in tourist schemes and maps that demonstrated Odesa as a strategic resort and transportation centre.



Figure 152. The Potemkin Stairs at the 1970s

Source: *Old Odesa in photographs (2025).*

The Soviet government viewed the city of Lviv not only as a cultural centre, but also as an essential industrial hub that required modernisation. The spatial structure of Lviv was changing: the historic districts were supplemented by new neighbourhoods, industrial facilities were allocated separate zones, and the transport infrastructure was expanded to meet the needs of the growing population (Sossa, 2020). In 1932, the city's master plan was approved, which defined the strategic directions of Lviv's development within the framework of Soviet urban policy (Fig. 153). The main emphasis was placed on reorganising the transport network and relocating industrial enterprises to the periphery. For example, the Pidzamche and Levandivka districts became centres of factory construction, as documented in cartographic materials of the period. The new city plan envisaged the creation of micro-districts instead of neighbourhoods, which was in line with the socialist principles of urban development. One of the largest residential projects was the Sykhiv district, which began to be designed in the 1960s. It became the first complex residential development to be built on the principle of neighbourhood planning. Graphic materials from that time show a clear building structure, division into functional zones, and the arrangement of courtyards. The large-scale transition to panel construction made it possible to significantly reduce construction time, which is reflected in the project documentation. Lviv's industrial districts were located mainly along railway lines and major highways, which provided convenient transport links. One of the key enterprises was the Lviv Bus Plant, which played an important role in the development of the Soviet automotive industry. Maps of the period clearly show industrial areas and their zoning. The problem of preserving the historical heritage in Lviv during the Soviet period was complex. The authorities recognised the cultural value of the city, but tried to adapt architectural monuments to new ideo-

logical and practical needs. In the 1950s, large-scale reconstructions of historical ensembles were carried out, including Rynok Square and the Vysokyi Zamok (eng. High Castle). Some of the reconstructions led to changes in the appearance of historic buildings, which was recorded in the urban planning and tourist schemes of the time. Soviet cartography of Lviv at the end of the 20th century is a testament to the radical changes that took place in the city. It recorded the transformation of Lviv from the historical centre of Galicia to a socialist metropolis, where industry and the transport network developed alongside residential areas and adapted historical monuments.

During the Soviet period, Kharkiv became a centre of industrial development and architectural innovation, especially in the style of constructivism. The city was a platform for bold architectural experiments, which were reflected in numerous graphic materials of the time. One of the most famous examples of constructivism is the building of the State Industrial Complex (Derzhprom), built in 1925-1928 (Fig. 154). This building became a symbol of Soviet architecture and engineering. In addition to industrial and administrative buildings, large-scale cultural facilities were built in Kharkiv during the Soviet period, one of which was the Zaliznychnyk Palace of Culture (Fig. 155), built-in 1927-1932 by architect Oleksandr Dmytriiev in the style of constructivism. The building was distinguished by its unique design: the composition of the original facade reflected its internal structure, with five concave surfaces resembling a stretched harmonica (Smolenska, 2024). The large auditorium was connected to an arched foyer, and the walls of the passage were decorated with monumental frescoes by the famous artist Yevhen Lansere. In the post-war period, Kharkiv was actively developing as an industrial centre, which required massive residential development. In the 1960s and 1980s, numerous panel housing estates were built in the city, designed according to standardised designs. The graphic documents of that time reflect standardised approaches to the planning of residential areas, in particular the Saltivka and Oleksiivka neighbourhoods. The development of Kharkiv as an industrial centre was accompanied by the creation of master plans that envisaged the expansion of industrial zones and the modernisation of infrastructure. The building of the Kharkiv Commodity Exchange deserves special attention (Fig. 156). This building is a vivid example of constructivist architecture with characteristic geometric shapes and minimalist decor.

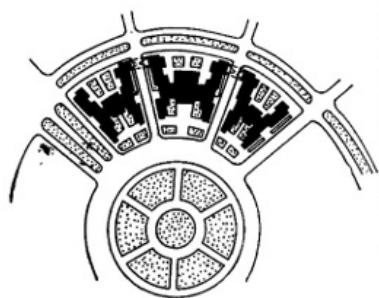


Figure 153. Derzhprom in Kharkiv, 1942

Source: I. Semenova (2024).

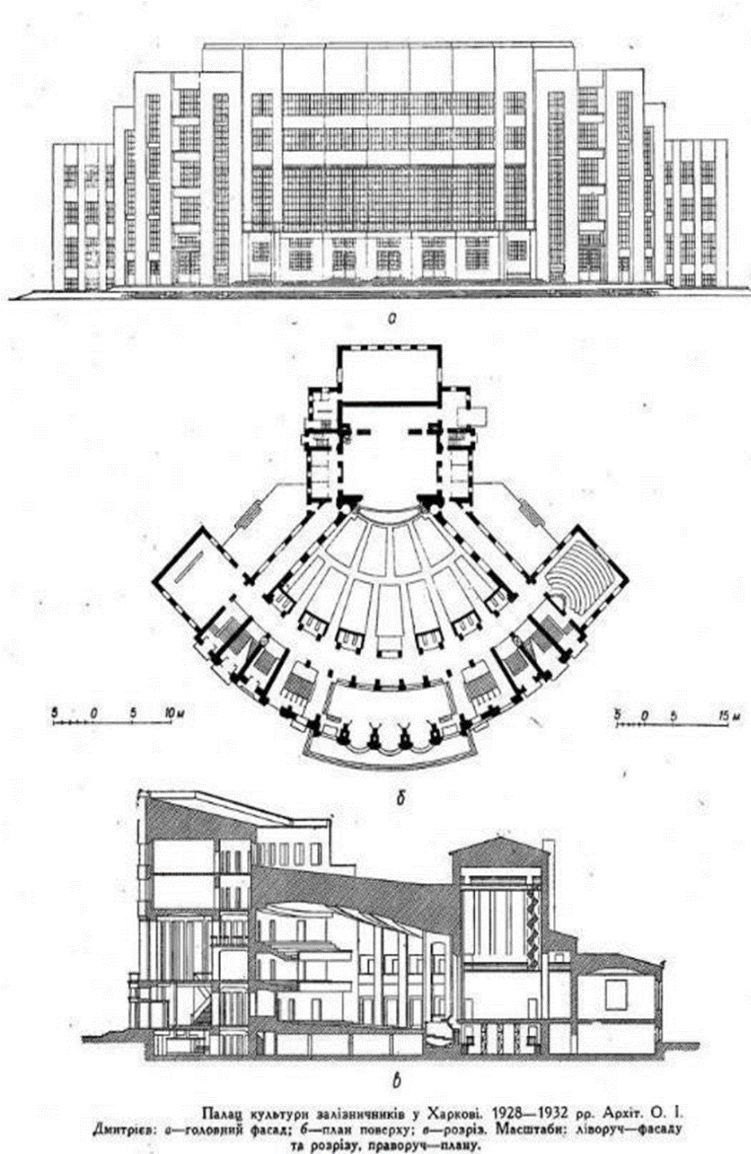


Figure 154. Zaliznychnyk Palace of Culture in Kharkiv

Source: I. Mozheyko (2022).

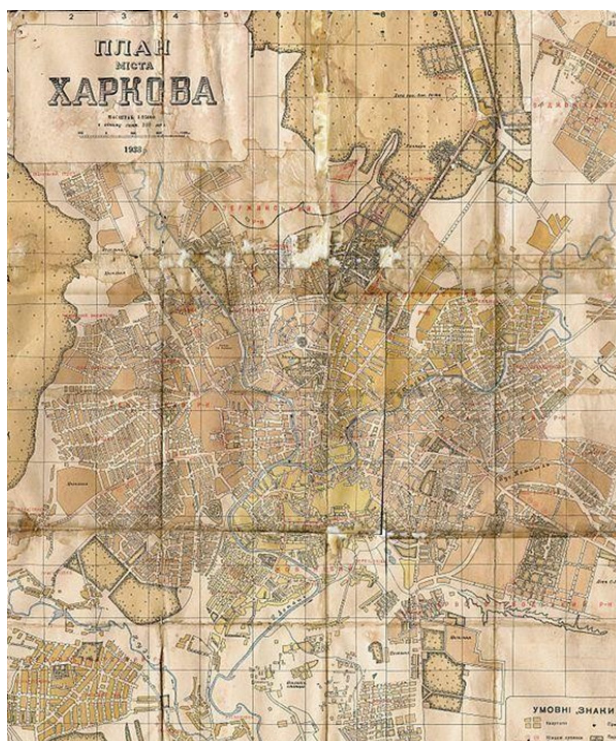


Figure 155. Kharkiv districts

Source: O. Musiezdov (2009).



Figure 156. The Kharkiv Commodity Exchange, 1925 (architect V.A. Linetskyi)

Source: Museum of the History of the City of Kyiv Institute of the History of Ukraine NAS of Ukraine (2015).

2.6 Planning and architectural graphics to convey the image of the Ukrainian cities after independence (1991-)

Political instability and wars have had a negative impact on cartographic research. Numerous conflicts on the territory of Ukraine, such as the war with the Ottoman Empire, the Crimean War, and revolutions, led to the destruction of archives and the loss of valuable cartographic materials. Archives and museums play a key role in preserving the historical memory of Ukrainian cities by providing access to valuable documents, artefacts, and graphic materials. They helping researchers, historians, and the public to better understand the evolution of urban architecture, planning, and everyday life in cities of the past. One of the crucial functions of archives and museums is not only to preserve but also to promote historical heritage.

One of the most distinguished archives in Ukraine is the Central State Historical Archive of Ukraine in Kyiv. This archive contains a massive number of documents covering the period from the Middle Ages to the present day. Its collections contain unique graphic materials, including city plans, architectural drawings and maps, which allow reconstructing the historical appearance of Ukrainian cities. For instance, the archive contains maps of Kyiv dating back to the 17th and 18th centuries, which provide valuable information about the development of the city in different historical periods.

The National Museum of History of Ukraine in Kyiv (2025) also has a large collection of graphic views of Ukrainian cities. This museum houses not only documents and maps, but also artworks that reflect the urban environment of different eras. For example, the museum's exposition features drawings and engravings of views of Lviv, Odesa, Kharkiv, and other cities created by both Ukrainian and foreign artists. These works provide a visual representation of the architectural and urban features of cities, helping to understand their history and development (Fig. 157).



Figure 157. Postcard “General view of St. Sophia Square”, 1904-1909

Source: Postal card “General view of Sophia Square” (2025).

Odesa, as one of the largest port cities in Ukraine, also has its own unique collections of graphic views (Fig. 158). The Odesa State Archive and the Odesa Archaeological Museum store a large number of materials related to the city's history. Particularly interesting are the old maps and plans of Odesa, which demonstrate how the city developed during the 19th century. Furthermore, the archive contains unique photographs and postcards from the early 20th century, which provide an insight into everyday life and architectural changes in the city.



Figure 158. A map of the city of Odesa, 1827

Source: “The first architect of Odesa...”, 2022.

The Central State Historical Archive of Ukraine in Lviv holds numerous documents and maps, which demonstrate the unique architecture of the city and its fortifications. The Lviv Historical Museum also has many graphic materials depicting cityscapes and architectural monuments. Archives and museums also hold materials related to lesser-known but no less important cities in Ukraine. For example, the Central State Archive of Public Associations of Ukraine holds documents on the history of the city of Kamianets-Podilskyi, which was an important cultural and commercial centre (Fig. 159). The archive's collections include old maps, plans of the city and fortifications, as well as photographs from the late 19th and early 20th centuries that reflect the multinational environment of the city. Graphic depictions of Kyiv also include works in the National Museum of the History of Ukraine in the Second World War (2025). This museum, located on the slopes of the Dnipro River, houses numerous artefacts and memorials dedicated to Ukraine's role in World War II. The museum's graphic works often depict magnificent statues and memorials that reflect the courage and sacrifice of Ukrainians during the war.



Figure 159. Kamianets-Podilskyi maps

Source: *Maps of Kamianets-Podilskyi* (2012).

Notably, archives and museums not only store documents, but also organise exhibitions, lectures, and other events that promote the history of Ukrainian cities. For example, the National Museum of History of Ukraine regularly holds exhibitions on the history of Kyiv and other cities (2025). Such events draw the attention of the general public to the historical heritage and contribute to its preservation. Furthermore, museums often organise excursions for schoolchildren and students, which helps to foster respect and interest in the history of their country among young people. Archives and museums often cooperate with researchers and academic institutions, providing them with access to their collections for research. This contributes to the creation of new scientific studies, monographs, and papers that enrich the understanding of the history of Ukrainian cities.

Contemporary research on graphic representations of cities requires an interdisciplinary approach that includes architecture, urban studies, art history, and technology. Graphic views of Ukrainian cities play a key role in contemporary research in history, architecture, urban studies, and cultural studies. One of the key areas where graphical views are used is in architectural research. Architects and architectural historians use old prints, drawings, and maps to recreate the appearance of historic buildings and complexes that have been destroyed or rebuilt over time. For example, research on the architectural heritage of Kyiv includes the study of engravings from the 18th and 19th centuries depicting Saint Sophia Cathedral, the Kyiv-Pechersk Lavra, and other landmarks. This allows for more accurate restoration work and preservation of historical authenticity. Urban studies also actively use graphical views to analyse the development of urban spaces. Historical city plans, maps, and panoramas allow studying changes in the layout and development of

urban areas. For example, studies of Lviv's development are based on the analysis of maps from the 17th and 18th centuries. This allows researchers to understand how modern urban areas were formed and what factors influenced their development. One example is the study of Lviv's historic neighbourhoods, where old maps revealed how the layout of streets and buildings has changed after numerous reconstructions. Furthermore, graphic types are actively used in cultural and ethnographic research. For instance, graphic views of 19th-century Odesa reflect not only the city's architectural features but also scenes from the lives of its inhabitants, such as market trading, holidays, and other events. These materials provide researchers with valuable information about the social structure, economic and cultural aspects of the city. The use of graphical views is also an essential tool in the field of local history. Local history research, which focuses on the history of specific regions and localities, makes extensive use of old maps, plans, and drawings to recreate the historical context. For example, research on the history of Poltava includes an analysis of ancient city plans that show its development from medieval settlement to a modern regional centre (Fig. 160). Graphical views allow local historians to determine what changes have taken place in the city's infrastructure, how streets and squares have changed, and what architectural monuments have survived to this day. Graphic arts also play a significant role in contemporary art studies. Art historians use old drawings, prints, and watercolours to study artistic styles and techniques that were popular in different periods. Graphic types are also actively used in teaching history and cultural studies. For example, when teaching a course on the history of architecture at the National University of Kyiv-Mohyla Academy, they use old prints and drawings that demonstrate the development of Kyiv's architecture from the Middle Ages to the present.

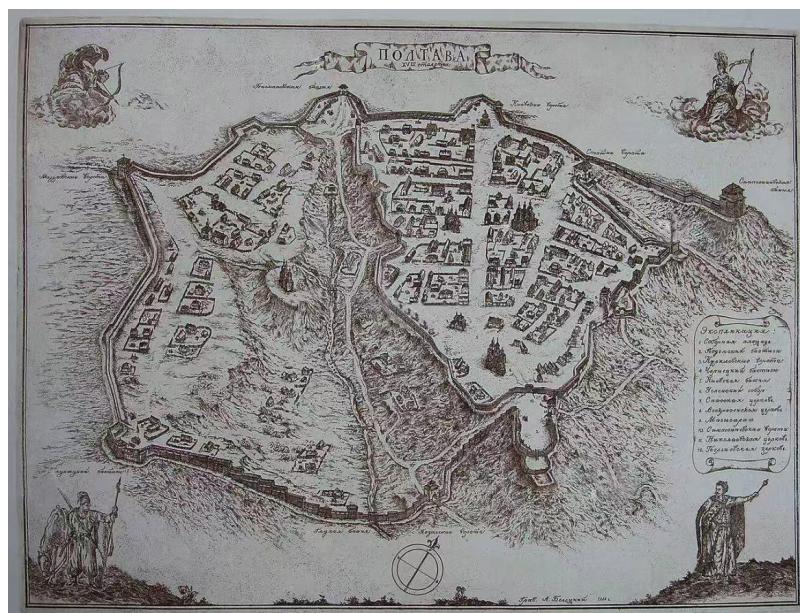


Figure 160. Map of Poltava in the early 18th century

Source: *Map of Poltava in the early 18th-century (2025).*

Engravings also play a significant role in the study of the interaction between architecture and other art forms. For example, Baroque engravings regularly feature architectural fragments combined with elements of sculpture and painting. In addition, architectural prints are critical for studying the development of technology and building materials. Engravings by eighteenth-century French architects frequently reflect new construction methods and the use of materials such as cast iron and concrete. In today's world, where technology is constantly evolving, the analysis and conservation of architectural prints is taking on new forms. One of the most important tools for analysing architectural prints is digital technology. High-resolution scanning of engravings allows for the creation of detailed digital copies that can be used for further analysis and research. Digital copies allow preserving the prints in their original form and provide access to them to a wide audience via the Internet. Spectroscopy and image analysis techniques are also widely used to study the techniques and materials used to create prints. These techniques allow researchers to analyse the chemical composition of ink and paper, which helps to better understand the techniques used by engravers. For example, infrared spectroscopy can reveal hidden layers and preparatory drawings that are not visible to the naked eye. Thanks to modern technology, many archival materials are being digitised and made available online. Digitising ancient maps, plans, and drawings makes them accessible to a wide range of researchers around the world. One of the most prominent examples of the use of digitised graphic views is the project "Historical 3D Map of Lviv", which was implemented in cooperation between the Ivan Franko National University of Lviv and the Lviv City Council. This project includes the creation of an interactive map of the city, where one can observe old plans and maps of Lviv, as well as modern photographs and descriptions of historical sites. Such an interactive platform allows not only researchers but also ordinary users to learn more about the history of the city and its development. Furthermore, graphic views are used in modern archaeological research. Archaeologists often use ancient maps and plans to identify the locations of ancient structures and other archaeological sites. For example, during excavations on the territory of the ancient city of Chyhyryn (Fig. 161), researchers used ancient plans and drawings to identify the location of fortifications and residential areas.

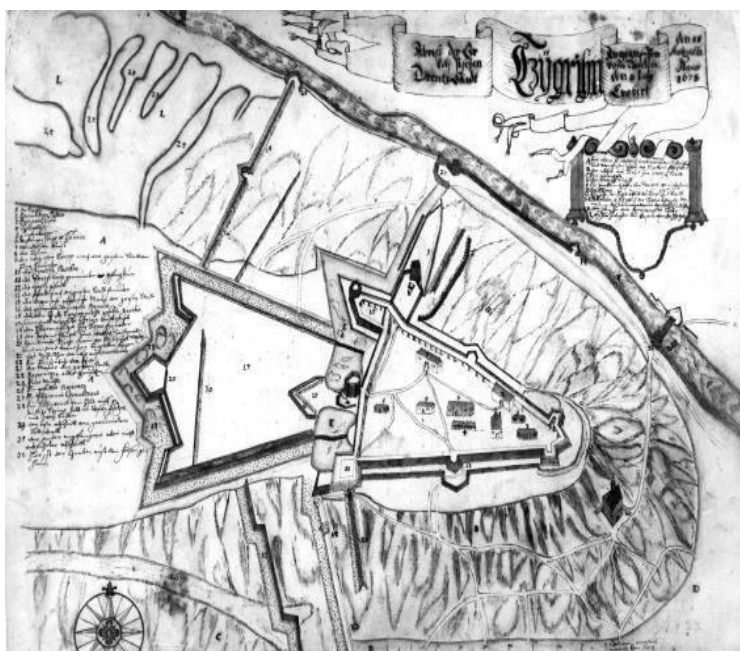


Figure 161. Plan of the Chigyrin fortress, 1678

Source: 1678 Plan of the fortress (2025).

Collections of graphic views of Ukrainian cities play an important role in the development of tourism potential. Thanks to the skilful efforts of archives, museums, and other cultural institutions, these collections have become an essential resource for creating tourist routes, exhibitions, and events that attract visitors from all over the world. The use of graphic collections for tourism development is not limited to large cities. For example, Kamianets-Podilskyi, known for its medieval castle and historic centre, actively uses old graphic views to create tourist routes and exhibitions. Kamianets-Podilskyi's tourist routes often include visits to places depicted on ancient graphic views. One of these routes, *Ancient Kamianets in Pictures and Engravings*, offers tourists to see the city's sights, such as the Kamianets-Podilskyi Castle, the city hall, the Sts. Peter and Paul Cathedral, Kamianets-Podilskyi, etc. Kyiv, the capital of Ukraine, has a rich history and cultural heritage, which is reflected in numerous graphic works depicting landmarks and events. One of Kyiv's most important architectural landmarks is Saint Sophia's Cathedral (Fig. 162). This cathedral, built in the 11th century, is one of the oldest and most prominent architectural monuments in the city. Graphic representations of Saint Sophia Cathedral often emphasise its grandeur and historical significance. They preserve details of frescoes and mosaics that reflect the spiritual and cultural life of Kyiv over the centuries. Another important site is the Kyiv-Pechersk Lavra, which is one of the most famous monastery complexes in Ukraine. Graphic works depicting the Lavra convey its architectural beauty and spiritual significance. They often include images of underground caves where the relics of saints are kept, as well as majestic churches and bell towers that dominate the

cityscape. Maidan Nezalezhnosti is Kyiv's central square and the site of many momentous events in Ukraine's recent history, such as the 2004 Orange Revolution (Main National Memorial..., 2025) and the 2014 Revolution of Dignity (Main National Memorial..., 2025). The graphic works depicting Maidan reflect not only its architectural features, but also the spirit of protest and the fight for freedom. They preserve the moments of mass gatherings and barricades that have become a symbol of the people's will and desire for change.



Figure 162. A map of the St Sophia of Kyiv Nature Reserve.

Note: 1 – St. Sophia cathedral; 2 – Bell Tower; 3 – Metropolitan house; 4 – Refectory; 5 – Brotherhood of the corps; 6 – Dormitory; 7 – Bread; 8 – Southern entrance tower; 9 – Zaborovsky gates; 10 – Monks' cells

Source: *Sophia Cathedral in Kyiv drawing (2025).*

An important architectural landmark is Andriivskyi Descent, one of the oldest and most famous streets in Kyiv. Andriivskyi Descent is a popular destination for artists who create paintings that reflect its unique charm and cultural atmosphere (Tripadvisor). Andriivskyi Descent is known for its unique architecture that reflects different eras and styles. One of the most famous buildings is St Andrew's Church (Fig. 163, a, b), built in the Baroque style by the famous architect Bartolomeo Rastrelli in 1754. The church is located at the top of the descent and the grand building with five domes is one of the main architectural dominants of Kyiv.

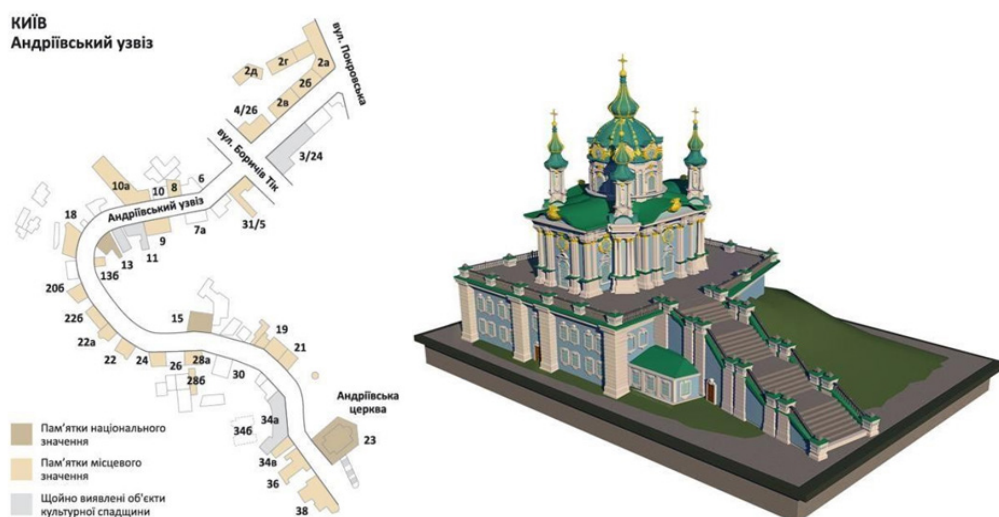


Figure 163. A plan of Andriivskyi Descent and a 3D model of St. Andrew's Church (Kyiv)
Source: K. Shpolyanska (2025).

Another important architectural object on Andriivskyi Descent is the house number 13, known as Bulgakov's House. This house was built in the mid-19th century and is known for the fact that the famous writer Mikhail Bulgakov, author of the famous novel *The Master and Margarita*, lived and worked here. Today, this building houses a museum. Andriivskyi Descent is also known for its many galleries, artists' studios, and souvenir shops. For example, the 36 Gallery is a popular destination for fans of contemporary art. This gallery is located in a building built in the early 20th century that combines elements of Art Nouveau and Neoclassicism. Another notable architectural object is Richard the Lionheart Castle (building No. 15), built in the Neo-Gothic style. This building was constructed in the early 20th century. Today, it is one of the most popular tourist attractions of the descent, drawing attention with its picturesque shapes and magnificent towers. Furthermore, building No. 34 is a striking example of Art Nouveau architecture, which was popular in the early 20th century. Andriivskyi Descent also has a special cultural landscape, including numerous museums, theatres, and cultural centres. Specifically, there is the One Street Museum, which is dedicated to the history of Andriivskyi Descent and its famous residents. Along Andriivskyi Descent, one can also see many monuments and sculptures that add to its special charm.

One of the most striking examples of using graphic collections for tourism development is Lviv. Lviv museums, such as the Lviv Historical Museum and the Andrey Sheptytsky National Museum in Lviv, have numerous engravings, drawings, and maps in their collections that reflect the development of the city over the centuries. Furthermore, Lviv is actively developing tourist routes that include visits to places depicted on ancient graphic views. For example, the tourist route "In the Footsteps of Old Lviv" offers visitors to explore historical sites depicted in engravings from the 17th and 18th centuries. Tourists can see the High Castle, Rynok Square, Dominican Cathedral, and other landmarks, comparing their modern appearance with old images. The use of graphic collections for

tourism development also helps to promote the cultural heritage of cities among local residents. For example, Lviv hosts an annual festival called “Lviv the Old”, which showcases ancient prints, drawings, and maps of the city.

Odesa is known for its architecture, which reflects the city’s multicultural influences (Fig. 164). One of the most famous landmarks is the Odesa National Academic Opera and Ballet Theatre. The theatre, opened in 1887, is one of the most beautiful in Europe. The Potemkin Stairs leading from Primorsky Boulevard to the port is a symbol of Odesa and is often used in graphic images to emphasise the city’s dynamism and energy. The graphic works depicting the Potemkin Stairs help to capture this important element of the urban landscape in cultural memory. Furthermore, Odesa is creating thematic tourist routes based on graphic views of the city. Tourists often choose places to visit based on the visual impressions they receive through graphic images. Images of Odesa’s waterfront, its beaches and seascapes are often used in tourist materials to help attract visitors to the city (Fig. 165). Odesa’s socio-cultural context also includes its multinational population and strong cultural identity. Pryvoz, one of Odesa’s largest and most famous markets, is an example of a place where one can see representatives of different nationalities. Pryvoz is the heart of Odesa, where Ukrainian, Russian, Jewish, and other cultures intertwine, creating a unique Odesa spirit. Another important aspect is the display of events that had a significant impact on the city. For example, graphic works depicting revolutionary events and wars reflect both architectural changes and social transformations that took place in Odesa.

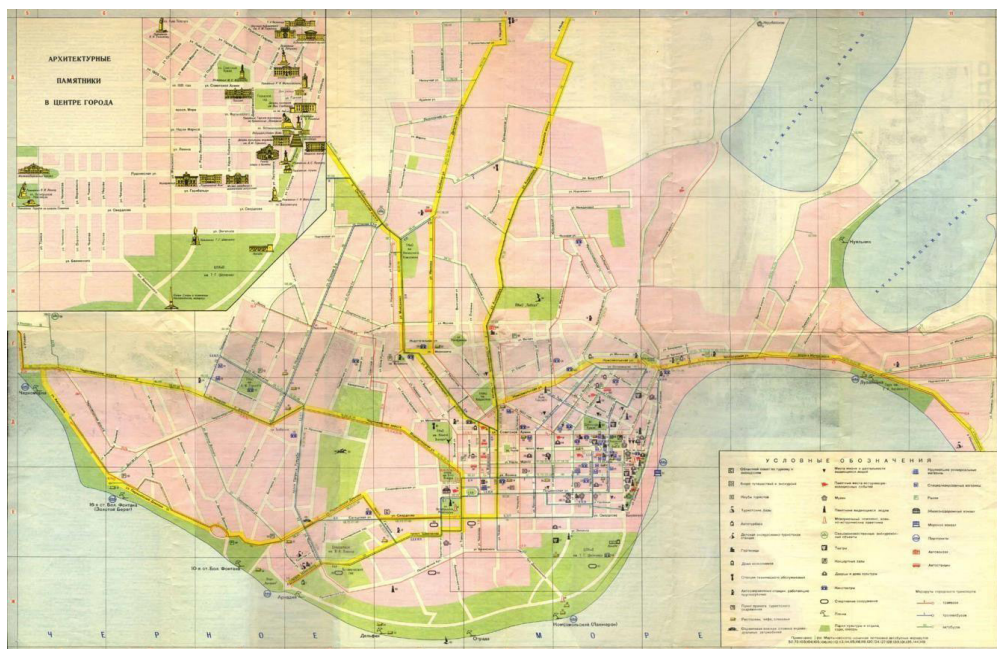


Figure 164. Map of architectural monuments in Odesa

Source: *Tourist map of Odesa. 1972 (2025).*



Figure 165. Odesa, Vue prise du quai commerciale

Source: *Odesa in the 19th century, lithographs (2025).*

In the modern era, graphic representations of a city have become an essential tool for conveying its unique image and history, contributing to both internal identification and international recognition. Modern technologies allow creating high-quality graphic images that can convey not only architectural details, but also the atmosphere and spirit of a place. Graphic representations of cities contribute to the formation of urban identity: they help city residents identify themselves with a particular place, feel its uniqueness and value.

With the development of digital technologies, which have increased the precision, detail, and accessibility of such images. This process began with the use of computer modelling, which opened new opportunities for architects and designers to visualise urban spaces. Thanks to computer technology, it is possible to create three-dimensional models of buildings and urban landscapes that accurately reflect their real proportions and placement. Software such as AutoCAD, SketchUp, and Revit have become essential tools in the arsenal of modern architects. Urban studies investigate the development of urban areas, their planning, and functioning. An important advancement in this area is the use of geographic information systems (GIS), which allow for the integration and analysis of spatial data. GIS provides detailed maps and plans of cities, including information on topography, infrastructure, demographics, and other important aspects. The ArcGIS and QGIS platforms are used to create high-precision mapping materials that serve as the basis for further analysis and planning of urban areas. For example, in Kyiv, GIS is used to create detailed maps that help plan urban development, preserve historical monuments, and manage the urban environment. MAPA: Digital Atlas of Ukraine program at the Harvard Ukrainian Research Institute (HURI) aims to advance Ukrainian studies using GIS (The MAPA program..., 2025). The use of drones and satellite imagery has become an essential part of the modern approach to creating graphic images of cities. Drones equipped with high-quality cameras provide detailed aerial photographs that can be used

to create three-dimensional models and orthophotomaps. This greatly facilitates the process of updating map data and monitoring changes in the urban environment.

An essential step in the development of technology was the introduction of virtual and augmented reality (VR and AR) in creating graphic images of cities. VR allows creating fully virtual environments where users can interact with threedimensional models of cities, explore their structure, and plan future projects. AR adds digital elements to the real world, allowing people to view realtime models of buildings and infrastructure on the ground. Such technologies are already being used in projects for the reconstruction of historic districts and the planning of new urban spaces. The use of 3D printing to create physical models of urban landscapes is another important aspect of the modern approach. 3D printing allows creating exact replicas of buildings and other objects used for presentations, planning, and educational purposes. For instance, the National Museum of History of Ukraine presented models of historical buildings in Kyiv printed on a 3D printer. Social media also plays an essential role in promoting graphic images of cities. This helps to promote urban landscapes and architectural monuments, stimulates interest in urban studies, and draws attention to the unique aspects of the city and contributes to its positive image.

Overall, the development of digital technologies has drastically changed the approach to creating graphic images of cities. They allow for more precise, detailed, and accessible imagery that reflects not only the physical characteristics of the urban environment, but also its cultural and historical context. An example is the Digital Lviv project implemented by the Lviv City Council, which uses GIS, drones and 3D printing to create detailed maps and models of the city. These materials are used to plan infrastructure development, preserve historical monuments, and promote Lviv's tourism potential. Thanks to this project, the city received tools to effectively manage its resources and promote its cultural heritage.

Graphic representations of cities reflect not only the physical landscape, but also socio-cultural aspects such as traditions, culture, and identity of local communities. This is crucial for cities with a rich history and cultural heritage, where every street and building have their meaning and history. In Ukraine, where many cities have centuries of history, graphic images are becoming an indispensable tool for preserving and passing on this heritage. One of the most striking examples is the city of Lviv, which is known for its unique architecture and culture. This is reflected in the graphic images, where one can see elements of different architectural styles and cultural influences. One of the key projects that reflects the socio-cultural context of Lviv is Interactive Lviv (Fig. 166), a digital encyclopaedia about the city and its history.

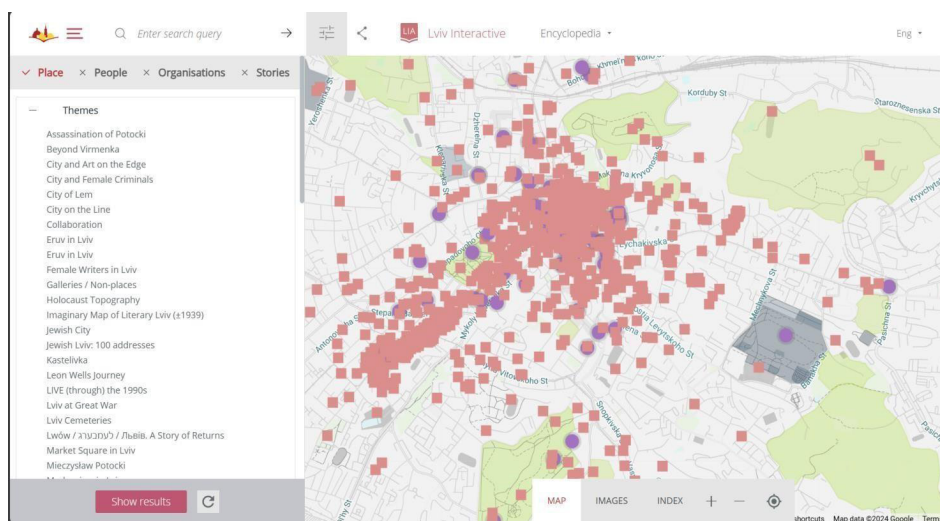


Figure 166. Interactive Lviv map

Source: *Interactive Lviv* (2025).

This project includes thousands of texts about the history of Lviv's buildings, organisations, and personalities, supplemented by photographs, archival materials, and interviews. It focuses on the history of the city from the late 19th century to the present day, covering architectural, urban, cultural, and social aspects. The project uses modern technology to create three-dimensional models of historic buildings and streets that can be viewed online. This allows tourists and researchers to get a virtual view of the city and its cultural attractions without leaving home.

SECTION III: TYPES OF GRAPHIC AND BASIC PRINCIPLES OF ARCHITECTURAL DRAWING OF UKRAINIAN HISTORIC CITIES

3.1 Topographic map of the region and city

The topographical type of graphic representation is one of the most crucial and widespread methods of documenting and presenting the spatial organisation of a city. Topographic images encompass various formats, such as maps, plans, and diagrams, which convey detailed information about geographical locations, natural features, and architectural elements. The primary goal of these images is to depict the actual configuration of a territory through accurate reproduction of scale and proportions (Maxwell *et al.*, 2020). A vital component of topographic images is the coordinate system, which enables precise localisation of objects on the map. For instance, modern topographic maps of Ukraine use the UCS-2000 coordinate system, which ensures high measurement accuracy. An example of such a map is provided by the National Geoinformation Agency of Ukraine (Fig. 167). Topographic images are characterised by the use of graphic symbols to identify elements of the urban landscape. For example, streets, buildings, bodies of water, and green areas are marked using standardised symbols and colour codes: blue for water bodies, black or red for roads, and green for vegetated areas (Fig. 168). These standardised signs contribute to a clear and intuitive map that is easily interpreted by users.

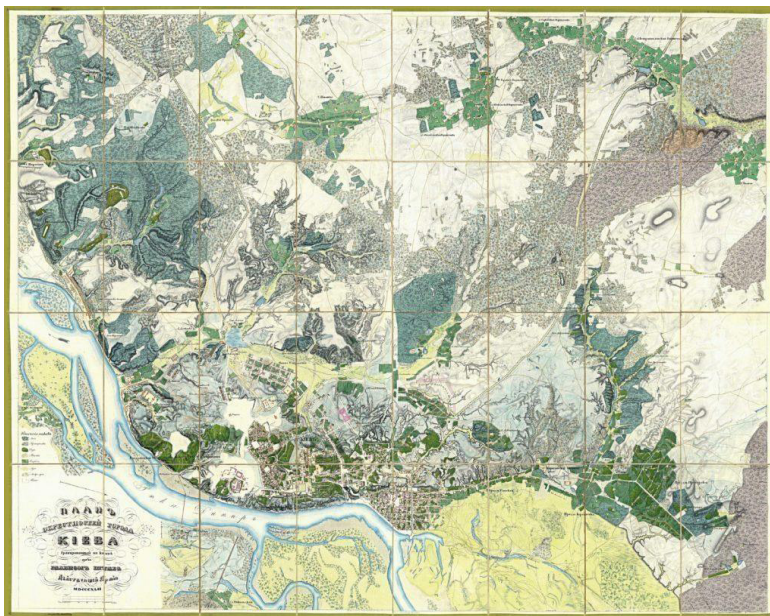


Figure 167. Map of Kyiv, 1842

Source: *Maps of Kyiv. From the beginning to the present day* (2019).



Figure 168. Map of the Kyiv Fortress, 1833

Source: *Maps of Kyiv. From the beginning to the present day* (2019).

Ukrainian cartography has evolved significantly from the Middle Ages to the present, transitioning from rudimentary sketches to advanced 3D models. The earliest mapping efforts in Ukrainian territories date back to the Kyivan Rus period. Traditional methods of topographic mapping laid the groundwork for later technological advances, relying on a variety of tools and techniques to represent geographic features with the highest accuracy then possible (Table 3) (Fig. 169).

Table 3. Key traditional methods of creating topographic maps

Method	Essence of the method
Field survey	Measurement of distances and directions on the ground using a compass, chain, measuring tape, and other simple tools
Theodolite surveys	Measurement of horizontal and vertical angles using a theodolite, an instrument with a telescope attached to a rotating wheel
Trigonometric survey	Establishment of trigonometric points on the ground and measurement of the angles and distances between them to create a network of triangles
Levelling	Determination of the difference in height between points using a level, which consists of a telescope on a horizontal axis
Astronomical observations	Using observations of stars and other celestial bodies to determine geographical coordinates on the ground

Table 3, Continued

Method	Essence of the method
Photographic topography	Use of aerial photographs (e.g., from aircraft) to create topographic maps
Engraving	Creation of maps by engraving images on metal plates and printing them
Lithography	Printing of maps using lithographic stones with the outlines of objects on them
Planimetry	Measurement of the area of objects on a map using a planimeter, a special tool for calculating areas
Curvimetry	Measurement of the length of curved lines on a map using a curvimeter, a tool for calculating curve lengths

Source: E.H. Weisson et al. (2020); W. Zhao et al. (2021); S.I. Deliry (2021); Y. Karpinskyi (2021).

One of the earliest methods of mapping was field surveying, which involved measuring distances and directions using simple tools such as a compass and a chain. This method required considerable physical training and precision, as any mistake could lead to considerable discrepancies on the map. The maps created in the times of Kyivan Rus, which, albeit quite simplified, still showed the main geographical objects. The first maps in Ukraine were mainly religious and mythological in nature. They often depicted worlds centred on Jerusalem or other sacred places, while the real geographical data was depicted very schematically. The first relatively accurate data and images appeared thanks to the efforts of European travellers and cartographers.

William of Rubruck, also known as Guillaume de Rubrouck, was a Flemish Franciscan missionary and explorer who made a remarkable journey to Central Asia in the 13th century. His travels, which lasted from 1253 to 1255, became a milestone in the history of European exploration of Eastern Europe and Asia. The main purpose of his mission was to find a common language with the Mongols, who then controlled large areas from Eastern Europe to China. His route passed through the Crimea, where he first stopped in the city of Sudak (then reported as Soldaia). Where William was impressed by the wealth and diversity of the population, which consisted of Genoese, Armenians, Greeks, and Crimean Tatars. Located on the Black Sea coast, Sudak served as a key point for European travellers and traders heading to Asia. He recalled the complex relationships between the various ethnic groups that inhabited the land, and how Mongol rule changed the social structure and economy of the region. Rubruck emphasised that the Mongols sought to control key trade routes that passed through these lands, specifically those linking Western Europe with Asia. His notes, known as the *Itinerarium et partes Orientales* (“The Journey to the Eastern Parts”), contain invaluable evidence of the nature, culture, religion, and political reality of the countries he visited (Fig. 169). His reports helped to clarify the location and characteristics of the lands to the east of Europe.



Figure 169. Map of William of Rubruck's voyage in 1248-1255

Source: N. Zharkikh (2012).

In the 15th and 16th centuries, Ukrainian territories increasingly appeared on European maps. Martin Waldseemüller, a German cartographer and geographer, made a valuable contribution to the development of cartography (Fig. 170). Waldseemüller used topographic mapping to create his maps. The approach was innovative for its time and contributed to a more accurate understanding of the continents and their boundaries. His topographical type of mapping influenced European perceptions of lands in Eastern Europe, exclusively including the territory of Ukraine (Lehmann, 2020). Although Waldseemüller did not create separate maps devoted to the Ukrainian lands, his works became the basis for subsequent mapping efforts. In the 15th and 16th centuries, Ukrainian lands were increasingly depicted on maps by European cartographers, specifically as part of the Grand Duchy of Lithuania or the Polish-Lithuanian Commonwealth.



Figure 170. Original copy of Waldseemüller's map

Source: A. Westhoff (2020).

In the 16th and 17th centuries, as technology developed, cartographers began to use more sophisticated tools to measure angles and distances. One such instrument was a gnomon, used to determine the time and study the movement of the sun. The gnomon served as the basis for the creation of the sundial, one of the oldest methods of measuring time. The gnomon was also used in topography to determine the direction of the cardinal points and the geographical latitude of the area. Thanks to the gnomon, it was possible to calculate the angles of inclination of surfaces, which was important for creating topographic profiles and determining the relief. With the development of geodesy in the 17th and 18th centuries, Ukraine began to use theodolites and levels, which allowed for more accurate measurements of angles and distances. A theodolite allows measuring horizontal and vertical angles between different points on the ground, which is essential for creating accurate maps and plans (Arora, 2021). A level, also known as a surveyor's level or a dumpy level, is used to determine the height differences between points, which allows creating terrain profiles and carrying out engineering work. This tool became a staple in the work of cartographers and surveyors of the time. One example of the use of the theodolite is the Ottoman map of Ukraine (Fig. 171). It is a prominent example of historical cartography that reflects the geographical and political features of Ukrainian lands in the context of Ottoman Ukrainian relations. The map details topographic features such as river systems, topography, and the location of key cities and fortifications (Fig. 171). This cartographic material provides valuable information for understanding the development of the territorial organisation and strategic aspects of the Ukrainian lands in interaction with the Ottoman Empire.

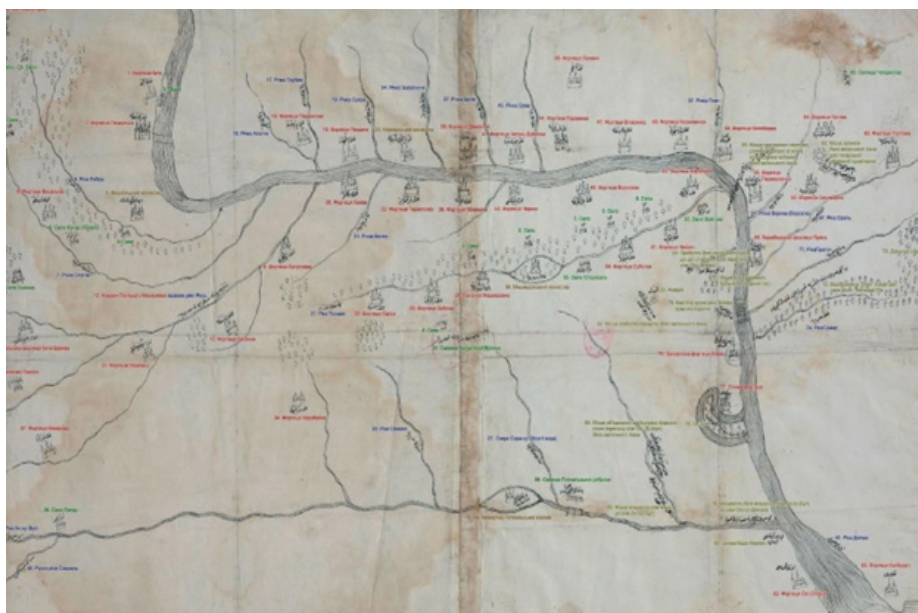


Figure 171. Map of Ukraine showing the Dnipro River and the location of fortresses (17th-18th centuries)

Source: *Maps of Kyiv and Kyiv region* (2025).



In the 19th century, the development of topographic images in Ukraine continued under the influence of scientific achievements and technological innovations (1854 Wittock Chromolithograph..., 2024). More detailed maps were created for military and civilian purposes. One of the crucial works of this period was the 1855 map of Crimea dedicated to Queen Victoria (Figure. 175). This map was created in the context of the Crimean War and reflected the strategic significance of the peninsula for British forces. This work, performed in topographic type, provided a detailed depiction of the geographical and relief features of Crimea, including the location of cities, roads, fortifications, and other notable objects. The use of topographic mapping was key to enabling the military to assess the terrain and develop tactical plans more accurately. The map became the main historical document that reflects the combination of cartographic art and military strategy during notable historical events. These maps were established in the Russian Empire in the late 19th and early 20th centuries and covered the territory of the entire empire, including Ukrainian lands. These maps are highly accurate and detailed, showing terrain, hydrography, road networks, settlements, and various natural and anthropogenic objects. In addition, tenverst maps, with a scale of ten versts per inch (1:420,000), were created to provide a general overview of large territories of the Russian Empire, including Ukraine. One of the most famous examples of such maps is Alexander Strelbitsky's General Map of European Russia, published in 1871 (Fig. 176). This map is notable for its high accuracy and detail, which made it a valuable tool for geographical and strategic research at the time.



Figure 175. Map of the Crimean Peninsula of 1855, dedicated to Queen Victoria, 1855
Source: *Ep. 1: Crimea as Queen Victoria Saw It (2023).*

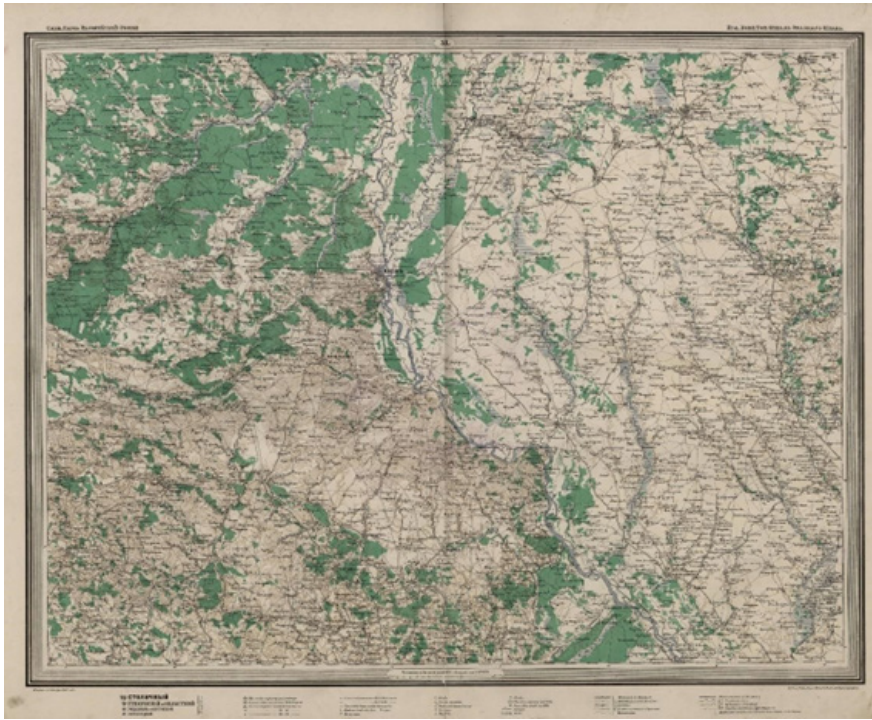


Figure 176. Special map of the European part of the Russian Empire, square 31 (Strelbitsky map)
Source: “*Special Maps of European Russia*” by Strelbitsky I.O. (2013).

An important traditional method of creating topographic maps was the use of astronomical observations. Astronomical observatories, such as the Pulkovo Observatory in the Russian Empire, played an essential role in this process by providing accurate data for mapping. One of the most prominent examples is the work of Vasily Struve, who made astronomical observations and used them to create topographical maps in the 19th century. He led the creation of the famous Struve Geodetic Arc, a network of triangulation points that stretched from Hammerfest in Norway to the Black Sea, through the territories of modern Norway, Sweden, Finland, Estonia, Latvia, Lithuania, Belarus, Ukraine, Moldova, and Russia.

Another traditional method of creating topographic maps was engraving. Engraving allowed creating accurate and detailed maps that could be replicated. In the 18th and 19th centuries, many famous cartographers used it in their work. In the 19th century, new methods of creating topographical maps, such as lithography, were introduced. This method involved the use of special lithographic stones on which engravers applied the contours of objects. Lithography helped to significantly increase the number of maps printed and make them more accessible to the public. One example of lithography is the map “European Russia with Neighbouring Countries in Europe and Asia” (*Das europäische Russland mit den angränzenden Ländern in Europa u. Asien*) created by Theodor Freiherr von Liechtenstern in the first half of the 19th century (Fig. 177). It covers the

European part of the Russian Empire, including the territories of modern Ukraine, and shows details of the topography and borders of the provinces of the time. The map is notable for its high accuracy in depicting physical features such as mountains, rivers, and plains. The use of hatching techniques to represent the terrain is indicative of Liechtenstern's innovative approach to cartography.



Figure 177. Map “European Russia with neighbouring countries in Europe and Asia” by Theodor Freiherr von Liechtenstern

Source: *Maps of Ukraine* (2025).

In the early 20th century, aerial photography became available. This enabled a considerable improvement in the accuracy and efficiency of mapping work. The first aerial photography of

Ukrainian territories was conducted during the First World War. Later, in the 1920s and 1930s, aerial photography was widely used to create peacetime topographic maps. After Second World War, the development of topographic imagery in Ukraine continued within the Soviet Union (Whiteside *et al.*, 2020). One of the most prominent achievements of this period was the maps of Kyiv of the 1950s, created based on aerial photography and satellite images. Used for a variety of purposes, from urban development planning to military operations. An important achievement of this period was the creation of a 1:25,000 map covering all regions of Ukraine. In 1991, after gaining independence, Ukraine began to develop its own topographic service. In 2000, the State Agency of Land Resources of Ukraine was established to be responsible for cartographic and geodetic work. In 2014, it was transformed into the State Service of Ukraine for Geodesy, Cartography, and Cadastre.

Modern topographic images are created using advanced technologies such as aerial photography, satellite imagery, and geographic information systems (GIS). Aerial photography is performed using aircraft or unmanned aerial vehicles, which yields high-quality images with high resolution. Satellite imagery, on the other hand, provides the ability to acquire data on large areas and detect changes in the landscape over a long time. Geographic information systems combine these data and create interactive maps that can be used for analysis and decision-making. One of the important advantages of aerial photography is the ability to capture images of the terrain from different angles, which allows creating 3D terrain models (Mudd, 2020). Satellite imagery is used to monitor changes on the earth's surface, such as changes in the landscape, urbanisation, changes in vegetation cover, etc. In Ukraine, satellite imagery is actively used within the framework of the Space Monitoring System project. This data is used for planning and management of territories, monitoring of natural resources, and assessment of the environmental situation. Geographic information systems (GIS) allow integrating data from various sources, such as aerial photography, satellite images, field surveys, and others, and creating detailed topographic maps based on them. This system enables government agencies, research institutions, and private companies to use geographic information data for planning and management of territories. 3D topographic images deserve special attention, as they allow for the creation of virtual city models. Virtual models can be used to perform a variety of analyses, such as assessing the impact of new development on existing infrastructure, calculating insolation and ventilation, modelling traffic, etc. Topographic maps allow recording their location and surrounding environmental conditions, which is essential for their preservation and restoration.

3.2 City map

The urban planning maps are categorized into general planning maps and specialized planning maps. One important aspect of the use of maps in urban planning was the creation of masterplans for cities, which became the basis for their development over a long time. The masterplans included not only the location of residential areas, but also industrial zones, green spaces, transport routes, and other elements of urban infrastructure. The city planning maps are fundamental tools in urban development, providing structured frameworks for the growth and transformation of urban spaces. They form the basis of master plans that guide land use, infrastructure expansion, and environmental preservation. These maps ensure that urban areas develop efficiently, maintaining a balance between modernization and sustainability. Their precision allows city planners to strategically allocate space for new residential districts, transportation networks, industrial zones, and green areas. Master plans incorporate detailed topographic data to analyse and predict urban growth, ensuring sustainable development. These maps integrate natural features such as rivers, hills, and forests, along with existing buildings and infrastructure. An example is the general plan of Kyiv, created in 1787, which included detailed plans of new districts, streets, and squares (Fig. 178). This plan was commissioned by the Russian Empress Catherine II, who sought to modernise Kyiv's urban planning and infrastructure, transforming it into a significant administrative and cultural centre of the Russian Empire. At the time, Kyiv was a large and important city with a rich history and cultural heritage. However, due to the lack of a clear development plan, its territory was used inefficiently and the city's infrastructure needed modernisation. Modern Kyiv's master plan outlines the expansion of its transportation system, the establishment of new residential districts, and the conservation of green spaces.

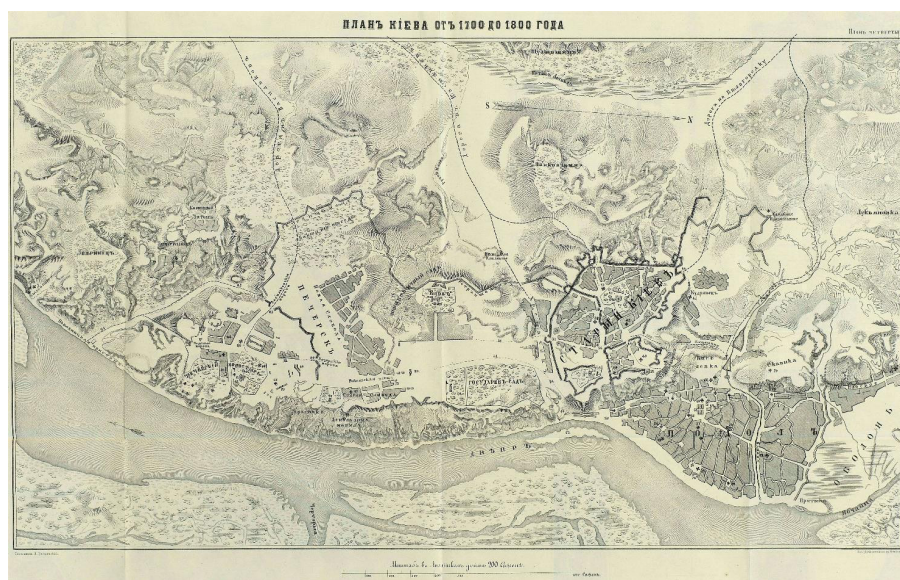


Figure 178. Plan of Kyiv in 1695, Transcription of Ivan Ushakov's plan. Podil
Source: *Maps of Kyiv. From the beginning to the present day* (2019).

3.3 Urban landscape drawing

Urban landscape drawing also plays a significant role in conveying historical information. They document the changes in the urban environment, architectural styles, and socioeconomic conditions that influence urban development. Through the depiction of cityscapes, these panoramas provide visual evidence of historical events that have affected the architectural landscape, such as wars, fires, urbanization, or reconstruction. For instance, the aerial view of medieval Lviv preserved the image of the city in its heyday (Fig. 179), when it was an important commercial and cultural centre. These images show what the urban environment looked like before the significant changes that occurred as a result of numerous wars, fires, and restructuring.



Figure 179. Map of Lviv, 1618

Source: S. Legin (2017b).

One of the most remarkable examples of Ukrainian historical city Aerial view is the 1854 bird's-eye view of Odesa created by Nathaniel Whittock (Fig. 180). This map combines both topographic and panoramic perspectives, offering a detailed visualization of Odesa's urban landscape, including ports, fortifications, and residential districts. Whittock, an English lithographer renowned for his panoramic maps, carefully illustrated the city's architectural layout and geographic position, emphasizing its significance as a Black Sea port.



Figure 180. Bird's eye view of Odesa, 1854, by N. Whittock

Source: *Plans and maps of Odesa. 1769-1919 (2015).*

Aerial view combines the accuracy of topographic maps with the artistic expressiveness of panoramic images. Ability to convey not only the spatial structure of the terrain, but also its visual perception. In contrast, the aerial view also provides aesthetic and visual information about the area. These images use artistic depiction techniques such as perspective, chiaroscuro, and colour to create a more realistic and comprehensible visual representation of the landscape and architecture (Li, 2020). It often has limited topographic accuracy and are intended primarily for artistic or aesthetic enjoyment. Aerial view can capture the beauty of landscapes and architectural ensembles, but they rarely provide accurate information about geographic coordinates, elevations, or distances. For example, panoramic views of the Carpathians (Fig. 181).

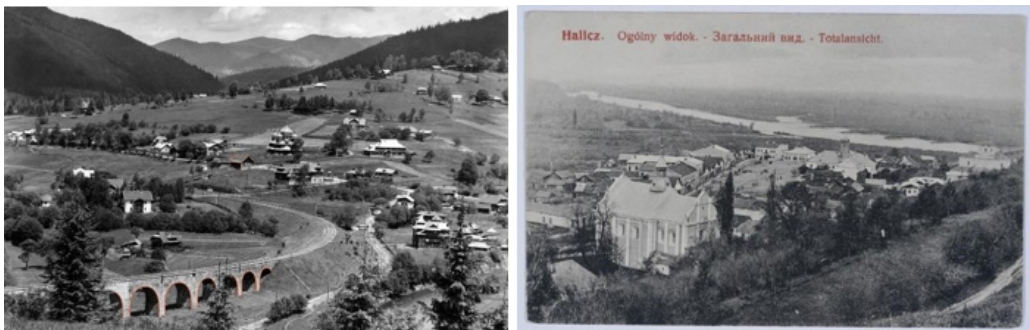


Figure 181. Panorama of Vorokhta, 1930s

Source: *Vorokhta (2025).*

The first aerial photographs of Ukrainian territories were taken by German and French specialists during the First World War. These images became the basis for creating detailed topographic maps that combined topographic and panoramic elements (Figures 182; 183). The influence of European trends on Ukrainian cartography is also evident in the use of new tools and techniques, such as theodolite surveys, trigonometric surveys, and photogrammetry. For example, maps of Kyiv created in the 1920s based on photogrammetry included detailed images of the relief, buildings, and streets, combining topographic and panoramic elements.



Figure 182. German photo of Kyiv from an aerostat, 1918

Source: *Kyiv 1918: German aerial photographs (2024).*



Figure 183. German photo of Kyiv from an aerostat, 1918

Source: *Kyiv 1918: German aerial photographs (2024).*

Apart from technological innovations, the modern era has also brought about changes in approaches to creating urban landscape drawing. Architects and artists are increasingly turning to the idea of sustainable development, considering environmental and social aspects when creating panoramas. This includes integrating natural elements into the urban landscape, creating spaces that foster social interaction. The heyday of the urban landscape drawing on the Ukrainian lands took place. At that time, aerial views were used to depict monastery complexes, cathedrals, and urban ensembles, emphasising the grandeur and significance of these buildings in the context of the urban environment. For example, the panorama of the Kyiv-Pechersk Lavra created in the 19th century (Fig. 184) shows not only the individual buildings of the complex, but also how they interact with the landscape of the Dnipro slopes. This work demonstrates a great level of skill in the use of perspective and light and shadow to create a sense of depth and space. Allowing them to feel the scale and grandeur of the architectural ensemble. Besides that, Feofaniia Park in Kyiv (Fig. 185) create panoramas that considered the natural terrain, the location of trees and water bodies, as well as other environmental aspects, which allowed the planners to develop a project to restore the park.



Figure 184. Kyiv-Pechersk Lavra, view of the Upper Lavra from the south.

French engraving from the second half of the 19th century

Source: *Kyiv-Pechersk Lavra, general view, 1909 (2025).*



Figure 185. Feofaniia Park, aerial view

Source: *Feofania - park of Kyiv from above (2025).*

For example, the castle in Kamianets-Podilskyi (Fig. 186) was often depicted in aerial view, which allowed emphasising their architectural grandeur and importance in the urban landscape. These images, based on aerial view, demonstrate the attention to detail on facades, such as lancet windows, buttresses, and spires, which was inherent in the Gothic style. In the case of Kamianets-Podilskyi, panoramic images of the fortress also emphasised its defensive role, focusing on the massiveness of the walls and towers (Okonchenko, 2020). This fortress, which is one of the most famous architectural monuments in Ukraine (Fig. 186), has a complex system of fortifications and towers. Local views depicting individual towers or fragments of the fortress walls emphasise the strength and elegance of this structure. For example, one of the images focuses on the Papal Tower, which stands out for its massive and complex shape. The artist has captured the texture of the stone from which the tower was built, as well as the details.

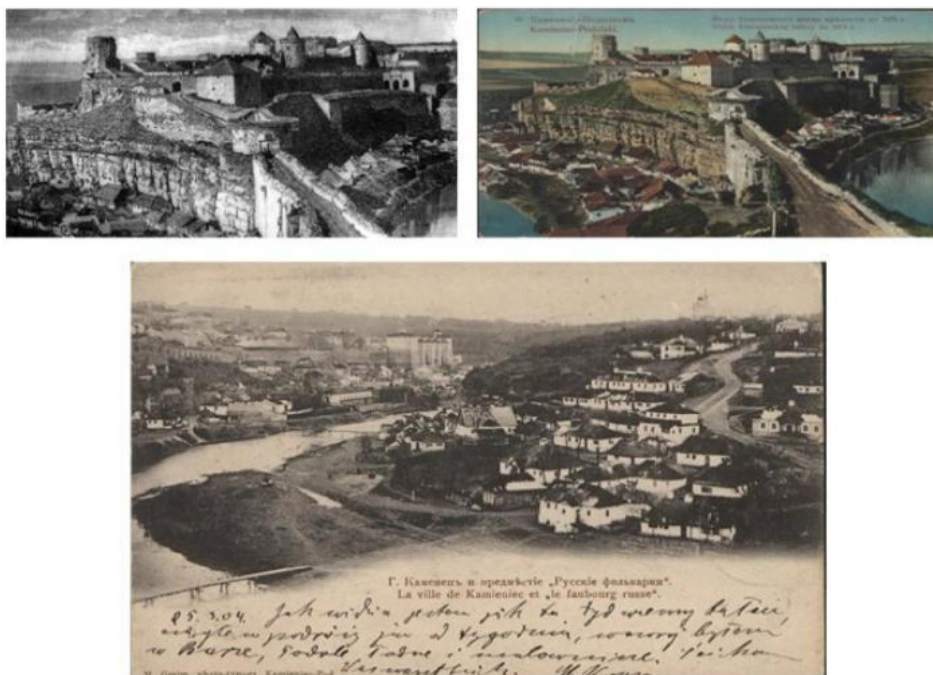


Figure 186. Kamianets-Podilskyi Castle, 19th-century engraving
Source: V. Vecherski (2022).

3.4 Architectural perspective drawing

Perspective is one of the most important artistic tools that allows conveying the three-dimensionality of space on a plane. It giving the viewer the impression that they are observing the cityscape as it would look in real life. In the context of architectural graphics, perspective helps to position buildings and other urban elements in space, ensuring that their dimensions and distances between them are correctly perceived. There are several types of perspective: linear, aerial, and axonometric. The linear perspective is the most common and is based on the principle of parallel lines converging at the vanishing point on the horizon. This allows creating the illusion of depth, where objects further away from the viewer appear smaller. Linear perspective is especially important when depicting streets, squares, and urban ensembles where buildings are arranged along a single axis. One of the main artistic techniques used to create Architectural perspective drawing is linear perspective. Linear perspective can be divided into three types based on the number of vanishing points: one-point perspective, two-point perspective, and three-point perspective. Lines that converge at a single point on the horizon help create a depth effect. Aerial perspective, unlike linear perspective, is based on the change in colour and clarity of objects depending on their distance from the camera. This effect is achieved by gradually reducing the contrast and changing the colour of objects in the background, creating the illusion of depth and space.

The perspective drawing has been widely used in the historical context to recreate urban landscapes, architectural ensembles, and natural spaces. It is characterised by the creation of the illusion of space that goes beyond the boundaries of a flat image, giving it a sense of depth and three-dimensionality (Bar-Eli, 2020). The Architectural perspective drawing pays special attention to spatial depth, i.e., the viewer's ability to "immerse" themselves in the depicted space. This is achieved through several key elements. Firstly, a linear perspective is used to create the illusion of space expanding into depth. For example, lines that converge to a point on the horizon or objects that become smaller as they move away from the foreground help convey a sense of depth. Secondly, atmospheric perspective, which includes the change in colour and clarity of objects as they move away, also contributes to the sense of space. Objects in the background may appear more blurred and have less saturated colours, mimicking the natural perception of distant objects. Apart from the artistic context, the architectural perspective allowed architects and urban planners to visualise projects in real space, showing how buildings and urban structures fit into their surroundings, interact with each other, and the natural landscape. This approach was especially important for large urban planning projects, where the correct layout and location of buildings could considerably affect the overall perception of urban space. For example, in Lviv and Kyiv, during the design of many historic districts (Fig. 187, 188), architectural perspective drawings were used to determine the best locations for key architectural structures such as cathedrals, administrative buildings, and squares. They helped to create harmonious and aesthetically pleasing urban spaces, where each element was part of a common ensemble that was perceived as a single whole. Architectural perspective drawings allow focusing on the key architectural elements that give a city its unique character. Through detailed images of individual buildings, monuments, or landmarks, architectural perspective helps to understand the architectural structure of a city and its cultural identity.



Figure 187. A drawing of Lviv dated 1618, the oldest drawing of the city showing
Source: *W. Rubruk, 2018.*



Figure 188. Pochayiv Lavra from south 1846, watercolor by Taras Shevchenko
Source: *Shevchenko is an artist. The best paintings of Taras Shevchenko (photo report) (2016).*

Firstly, Ukraine, located at the crossroads of trade routes between Europe and Asia. Byzantine architecture was characterised by a complex system of domed structures and an iconographic programme, which was manifested in the creation of spatially rich interiors of churches (Kakissis, 2023). Where the architectural perspective drawing was used to convey a sense of the grandeur of temple spaces. It was a period when architecture played an important role in expressing religious ideals, and therefore churches and cathedrals were often depicted in architectural perspective drawings. This is especially true of iconography, where frontal images of churches and monasteries symbolised the spiritual significance of these objects (Fig. 189). The iconography and miniatures in

the manuscripts reflect the artists' attempts to convey architectural structures with a certain sense of depth, although these images stayed mostly flat. The Mongolian and Tatar artistic traditions that came from Central Asia brought along new aesthetic elements, such as the use of complex ornaments and symmetry, which gradually began to integrate into Ukrainian art. With the arrival of Renaissance influence on the Ukrainian lands, especially in the western regions, which was an important cultural and commercial centre, began to create many architectural perspective drawings that tried to convey the spatial relationships between architectural objects.

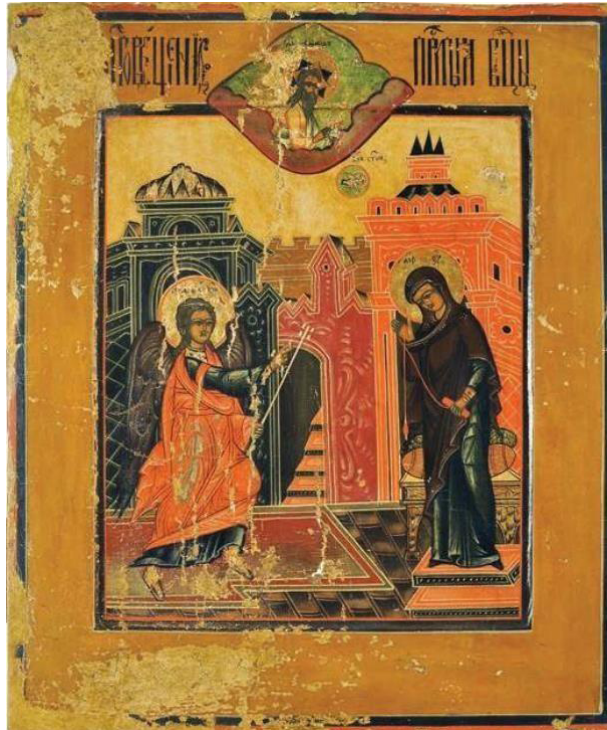


Figure 189. Icon of the Annunciation, wood, 19th century

Source: *S. Levchenko and G. Alaverdova (2020).*

The architectural perspective drawings have become particularly popular in periods when interest in individual architectural monuments has grown amid increased attention to the preservation of cultural heritage and historical values. In Ukraine specifically, this type of graphics has become an essential tool for recording and promoting architectural structures that were symbols of national identity or were important for concrete regions. At the same time, perspective drawings were not limited to buildings; they also included images of monuments, bridges, historical sites, and even individual neighbourhoods or streets where architecture and urban planning were of particular interest. Notably, architectural perspective drawings were often commissioned by state or local authorities, as well as by private individuals who wanted to capture or present a particular

object in the best possible light. These could be images of palaces, cathedrals, city halls, which served not only as architectural documents but also as business cards of cities, emphasising their uniqueness and cultural significance. For instance, in Lviv, which became one of the centres of Renaissance architecture, architectural perspective drawings were used to depict market squares, palaces, and churches. The buildings on Rynok Square (Fig. 190) were depicted from a frontal perspective, which allowed focusing on their facades, adorned with decorative elements such as pilasters, cornices, and friezes (Bevz, 2024). These images were not only aesthetically pleasing, but also practical, as they served as a kind of “business card” for the city, representing its cultural and architectural wealth.



Figure 190. The Scholz-Wolfowicz house on Rynok Square, early 20th century photo
Source: *Bandruk (2015).*

One of the most famous examples of the use of architectural perspective drawing in Ukrainian historical context is the works of Ukrainian masters. For example, in the work of Karel Auer, specifically in his painting Rynok Square with the image of the Town Hall, one sees an example of the perfect use of two-point perspective, which gives the image depth and realism. The creation of this architectural perspective is based on the principles of descriptive geometry.

In the 19th century, under the influence of Romanticism, the architectural perspective drawings, focused on creating a certain mood or feeling. This is reflected in the works of landscape painters. For example, in the works of Taras Shevchenko, who, apart from his literary work, was a

talented painter, one can see attempts to create deep, architectural perspective drawings of Ukrainian landscapes and architecture (Fig. 191). Another example is the Ukrainian architectural graphic publications of the 19th century, specifically a series of lithographs dedicated to architectural monuments in Kyiv and Lviv (Fig. 192, 193) (Lihus, 2021). The lithographs depict the facades of churches, cathedrals, town halls, and other important architectural exterior, allowing viewers to get a complete picture of their architectural style. A notable technique is stylisation and generalisation. This allows preserving the characteristic features of an object without overloading the image with details. Stylisation can also be used to emphasise a particular architectural style or era. For example, in works devoted to Art Nouveau architecture (Fig. 194), stylisation was often used to emphasise the smooth lines and organic forms that were inherent in this style. The generalisation, on the other hand, allowed creating a compositionally balanced image, where each element played its role in the overall architectural harmony. It is also worth mentioning the architectural perspective drawing created for the Odesa Opera House (Fig. 195). The Odesa Opera House is considered one of the most beautiful theatres in Europe. The architectural perspective graphic representations of the theatre created in the late 19th century focused on the front facade of the building, which features majestic columns, sculptures, and decorative elements reflecting the Neo-Renaissance style (Gervits, 2024). The artists thoroughly conveyed the play of light and shadow on the facade, which emphasised the plasticity of the architecture and the richness of its decor. The image of the bell tower of the Assumption Cathedral in Kharkiv (Fig. 196), made in the mid-19th century. This bell tower, one of the city's tallest structures, exemplifies Orthodox architectural characteristics, including symmetry, restrained decor, and a majestic vertical design, as well as the iconic "onion dome" shape crowning it. The architectural perspective of the bell tower focuses on its slenderness and harmony of proportions, as well as its location in the urban space, which emphasises its importance as the spiritual and architectural centre of Kharkiv.

One of the modern examples of the use of Architectural perspective rendering is the design of new city districts or the renovation of old ones. Computer models can be used to show in detail how new buildings will integrate into the existing urban landscape. That time did not have a pronounced depth, they already contained elements that hinted at a spatial representation. The iconography and miniatures in the manuscripts reflect the artists' attempts to convey architectural structures with a certain sense of depth, although these images stayed mostly flat.



Figure 191. House of I. Kotliarevskyi in Poltava, Taras Shevchenko, 1845

Source: *Shevchenko is an artist. The best paintings of Taras Shevchenko (photo report) (2016).*



Figure 192. Panorama of the Kyiv-Mohyla Academy and the Brotherhood Monastery

Source: *T. Asascheva (2021).*



Figure 193. Rynok Square with the image of the Town Hall. Lithograph by Karel Auer.
Source: Source: O. Bandruk (2015).



Figure 194. Bessarabian Market in Kyiv. The building is a late modernist style building designed by architect Henryk Gay
Source: T. Asadcheva (2023).

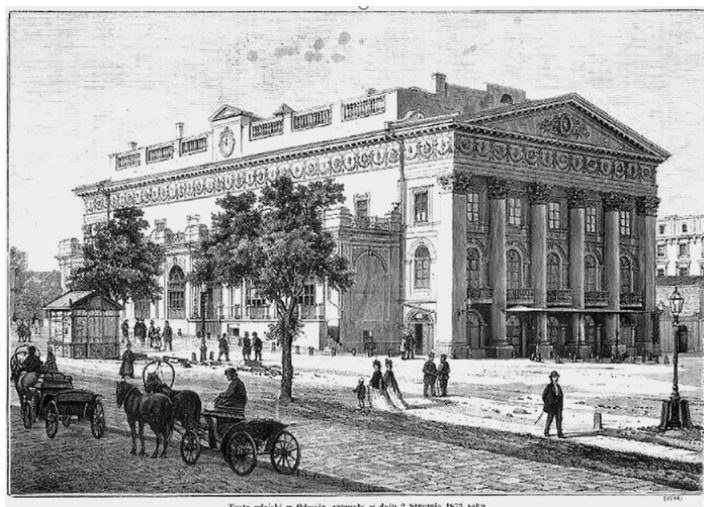


Figure 195. Odesa Opera House

Source: *The First City Theater of Odesa (2025).*



Figure 196. Assumption Cathedral in Kharkiv, photo by V. Dosekin, 1860s

Source: *Symbol of Kharkov and four centuries of changes in the history of the Annunciation Cathedral (2022).*

In the 19th century, the development of local types was intricately linked to the spread of academic traditions in art. One of the most striking examples is a series of lithographs created to recreate the appearance of ancient churches in Chernihiv. For example, the image of the Friday Church,

created in the mid-19th century (Fig. 197). The lithograph reflects the harmonious combination of the church with the surrounding natural environment, which emphasises the significance of this monument in the cultural landscape of the city.



Figure 197. Piatnytska (St. Paraskeva) Church in Chernihiv, 1840s

Source: *P. Artymyshyn (2023).*

With the advent of photography in the mid-19th century, allowing for high precision and realism in images. The architectural perspective created by photography were used for scientific research, restoration, and architectural design. Photographs of architectural objects, such as the houses on Andriivskyi Descent (Fig. 198) in Kyiv, helped to accurately recreate their facades in various projects. Specifically, the spread of photography encouraged artists to reproduce architectural objects in graphics even more accurately. One interesting example of this period is a series of graphic representations of Lviv buildings based on photographs. For instance, the architectural perspective drawing of the Lviv Opera House, created in the early 20th century (Fig. 199), shows not only the accuracy of the architectural details but also the dynamics of life around the building. The artists sought to capture not only the building itself, but also the atmosphere surrounding the theatre – the streets that came to life during theatre performances, numerous carriages and passers-by. Such local views had a considerable impact on the formation of an understanding of the urban environment and its cultural life.

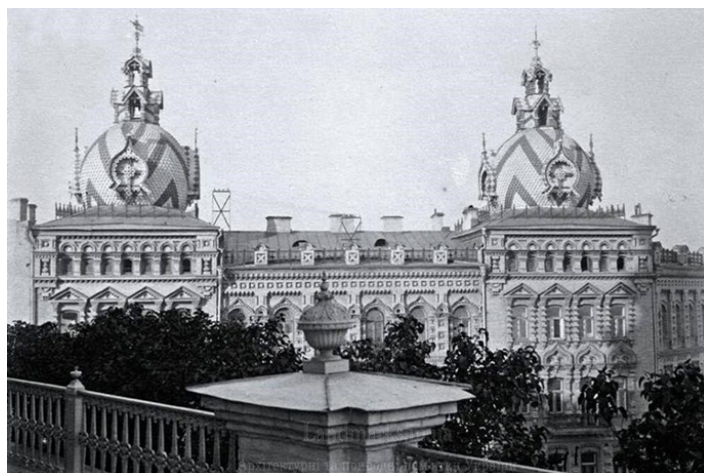


Figure 198. “House-Terem”, 34 Andriivskiy Descent

Source: *D. Kropyvnytskyi (2024).*



Figure 199. Lviv Opera House, 1900

Source: *Lviv in the past and now. Rare photos of the opera house (2017).*

Notably, socio-economic and political changes have had a significant impact on the development of local species. For example, after the Second World War, when many cities were being reconstructed, artists used architectural perspective drawings as a means of documenting the process of restoring historical monuments. Numerous graphic representations of restored architectural objects, such as St. George’s Cathedral in Lviv, were created during this period (Fig. 200). These images not only recorded the architectural changes but also reflected the new context in which they functioned after the reconstruction (12 facts about..., 2019). For example, Lutsk Castle (Lubart’s

Castle) (Fig. 201), built in the 14th century, which is one of the most famous architectural monuments in western Ukraine and a symbol of medieval Lutsk. Local views of the castle show in detail its defensive walls, towers, loopholes, and other elements that emphasise the military power and importance of this structure for the city. The images of Lutsk Castle also focus on its surroundings – the Styr River, which was an essential part of the castle's defence system.



Figure 200. St. George's Cathedral in Lviv, postcard, 1941-1944

Source: *St. George's Cathedral* (2025).



Figure 201. Lutsk Castle

Source: *Castles and temples of Ukraine. Lutsk Castle* (2025).

Special attention should be paid to the artistic approaches used in the creation of architectural perspective drawings. They included a variety of compositional techniques, such as the choice of angle, the use of perspective, and the play of light and shadow, which allowed not only to recreate reality but also to convey the emotional atmosphere of the place (Campo, 2021). For example, the image of St Volodymyr's Cathedral in Kyiv (Fig. 202), created in the early 20th century, demonstrates a carefully considered composition in which the cathedral is depicted from an angle that emphasises its majesty and significance in the cityscape. The artist used subtle gradations of light and shadow to convey the play of sunlight on the gilded domes of the cathedral, creating an impression of movement and dynamism. The combination of perspective, light, these elements allow conveying not only the physical characteristics of the urban environment, but also its atmosphere, character, and culture. The perspective ensures the correct positioning of objects in space, creating the illusion of the depth and scale of the city. The light emphasises the structure and material of the buildings, while the shadow adds volume and relief to the image. For example, in the famous architectural perspective drawing of old Kyiv, such as those created in the 19th century, perspective techniques are combined with the skilful use of light and shadow to convey the grandeur and beauty of the city. The perspective provides an accurate location of major architectural objects such as Saint Sophia Cathedral (Fig. 203), while light and shadow emphasise their architectural details and create an impression of depth and space. For example, graphic representation of the Boim chapel created in the early 20th century (Fig. 204). Located near the Latin Cathedral, this chapel is distinguished by its unique Mannerist architecture (Iaromenko and Nezdoyminov, 2023). The artists who depicted the chapel sought to emphasise the details of its facade, the richness of its sculptural decor, and the complex composition of the dome.



Figure 202. St Volodymyr's Cathedral. Photo studio of Gudshon and Hubchevskyi, early 20th century, National Museum of History of Ukraine
Source: *How the site for St Volodymyr's Cathedral was searched for: recalling the history of the monument (2022).*



Figure 203. Saint Sophia Monastery in Kyiv, watercolour by M. Sazhyn. 1840s

Source: *Sophia Cathedral in Kyiv drawing (2025).*



Figure 204. Boim Chapel, watercolour by A. Kamenobrodskyi, early 20th century

Source: *S. Legin (2018).*

Another essential aspect of the technical and artistic features of local species is the use of colour. Although most of the early architectural perspective drawings were made in monochrome techniques, over time, artists began to use colour to enhance the emotional impact of the images. In the 19th century, watercolour images became popular. For instance, watercolour images of the Lviv City Hall (Fig. 205), created in the mid-19th century, demonstrate the skilful use of colour.



Figure 205. Lviv City Hall, watercolour, mid-19th century

Source: *5 facts you did not know about Market Square in Lviv (2024).*

Another One-point perspective example is the image of the Southern Railway Station in Kharkiv (Fig. 206), reconstructed and completed in 1952. This station, built in the style of Stalinist neoclassicism and has become a symbol of the city's recovery and development after the Second World War. The local views of the station focus on its monumental forms, classical elements and symmetrical proportions, which emphasise its role as an important infrastructure facility.



Figure 206. The Southern Railway Station in Kharkiv, mid-20th century

Source: *History of the Kharkiv South Railway Station (2021).*

3.5 Orthographic projection of architectural drawing

Although the Warring States period copper plate Zhao Yu Tu already exhibited an embryonic form of the cemetery plan, it was not until much later those systematic approaches to spatial representation began to emerge. Despite the fact that Leon Battista Alberti, during the Renaissance period, introduced the conceptual distinction between plan and facade in architectural design, a unified and coherent theoretical framework had not yet been established (Grafton, 2020). A significant advancement occurred only in 1795, when the French mathematician Gaspard Monge formally articulated the principles of orthographic projection. In his work, Monge developed a rigorous method for the accurate representation of three-dimensional objects on a two-dimensional surface. This approach not only laid the mathematical foundations for descriptive geometry but also played a pivotal role in the subsequent standardization of technical and engineering drawings, enabling consistent communication of spatial information across scientific and industrial domains. In architectural drawing (Fig. 207), the plan, facade, and section represent the three fundamental types of projections, all of which are constructed through the application of orthographic projection principles.

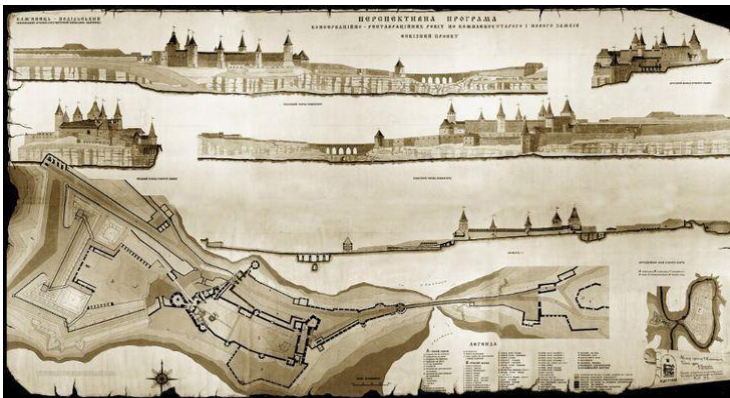


Figure 207. Kamyanets-Podilsky Fortress Restoration Project

Source: O. Plamenytska (2020).

The architectural facade is a vertical projection. Type of image in which architectural objects, including building facades, are presented in a frontal view. This means that the viewer sees objects without distortion of perspective. Facades are usually created from a single point of view, which allows viewing buildings in their full height and width, with an emphasis on facade details (Fig. 208) (Cucuzzella, 2023). In this facade, the emphasis is placed on the proportions, architectural elements, and decorative details, which offers a better insight into the architectural style and artistic vision of the authors. The facades provide an opportunity to convey the architectural features of buildings in detail/The correct use of scale is also an important technical aspect. For the architectural facade drawing to be accurate, it is necessary to maintain a precise relationship between the individual parts of the building. This allows preserving the proportions and creating a believable image that corresponds to the real dimensions of the architectural object.

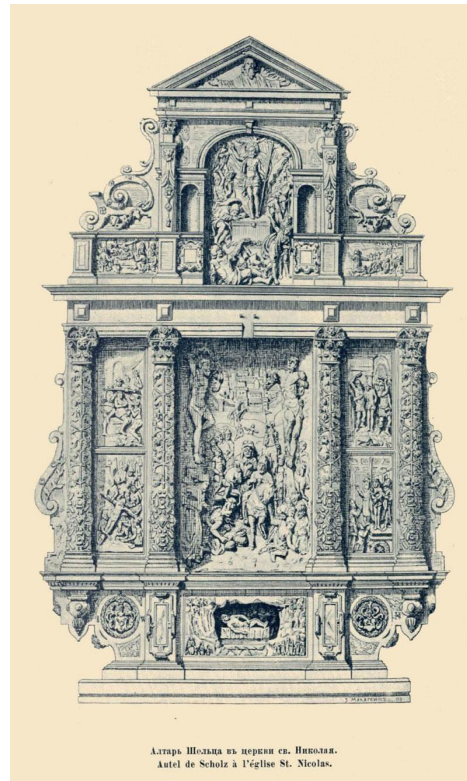


Figure 208. Scholz altar in St. Nicholas Church

Source: *Album of old Lviv (1914-1915)* (2013).

Photographs usually produce an approximate, not an absolute, orthographic projection image. This is achieved by reducing perspective effects to a minimum, which avoids deformation of the shapes and sizes of objects (Singh and Singh, 2021). Instead, it provides the viewer with the opportunity to view the building as a planar image, which allows them to focus on the facade details and compositional features of the architecture. Creating a facade in architectural graphics requires the use of descriptive geometry techniques that ensure the accuracy and detail of the image, as well as convey the aesthetic qualities of the architectural object.

Creating a facade in architectural graphics requires the use of descriptive geometry techniques that ensure the accuracy and detail of the image, as well as convey the aesthetic qualities of the architectural object. Clearly defined lines of contour help to define the main forms of the building, dividing it into separate architectural elements. The use of facade in frontal panoramas avoids blurring and emphasizes the rigour and precision of architectural forms. This technique is especially important for displaying classical architecture, where proportions and symmetry are crucial. In Renaissance architectural engravings, for instance, the line was used as the main means of conveying the proportions of buildings and the structure of facades (Mikhailova, 2022). Chiaroscuro adds another dimension to the frontal panorama and makes the image more vivid and realistic.

The skilful use of chiaroscuro helps to emphasize the three-dimensionality of architectural elements, even if the panorama itself is flat. The shadows cast by architectural details such as columns, cornices, or windows add expressiveness and depth to the image.

Although facade drawings are often created in black and white, the use of colour and texture is an essential artistic technique when it comes to colour images. The use of colour can also convey the materiality of an object, for instance, to show the difference between stone, wood, or metal in a building structure. The texture makes the image more realistic and tactile. For example, in frontal panoramas depicting medieval castles or fortresses, the texture of the stone walls, shown using corresponding strokes and tonal transitions, creates the impression of the buildings' strength and age. Such techniques were actively used in works of Gothic architecture (Fig. 209; 210; 211), where each element of the decor, whether a lace pattern of windows or intricate column capitals, received its own textural solution (Orlenko, 2021). There are many examples of Gothic architecture in Ukraine that not only reflect the influence of European stylistic traditions, but also show distinct local adaptations. Ukrainian Gothic buildings often combine traditional verticality and lancet arches with elements characteristic of regional building practices, such as the use of local stone, brick patterns, and restrained ornamentation influenced by Orthodox and Eastern European aesthetics. Examples include the Church of St. Nicholas in Kyiv (Fig. 209), the Church of Our Lady of Perpetual Help in Trybivka (Fig. 210), and the Church of Our Lady of the Holy Rosary and St. Stanislaus in Chortkiv (Fig. 211). These monuments testify to the creative assimilation of Gothic forms in the architectural landscape of Ukraine.



Figure 209. Church of St. Nicholas in Kyiv

Source: *M. Palamarchuk (2023).*



Figure 210. The Church of Our Lady of Perpetual Help in Trybivka

Source: *The Church of Our Lady of Perpetual Help (1903–1923) (2021).*



Figure 211. The Church of Our Lady of the Holy Rosary and St. Stanislaus in Chortkiv

Source: *Ya. Shevtsova (2019).*

The orthographic projection drawing as a type of graphic image has deep roots in the history of art and architecture. From the earliest examples that appeared in ancient times to modern digital technologies, the orthographic projection drawing has stayed a consistently important means of visualising architecture. The works of the masters of that time were illustrated in architectural treatises, where facade drawings of buildings were used to explain design features and architectural

principles. In the Baroque period, architectural forms became more complex, with rich decor and dynamic compositions. In the 18th century, classicism, with its desire for simplicity and geometric clarity, was also reflected in frontal panoramas. The facades of the buildings depicted in the frontal view were marked by clear lines, strict proportions, and the absence of excessive decor. This was the period when the frontal panorama acquired new technical possibilities due to the improvement of engraving and the emergence of the first architectural photogrammetric studies. With the development of the industrial revolution and urbanisation, the need for accurate and detailed depictions of urban architecture has increased. The architectural facade drawings have become an essential tool for urban planners, architects, and engineers. This period was also marked by the emergence of new printing and photographic techniques, which enabled the creation of more accurate and detailed facade drawings. In the 19th-20th century, the development of the architectural graphic continued in the context of new architectural styles and technologies. Modernism, with its emphasis on functionality and the rejection of excessive decoration, was reflected in orthographic projection drawings, where attention was paid to simplicity and clear geometric shapes.

The orthographic projection drawings play a vital role in recreating the architectural image of Ukrainian cities, including historical ones, allowing for a focus on the facade characteristics of buildings. Orthographic projection drawings that accurately conveyed the proportions and structure of public building facades (Hájková, 2022). One of the most striking examples is the image of the Mariinskyi Palace in Kyiv (Fig. 212; 213), created in the style of classicism. The facade drawing of the palace emphasised its symmetrical composition, classical columns, and strict lines, which was in line with the aesthetic principles of the time. At the turn of the 19th and 20th centuries, the Art Nouveau style began to develop in the Ukrainian lands, which had a considerable impact on architectural graphics, especially on frontal panoramas. Modernism was marked by the use of asymmetry, organic forms, and new materials such as metal and glass, which drastically changed the appearance of urban buildings and, accordingly, their frontal images. In Lviv, Art Nouveau was especially developed by the architect Ivan Levynskyi, who integrated curves and organic elements into the facades of buildings on the streets of Lviv (Fig. 214). The facades of these buildings demonstrate new principles of architectural composition, where asymmetry is combined with smooth lines and decorative ornaments to create a unique image of the city.



Figure 212. Facade and plan of the Mariinskyi Palace, 1814

Source: I. Andreev (2018).

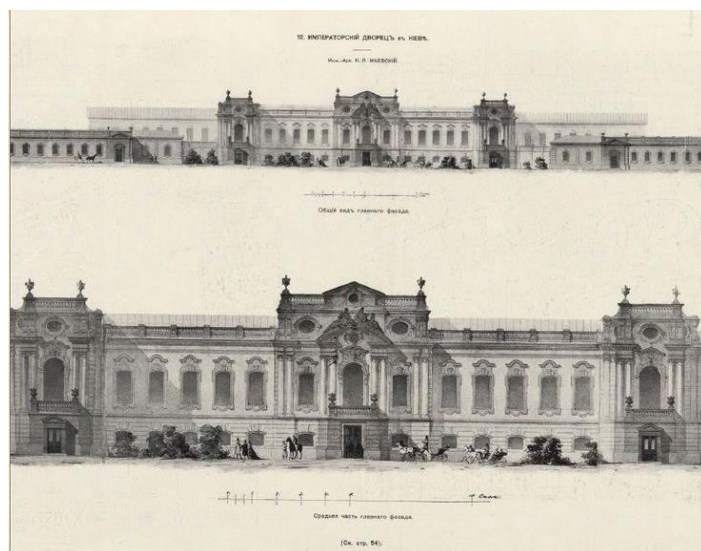


Figure 213. The Mariinsky Palace, photo circa 1893,
from the collections of the National Museum of History of Ukraine
Source I. Andreev (2018).



Figure 214. Solomiya Krushelnytska Lviv State Academic Theatre of Opera and Ballet
Source: 15 photos of Lviv in 1956 from the family archive of a Kyivan.

In architectural graphics, light is used to model the volume of buildings, emphasise the texture of materials, and accentuate important facade details. The location of the light source in the image determines how objects will look: whether they will look flat or, on the contrary, will acquire

volume and relief. For example, the image of a building's facade in a side lighting creates shadows that emphasise the relief of architectural details such as cornices, pilasters, and sculptures. Thanks to the light, the viewer can better understand the structure and material of the building. Shadow is an integral part of architectural graphics, complementing the work of light and helping to shape the volume and relief of buildings. In combination with light, the shadow creates the illusion of space and helps the viewer to perceive the image as three-dimensional. Shadows in architectural graphics can be deep and sharp if the light source is close to the object, or soft and diffuse if the light falls from a great distance or passes through clouds. Sharp shadows emphasise the details and contours of architectural elements such as arches, columns, or windows, while soft shadows create an overall atmosphere and emphasise the shape of the building as a whole. Shadow also plays a vital role in creating a sense of time of day and weather conditions in an image. For instance, long shadows that appear at sunset can convey the calm evening atmosphere of a city, while short shadows in the bright midday sun emphasise the dynamics and activity of urban life.

Hryhorii Lukomskyi, a Ukrainian architect and art historian, skilfully used light and shadow in his architectural facade works (Fig. 215) to emphasise architectural details and building volumes. The light and shadow effects in Lukomskyi's works emphasise architectural elements such as window arches, columns, and carved details and preserving the authenticity of historic buildings. The light and shadow effects in Lukomskyi's works emphasise architectural elements such as window arches, columns, and carved details, creating a realistic sense of space and preserving the authenticity of historic buildings. Light also affects the emotional perception of an image. For example, morning or evening light falling at a low angle creates long shadows and soft lighting, which gives the city a cosy and calm look. In contrast, harsh midday light with short shadows can emphasise the clarity and rigour of architecture, giving the image a more formal and majestic appearance.



Figure 215. Castle of the Lubomirski princes, H.K. Lukomskyi

Source: V. Litevchuk (2018).

Engraving was the next step after drafting. This technique allowed conveying the smallest details of the facade, from the stone texture to decorative elements. Lithography, which appeared in the late 18th century was much simpler and cheaper than engraving. The lithographic frontal panoramas were of high quality and allowed for an accurate rendering of the proportions and decorative elements of the facades. In Ukraine, lithography became popular in the 19th century, when images of architectural monuments such as Kyiv University or Lviv City Hall were distributed through printed publications. Lithographs had artistic value due to the ability to add colour and gradients that emphasised the volume and texture of the facades.

Interior perspective drawing focuses on individual, specific elements of the architectural that have significant cultural or historical significance (Fig. 216). This type of image is distinguished by its meticulous attention to detail, often combining technical precision with artistic expression to convey not only the physical but also the emotional or symbolic aspect of the subject.



Figure 216. Collection of W. Lozynski

Source: *Album of old Lviv (1914-1915) (2013).*

Overall, the contemporary use of architectural graphic is multifaceted and constantly evolving. From documenting and restoring historic buildings to promoting architectural heritage and integrating it into contemporary art, city maps and architectural graphic stay a valuable tool to help preserve architectural memory and pass it on to future generations. They are not only a testament to the past, but also part of the contemporary cultural landscape, reflecting the ongoing dialogue between past, present, and future in the context of architecture and the urban environment.

SECTION IV: IMPORTANT HISTORICAL CITIES OF UKRAINE ON HISTORICAL MAPS AND ARCHITECTURAL GRAPHICS

4.1 Kyiv

4.1.1 Overview of Kyiv

Kyiv, the capital of Ukraine, is one of the oldest and most prominent cities in Eastern Europe. Its history spans more than 1,500 years, during which time it has been a significant political, economic, cultural and religious centre in the region. Modern-day Kyiv (Fig. 217) retains its key importance. The name “Kyiv” has deep historical roots and is associated with the legend of the city’s founding by three brothers – Kyi, Shchek and Khoriv and their sister Lybid. The name of the eldest brother, Kyi, was immortalised in the city’s name. The name of the city is first mentioned in the chronicle “A Tale of Bygone”, dated to the 11th century, where Kyiv appears as the centre of the early statehood of the Eastern Slavs – Kyivan Rus (Gunnarsson, 2021). Throughout its history, the name of the city has undergone certain adaptations in different languages.

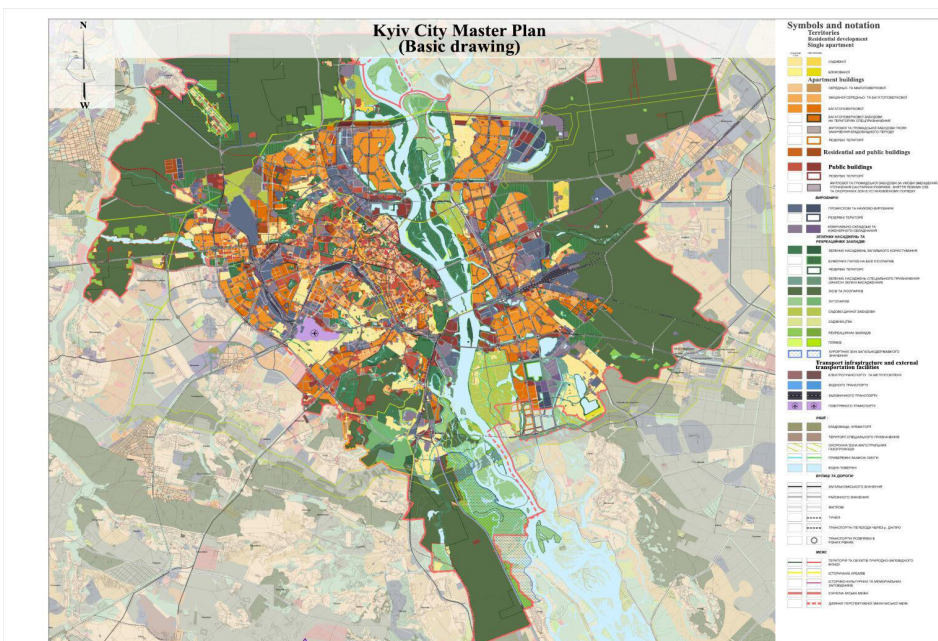


Figure 217. General plan of Kyiv, 2000s

Source: *Maps of Kyiv. From the beginning to the present day (2019).*

Kyiv is in the northern part of Ukraine on the border of the forest-steppe and forest natural zones, which contributed to its historical development as a trade and transport hub. City coordinates: 50°27' north latitude and 30°31' east longitude. The Dnipro River flows through Kyiv, which played a strategic role in the city’s development, as part of the trade route from the Varangians to the Greeks. The city’s topography is complex: the right bank part of Kyiv is represented by hills, including the most famous Volodymyrska Hill, Castle Hill and Pechersk Slopes, while the left bank

part is predominantly flat. Kyiv has a moderately continental climate with mild winters and warm summers. The average temperature in January is -3.5°C , and in July it is $+20.5^{\circ}\text{C}$ (Report on the state..., 2022). The Dnipro River divides the city into two parts, which are connected by numerous bridges, among which the oldest was the Chain Bridge (Mykolaivskiy) (Fig. 218), built in 1853, and the most famous modern bridge is the South Bridge (Fig. 21+9), opened in 1990. Kyiv's geographical location has made it an important transport hub. International motorways, railways and air routes pass through the city. Kyiv has two international airports – Boryspil (Fig. 220) and Kyiv (Zhuliany) – and a river port (Fig. 221), which provides access to the Black Sea.

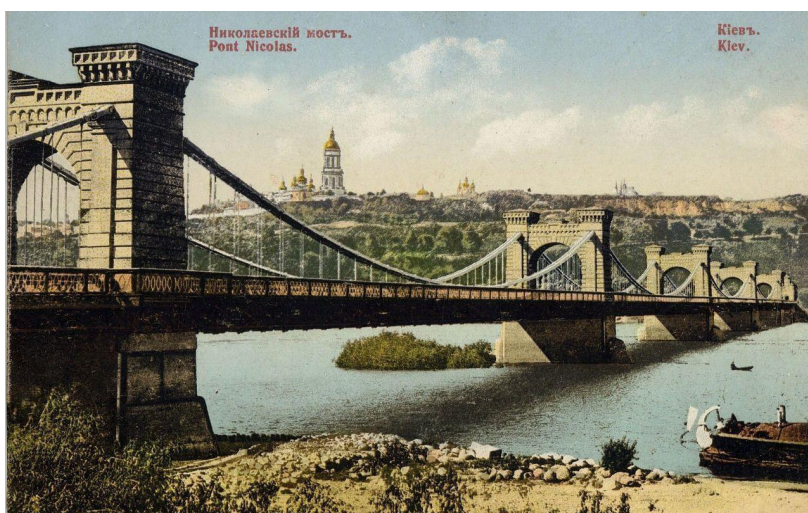


Figure 218. Mykolaiv Chain Bridge on an old postcard from the 19th century

Source: T. Asadcheva (2023).

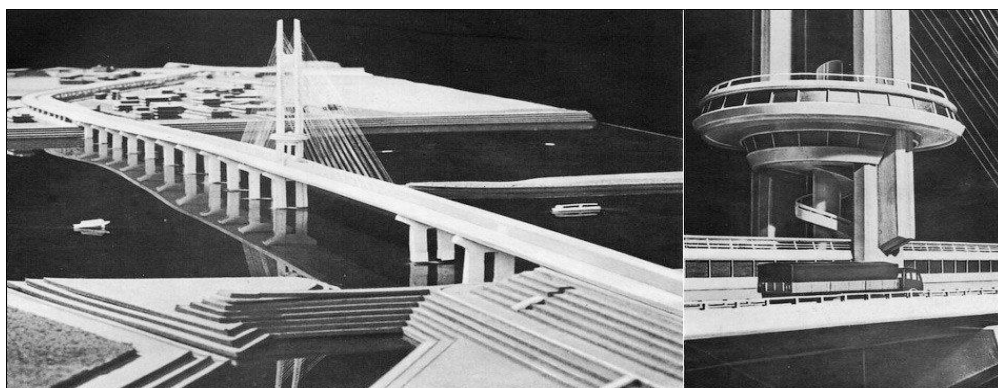


Figure 219. A model of the South Bridge

Source: South Bridge. History (2020).



Figure 220. Boryspil Airport, modern appearance

Source: *O. Tymchenko (2023).*

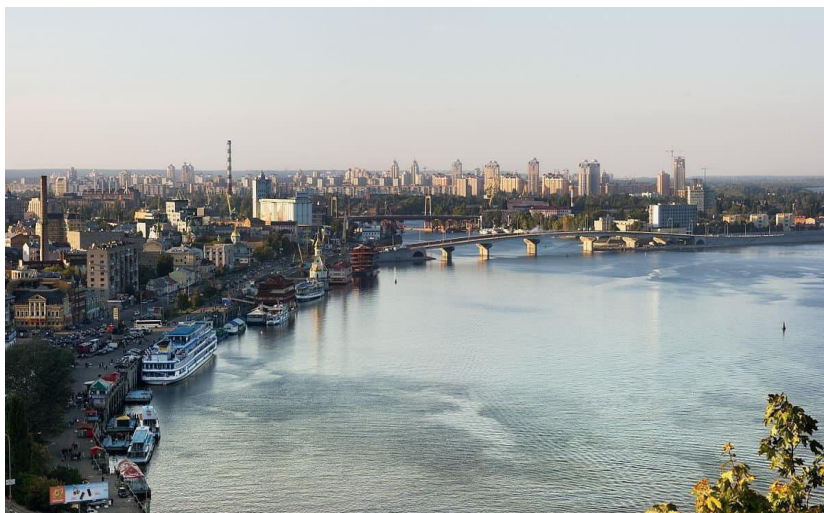


Figure 221. Kyiv River Port, modern appearance

Source: *History of our port (2025).*

Kyiv's demographic development is showing significant dynamics. As of 2022, the city's population was just under 3 million, making it the largest city in Ukraine. Over the centuries, the

population has fluctuated due to wars, epidemics, and economic crises. The post-war period was marked by rapid population growth due to industrialisation and urbanisation. The socio-demographic structure of Kyiv is diverse: most of the population is Ukrainian, but the city is also home to Russians, Belarusians, Poles, Armenians, Azerbaijanis, Georgians and other nationalities. Kyiv is also an important educational centre with students from over 100 countries. There are around 300 higher education institutions in the city, including Taras Shevchenko National University of Kyiv (Fig. 222).



Figure 222. The Red Building of the Taras Shevchenko National University of Kyiv

Source: *Taras Shevchenko National University of Kyiv. History (2021).*

Kyiv is a leading economic centre of Ukraine with developed industrial, financial and service sectors. The city's economy is based on such industries as mechanical engineering, food, chemicals, light industry, construction, and information technology. Popular tourist attractions include St Sophia Cathedral, Kyiv Pechersk Lavra, St Andrew's Descent, as well as the Mystetskyi Arsenal Museum and the Chornobyl Museum. Kyiv is one of the centres of Orthodox culture, as evidenced by its numerous churches, monasteries and cathedrals, including St Sophia Cathedral and the Kyiv Pechersk Lavra, both of which are UNESCO World Heritage Sites (Kravchenko *et al.*, 2022). Kyiv is home to the National Academy of Sciences of Ukraine, numerous research institutes, and cultural institutions, including the Vernadsky National Library of Ukraine (Fig. 223), the largest library in the country. The Kyiv Opera and Ballet Theatre, Ivan Franko Theatre, the National Museum of History of Ukraine, and the Pyrohiv Museum are important centres of cultural life in the capital.



Figure 223. The modern building of the Vernadsky National Library of Ukraine

Source: *National library of Ukraine named after V.I. Vernadsky: history and modernity (2025).*

4.1.2 History of urban planning and development in Kyiv

The history of Kyiv's urban development reflects a complex and multifaceted process of city development that has lasted for over a thousand years. This process is characterised by the gradual layering of various architectural styles and urban planning concepts that have shaped the unique image of the capital of Ukraine. The first settlements on the territory of modern Kyiv appeared in the fifth century. Archaeological research has shown the existence of fortified settlements on Starokyivs-ka Hill and in its vicinity (Archaeology of the Ukrainian SSR. Volume 3, 1986). These settlements had a chaotic layout with wooden dwellings and outbuildings surrounded by earthen ramparts and wooden walls to protect from attacks. In the ninth century, Kyiv became the centre of Kyivan Rus, which contributed to its rapid development. The city expands, and new fortified districts appear, such as the "city of Volodymyr" and the "city of Yaroslav". The development of this period is characterised by the construction of stone churches, including the Tithe Church (Fig. 224) and St Sophia's Cathedral (Fig. 225), which became centres of spiritual and cultural life. The streets had a radial ring structure that converged to the central squares and princely courts. After the Mongol invasion and the decline of Kyivan Rus, the city became part of the Grand Duchy of Lithuania, and later the Polish Lithuanian Commonwealth. At that time, Kyiv lost its status as a capital but remained an important commercial and cultural centre. The city's buildings were restored, and new wooden and stone buildings, including churches and monasteries, appeared. The streets remained narrow and winding, and the buildings were dense, without a clear layout.

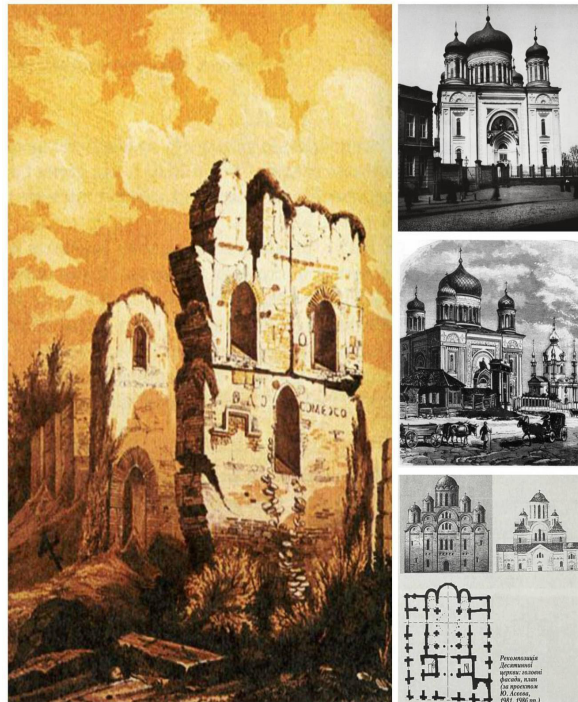


Figure 224. Recomposition of the Tithe Church

Source: *The first consecrated temple in Kyivan Rus. See how the Church of the Tithes once looked (2024).*

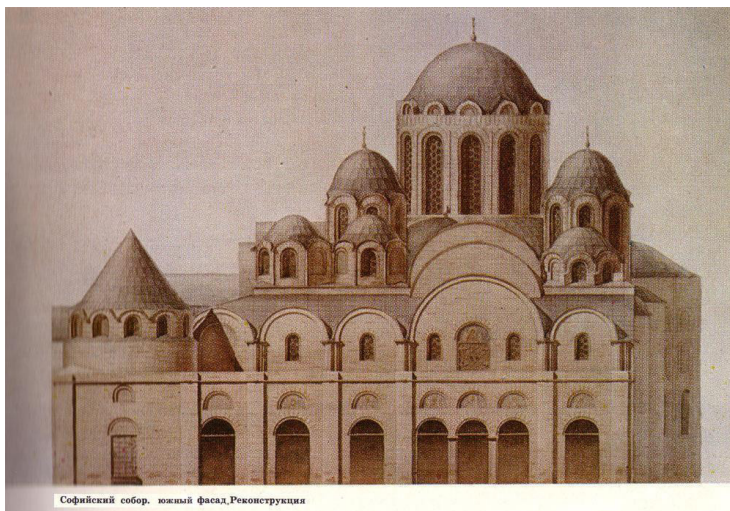
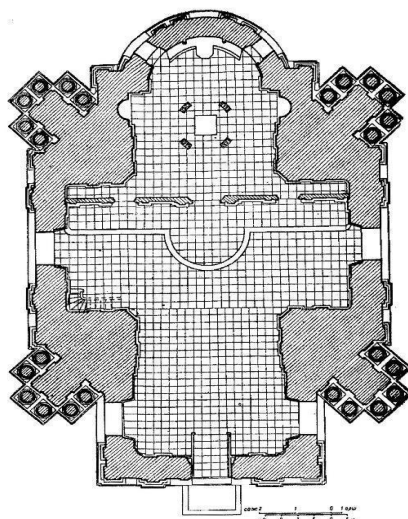


Figure 225. St Sophia Cathedral, south facade, reconstruction

Source: *Sophia Cathedral in Kyiv drawing (2025).*

During the Hetmanate, Kyiv experienced a cultural and architectural boom. Numerous churches in the Ukrainian Baroque style were built, such as St Andrew's Church (Fig. 226). The city is expanding with new suburbs, including Podil, which is becoming a shopping centre. The first attempts to plan streets and squares are notable, although the overall structure remains irregular.



Андреевская церковь в Киеве
Бартоломео Франческо Растрелли, 1748—1767

Figure 226. Plan of St Andrew's Church in Kyiv

Source: *St Andrew's Church* (2025).

After Kyiv was incorporated into the Russian Empire during the 18th–19th centuries, its urban planning underwent significant changes due to imperial policies. One of the key aspects of the 1787 masterplan was the introduction of regular street and neighbourhood planning (Fig. 227) (Hofmeister and Riedler, 2023). The plan envisaged the expansion of the city and the creation of new districts with a rectangular street grid, which ensured ease of movement and more efficient use of the territory. For example, the plan designed new residential neighbourhoods with wide streets and central squares that became important public spaces. The masterplan also included the development of public buildings such as administrative buildings, markets, theatres, and churches. An important aspect was the creation of new administrative centres, which helped to strengthen the government and improve the city's management. Kyiv's 1787 general plan also included the development of the city's infrastructure, including water supply and sewerage. For instance, it included the construction of new water intake facilities on the Dnipro River and a sewerage system, which helped improve the hygiene and overall health of the city's residents. Ukrainian architect Hryhorovych-Barskyi took an active part in the creation of the contributing to the improvement of urban areas. The General Plan of Kyiv of 1787 also envisaged the creation of new green areas and parks, which were to become places of rest and recreation for the city's residents. This helped

to improve the quality of life of residents and create an attractive urban environment. Industrial and commercial growth in the early 19th century spurred urban development, prompting population influx and construction revival. In the nineteenth century, the city's development envisaged regular street layout and the creation of wide avenues and squares (Fig. 228). Geometric planning became prevalent, with straight streets cutting through old fortifications and laid out regardless of relief, riverbanks, and existing green spaces. In Kyiv, three previously separate parts merged. The Lipki district was built between the old city and Pechersk per the 1787 plan, and the city's formerly fortified parts were replanned and united with the New Construction district according to the 1837 plan (Fig. 229). The city's buildings acquire classicist and eclectic features, and public buildings, theatres, and educational institutions appear. The construction of the railway and bridges across the Dnipro River fuelled economic development and the expansion of the city to the left bank.



Figure 227. Plan of Kyiv in 1787

Source: *The Complete Collection of the Laws of the Empire, Book of City Maps, 1839*



Figure 228. Special Geometric Plan of the City of Kyiv, 1833

Source: *National library of Ukraine named after V.I. Vernadsky: History and modernity (2025).*

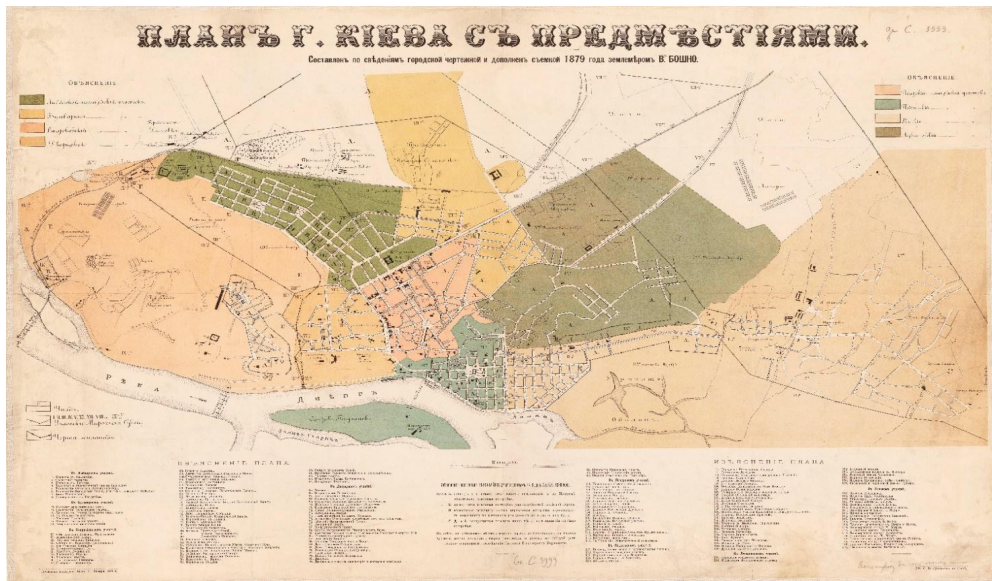


Figure 229. Plan of Kyiv and its suburbs. Measured by Surveyor B. Bosch in 1877. Lithography Printing from G. Becker

Source: National library of Ukraine named after V.I. Vernadsky: *History and modernity* (2025).

After the 1917 Revolution and the establishment of Soviet rule, Kyiv became the capital of the Ukrainian SSR. The urban planning of this period is characterised by the introduction of socialist ideals, the construction of large-scale residential areas, and administrative buildings in the style of constructivism and neoclassicism. In the 1930s, Kyiv, as the capital of Soviet Ukraine, implemented multiple urban construction projects under the USSR's industrialization policy, involving industrial zone expansions, transportation upgrades, and government building complexes. The General Plan of Kyiv in 1938 was the city's master plan developed by a group of architects led by Pavel Haustov between 1934 and 1936. The plan regulated the city's general territorial development, featuring a rounded and compact layout, with expansion envisioned on both the right and left banks of the Dnieper River. It clearly defined the capital's priority working profession – precision machine and instrument engineering. The plan emphasized the redevelopment of existing urban areas and the creation of new districts in Kyiv (Fig. 230).

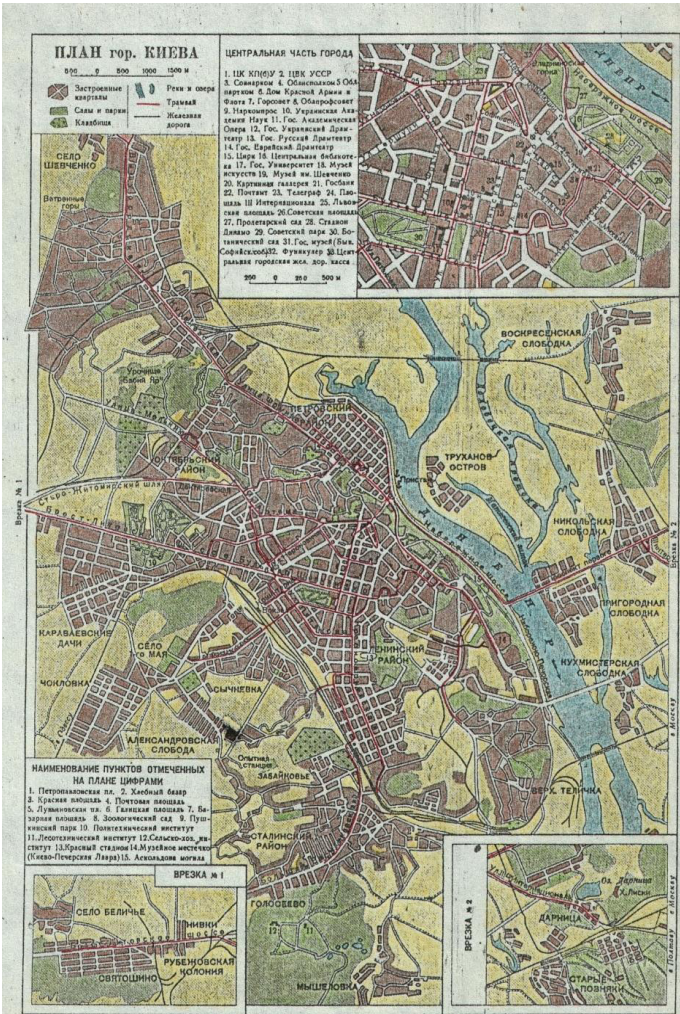


Figure 230. Plan of Kyiv in 1936

Source: *Maps of Kyiv and Kyiv region (2025).*

Post-war reconstruction after the Second World War led to significant changes in the appearance of the central districts, including Khreshchatyk (Fig. 231). In the 1960s, the construction of the subway began (Fig. 232), which contributed to the development of transport infrastructure and the expansion of the city. Urban development in this period is characterised by a combination of preservation of historical heritage and the introduction of modern architectural solutions (Pidorycheva, 2022). New residential complexes, business centres, and shopping and entertainment venues were built. At the same time, the problem of preserving historic buildings and the harmonious development of the urban environment arose.



Figure 231. Khreshchatyk before the outbreak of World War II

Source: *Modern history of Kyiv in maps, diagrams and photographs (2025).*



Figure 232. Subway map plan and the building of the Vokzalna station of the Kyiv subway, November 1960

Source: *S. Pyvovarov (2023).*

4.1.3 Features of historical architectural in Kyiv

Public architecture in Kyiv has always played an important role in the city's social life. One of the most striking examples of public buildings is the Contract House (Fig. 233), built in 1815-1817 to a design by William Hesté. This building is in Podil, which was the main trade centre of Kyiv in the nineteenth century. The architectural style of the building is characterised by classical simplicity with distinctive Doric and Ionic columns that emphasise its monumentality and functionality. Contract fairs were held in this building, bringing together merchants not only from different

regions of Ukraine but also from other countries. Another iconic example is the House with Chimeras (Fig. 234), built in 1901-1903 to the design of Władysław Horodecki. This building is a unique example of architectural modernism with elements of eclecticism. The facade is decorated with sculptures of fantastic creatures, sea monsters and animals, which gives it a unique look. The use of cement in building decoration was an innovative solution for the early twentieth-century. Equally important is the National Bank of Ukraine (Fig. 235), built in 1902-1905 and designed by architects Oleksandr Kobelev and Oleksandr Verbytskyi. (Deriabina *et al.*, 2024).

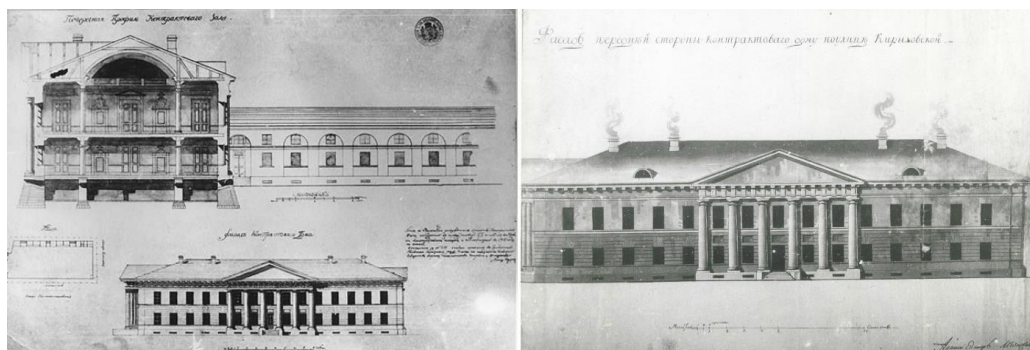


Figure 233. Plan and facade of the Kontraktovyi Building

Source: Contract house – The place where important deals were made and Ferenc Liszt found love (2023).

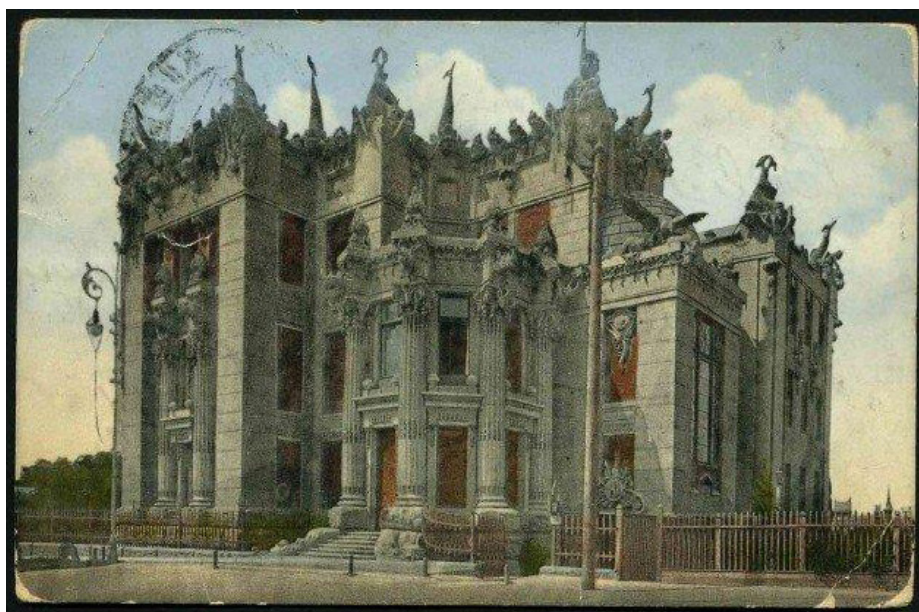


Figure 234. The house was built in the 1900s

Source: P. Artymyshyn (2023).



Figure 235. The building of the National Bank. Photo from the early twentieth century
Source: *National Bank of Ukraine. History and Architecture (2021).*

The sacred architecture of Kyiv is one of the most expressive aspects of the city's historical development. St Sophia Cathedral, built in the 11th century during the reign of Prince Yaroslav the Wise. This building has a five-nave structure with thirteen domes symbolising Christ and the twelve apostles. The architectural style of the cathedral combines Byzantine and Old Russian traditions, which are reflected in the layout, the system of internal galleries and decorative elements. The cathedral's mosaics and frescoes depict scenes from the Gospels and figures from the princely family, therefore an important source of information about the history of Kyivan Rus. Another landmark is St Andrew's Church, built in 1747-1754 by Bartolomeo Rastrelli. It is a striking example of Ukrainian Baroque with Rococo elements. The architectural composition of the church is located on a steep hill, and its silhouette dominates Podil. The graceful forms, decorative elements of the facade, and picturesque interior paintings make St Andrew's Church one of the most beautiful in Kyiv (Fig. 236). No less interesting is the 12th-century St Cyril's Church (Fig. 237), which has preserved original frescoes with biblical scenes. Of particular artistic value are the 19th-century wall paintings by Mikhail Vrubel.



Figure 236. The altar of St Andrew's Church

Source: *St. Andrew's Church - The baroque pearl of Kyiv (2025).*



Figure 237. St Cyril's Monastery. Watercolour by F. Solntsev, 1843

Source: *Cyril's Church. History (2020).*

Kyiv's residential architecture also demonstrates gradual changes in urban planning principles. In the late nineteenth and early twentieth centuries, Yaroslav Val Street became a kind of architectural experiment, combining Art Nouveau, NeoGothic and Historicism. The most famous residential building on this street is the Castle of Richard the Lionheart (1902-1904) by architect Vladyslav Horodetskyi (Fig. 238). This building is made in the Neo-Gothic style with elements of Romanticism. High windows with stained glass, decorative turrets, and lancet arches make the

building one of the most expressive in the city. Nearby is the house of the merchant Sulyma (1895), the facade of which is decorated with ornamented brickwork (Fig. 239). In the post-war period, residential development became widespread, as a result of the need to quickly rebuild the city after the devastation of the Second World War. An example of residential architecture of this period is the house at 25 Khreshchatyk Street, built in the Stalinist Empire style (Fig. 240).



Figure 238. Richard the Lionheart Castle, 1910

Source: *Richard's Castle. History and legends* (2021).

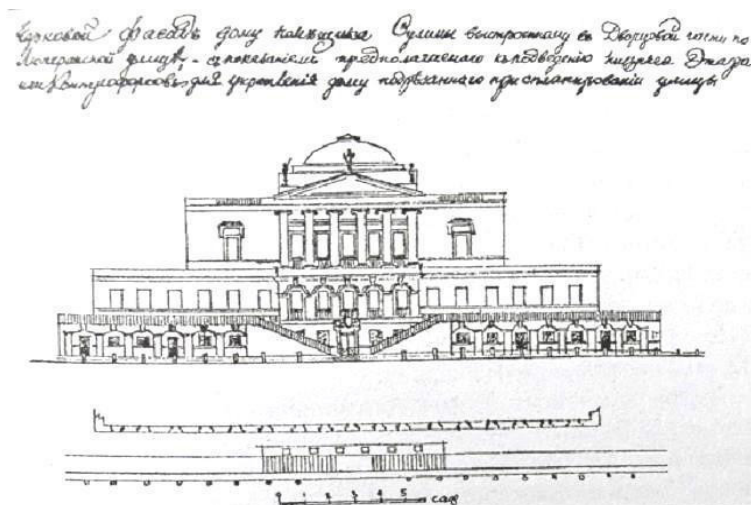


Figure 239. Design of the house of the merchant Sulyma Updated images

Source: *R. Stotrozhuik* (2021).



Figure 240. 25 Khreshchatyk Street or “House with a Star”, 1964

Source: *Khreshchatyk, 25 or “House with a Star” (2021).*

The industrial architecture of Kyiv was influenced by the industrialisation of the nineteenth century. One of the first industrial enterprises to have a significant impact on the development of the city was the Arsenal factory, founded in 1764 (Fig. 241). The buildings of the factory were massive, practical, and minimalist in their décor, which corresponded to their industrial purpose. The Kyiv Brewery (Fig. 242), built in the 1870s, is another example of industrial architecture that combined functionality with aesthetics. Its neo-Gothic red brick facade made the building recognisable, and its reinforced concrete structures ensured its durability (Zapotskiy, 2021). Brodsky’s Mill (Fig. 243), built in 1909 to a design by Władysław Horodecki, was one of the first industrial facilities in Kyiv to use reinforced concrete.



Figure 241. The Arsenal plant in Kyiv, an old photo

Source: *Advanced production: History of the factory “Arsenal” in Kyiv, - Photo (2021).*



Figure 242. Mikhail Richert's brewery, 1925

Source: *Volynian opened a brewery in Kyiv 150 years ago (2018).*

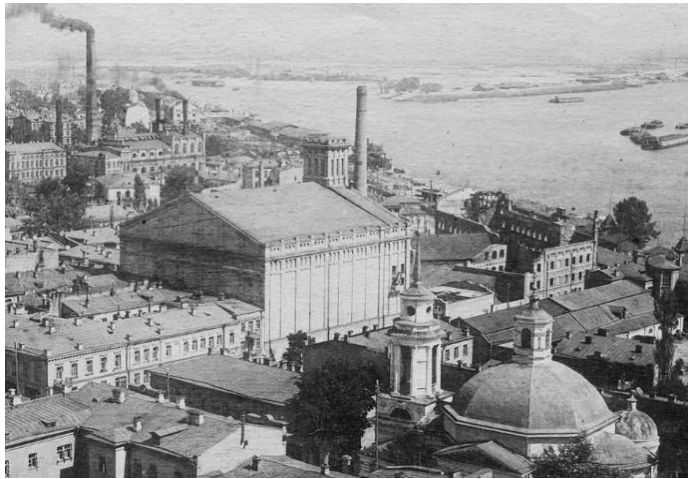


Figure 243. Elevator and ruins of the production building
of the former Brodsky mill, photo from the 1920s

Source: *M. Kalnytsky (2019).*

Kyiv's parks have become an integral part of the urban environment, providing recreation and preserving natural landscapes. Mariinsky Park (Fig. 244), founded in 1874, was designed in a mixed style with a combination of regular and landscape elements. Its creation was initiated by Empress Maria Alexandrovna. Taras Shevchenko Park, laid out in the 1890s, is a classic example of a regular park with a geometrically aligned system of alleys and flower beds. Holosiivskyi Park, laid out in the 1950s, demonstrates a new approach to preserving natural landscapes when creating recreational areas.



Figure 244. Mariinsky Park and the Mariinsky Palace, photo
Source: *I. Andreev (2018).*

4.2 Kharkiv

4.2.1 Overview of Kharkiv

There are several theories about the origin of the city's name. The most common is the hypothesis that Kharkiv is named after the legendary Cossack Kharka, who founded a settlement on the site of the modern city. Another version is related to the name of the Kharkiv River, along which the development of the territory began. Some sources also mention the Turkic roots of the word, which may indicate the ancient meaning of “fortress” or “fortification”. In the documents of the seventeenth century, the name of the city is already found in its modern form, which confirms its historical stability (Shpurik, 2014).

Kharkiv is located in the north-east of Ukraine, within the Slobozhanshchyna region, at the intersection of the Lopan, Kharkiv and Udy rivers, which belong to the Siverskyi Donets basin (Fig. 245). The geographical location of the city has determined its importance as a transport hub since its foundation in the 17th century. The city is located at the intersection of important trade routes connecting the central regions of Ukraine with Donbas, Russia and other Eastern European countries. The climate of Kharkiv is moderately continental with distinct seasons: hot summers, and cold winters, with periodic strong winds. The geographical location of the city was an important factor in its industrialisation in the XIX-XX centuries, as it facilitated the development of transport infrastructure, in particular, railway connections, which is reflected in numerous historical maps of the city.



Figure 245. Vector map of the city of Kharkiv

Source: *Map of Kharkiv (2025).*

Kharkiv's demographic development is one of the most dynamic among Ukrainian cities. As of the beginning of the 21st century, the city's population exceeded 1.4 million people (Kharkiv). Historical sources indicate that in the 18th century, Kharkiv was a relatively small settlement, with a population consisting mainly of Cossacks, peasants and craftsmen. In the late 19th century, due to industrial development, the population of Kharkiv grew to 200,000. The demographic structure of the city has undergone significant changes due to historical events, including the Second World War, the Holodomor, Soviet industrialisation and modern migration processes.

Kharkiv is an important industrial centre of Ukraine. Its economic structure was shaped in the second half of the 19th century by the development of railway transport and the emergence of large industrial enterprises. Maps from this period clearly show the expansion of industrial zones along the railway lines, in particular the Southern Railway (Fig. 246). The main industries of the city's economy are mechanical engineering, instrumentation, energy, information technology, and food processing. Kharkiv is home to such enterprises as Turboatom, Kharkiv Tractor Plant (HTZ), Electrotyazhmash, and aerospace and defence plants. An important stage in the development of the economy was the scientific and technological revolution in the second half of the twentieth century when the city became one of the leading research centres of the Soviet Union. The city's infrastructure is represented by an extensive transport system, including the subway, which was opened in 1975.

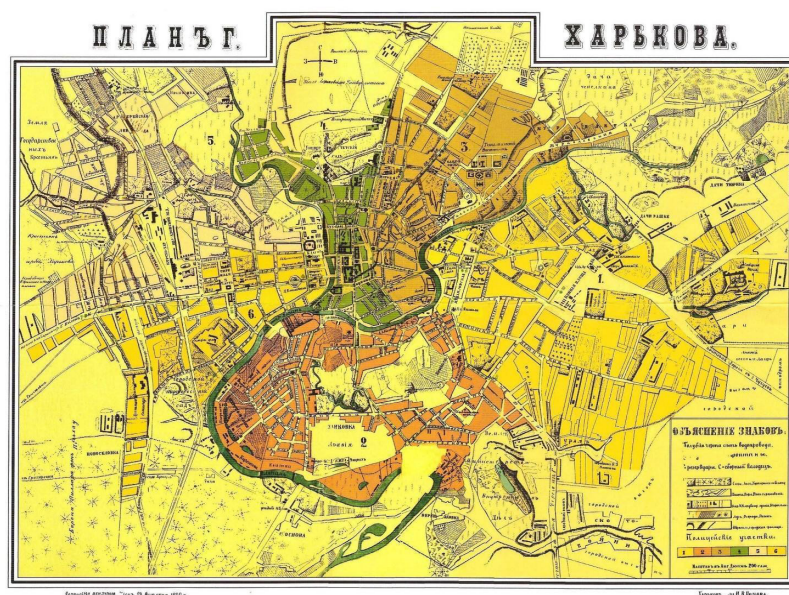


Figure 246. Map of the city of Kharkiv, 1880

Source: *Interactive old maps of Kharkov and Kharkov region (2025).*

Kharkiv is a city that has traditionally combined Ukrainian, Russian, Jewish, German, Polish and other cultural influences (Kravchenko, 2020). The architectural graphics of the 19th century

testify to the formation of a distinctive architectural style in Kharkiv, in which classical traditions were intertwined with modernism, neo-Gothic and constructivism. A significant role in the development of the cultural environment was played by the foundation of Kharkiv University in 1805 (Musiezdov, 2009). Such prominent figures as Mykola Sadovskyi, Ivan Karpenko-Kary, and Les Kurbas worked in Kharkiv. The Kharkiv State Academic Opera and Ballet Theatre, the Philharmonic, numerous museums and art galleries have become an integral part of the city's cultural landscape.

4.2.2 History of urban planning and development in Kharkiv

The foundation of Kharkiv dates to 1654 when a fortress was built on the site of the modern city to protect it from attacks by nomadic tribes (Fig. 247). The initial construction was defensive in nature and included wooden walls, towers and moats. The fortress was located on a high plateau between the Lopan and Kharkiv rivers, which provided natural protection. Its initial layout was radial, with streets extending outward from the fortress, influenced by the natural topography. The central part of the fortress was a square surrounded by administrative and military buildings. Gradually, Sloboda (settlements of artisans and traders) emerged around the fortress, which contributed to the expansion of the city territory.

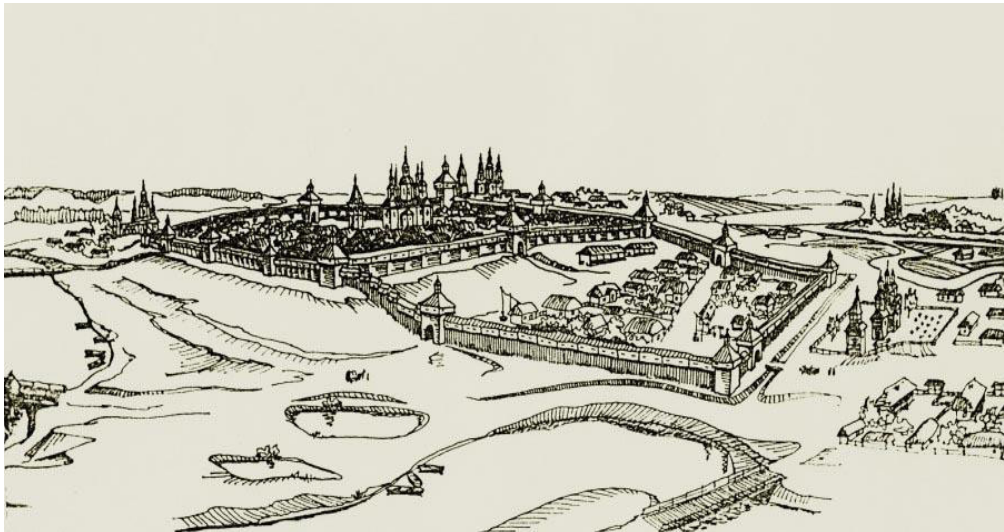


Figure 247. Kharkiv Fortress in the second half of the 17th century

Source: *Kharkiv in the XVII-XVIII centuries* (2025).

After joining the Russian Empire in the 18th century, the city transitioned from a military stronghold to a trade and administrative centre. Spontaneous construction dominated, with wooden structures prevalent, and only a few stone buildings (e.g., churches and colleges) serving as landmarks (Fig. 248). Kharkiv became the administrative centre of the Sloboda-Ukrainian province. This period is characterised by the active development of urban infrastructure and the streamlining of buildings (Oliynik and Oliynik, 2021).

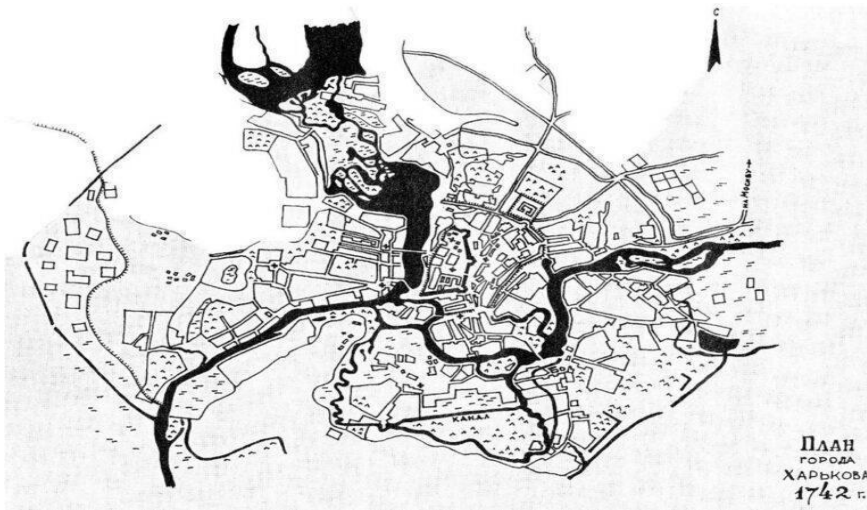


Figure 248. Map of the Kharkiv, 1742

Source: *Interactive old maps of Kharkov and Kharkov region (2025).*

The 19th century was a period of rapid industrial development in Kharkiv. The Industrial Revolution spurred a rapid population increase, and the construction of the railway (1869) accelerated expansion. However, the lack of planning control led to the mixing of industrial and residential areas. The construction of the Kursk-Kharkiv-Azov railway in 1869 turned the city into an important transport hub, which stimulated the development of industry and trade (Bogatchuk *et al.*, 2022). During this period, numerous plants, factories and workshops appeared, which contributed to population growth and the expansion of the city territory. Urban planning policy at that time was aimed at streamlining development and improving sanitary conditions. In 1854, a new master plan was approved (Fig. 249), which envisaged the expansion of the city by annexing adjacent territories and creating new residential areas. Streets were paved with cobblestones, gas lighting was introduced, and water supply and sewerage systems were built.

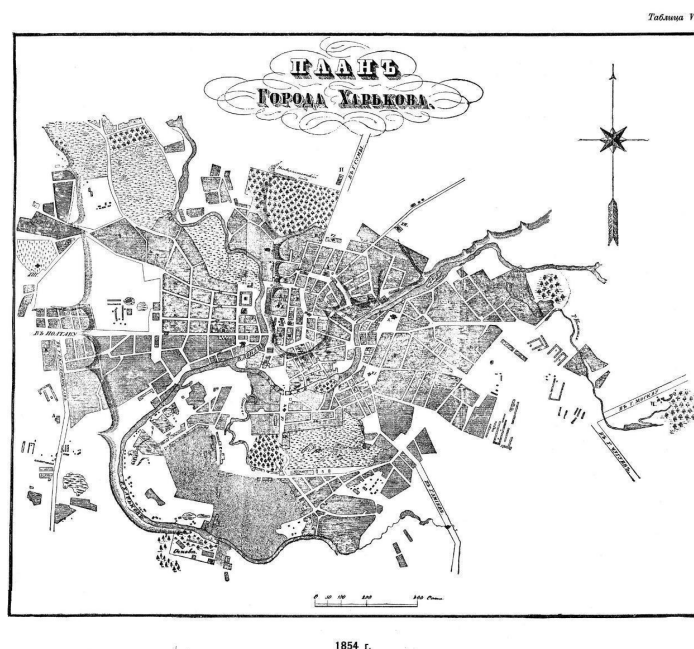


Figure 249. Map of the Kharkiv, 1854

Source: *Interactive old maps of Kharkov and Kharkov region (2025).*

After the establishment of Soviet rule in 1917, Kharkiv became the capital of the Ukrainian Soviet Socialist Republic (until 1934). This status determined large-scale urban planning transformations aimed at creating a new socialist infrastructure. In the 1920s, the city became the centre of the architectural avant-garde, in particular the constructivist style (Cherkashyna, 2022). One of the most famous buildings of this period is the Derzhprom complex (House of State Industry), built in 1925-1928. This monumental building has become a symbol of industrialisation and innovative architectural solutions. Another example is the Slovo residential building (1928) (Fig. 250), built for the Ukrainian creative intelligentsia. These buildings reflect the desire for functionality and rationality in architecture. In the 1930s, with the transfer of the capital to Kyiv, the architectural policy changed, focusing on the Stalinist Empire style. The buildings of this period are characterised by their monumentality, use of classical forms and decorative elements. An example is the Kharkiv Railway Station building (1952), which combines elements of classicism and baroque (Fig. 251). After the end of the Second World War, Kharkiv suffered significant destruction (Fig. 252). More than 70% of the buildings in the central part of the city were destroyed or damaged (Flierl and Haspel, 2022). Post-war reconstruction shifted toward a radial-ring road network, emphasizing a polycentric structure, and established a modern framework anchored by three major squares, such as Constitution Square and Railway Station Square. The reconstruction was carried out following a plan that included the restoration of historical monuments and the construction of new buildings in the style of socialist realism. Central squares, transport infrastructure, and educational and cultural institutions were rebuilt.



Figure 250. Derzhprom, aerial photography

Source: A. Bondarev (2018).



Новый Харьковский вокзал, 1953 г., архит.: Е. А. Лымарь, Б. С. Мезенцев,
Г. И. Волошинов.

Figure 251. Kharkiv railway station building, 1953

Source: A. Bondarev (2018).



Figure 252. Kharkiv city centre reconstruction project, 1946

Source: A. Bondarev (2018).

In the 1960s and 1970s, the city was actively developing as part of industrialisation and urbanisation. New residential areas and industrial zones appeared, and the road network was expanded. In 1975, the Kharkiv Metro was opened, significantly improving transport links. After Ukraine declared independence in 1991, Kharkiv faced new challenges. The economic crisis of the 1990s slowed down construction, but in the early 2000s, a new stage of urban development began (Antonenko, 2024). The city began active reconstruction of historic neighbourhoods and, the creation of modern business centres, shopping malls and cultural facilities. Preparations for Euro 2012 were an important stage in the development of Kharkiv's infrastructure: Freedom Square and Metalist Stadium were reconstructed, and roads and public transport were upgraded. Modern Kharkiv remains one of the largest industrial, scientific and cultural centres of Ukraine, preserving its unique architectural heritage.

4.2.3 Features of historical architectural in Kharkiv

One of the most prominent public buildings in Kharkiv is the House of State Industry (Derzhprom), built in 1925-1928 (Fig. 253). This building became a symbol of Soviet constructivism and industrialisation. The architects Sergei Serafimov, Samuel Kravets and Mark Felger designed a complex of three interconnected blocks that form a single composition. The building has 13 floors and at the time of completion was one of the largest in the world constructed of reinforced concrete. The uniqueness of Derzhprom lies in its symmetry, which can only be perceived from the centre of Freedom Square. One significant object is the building of the V. G. Korolenko Kharkiv State Scientific Library, which was founded in 1899 and designed by architect Alexei Beketov (Fig. 254). Beketov incorporated the latest world achievements in library construction at the time, successfully solving the problems of limited space and difficult terrain. The building combines elements of neoclassicism and modernism, which gives it a special elegance. Another important architectural object is

the building of the North Building of V.N. Karazin Kharkiv National University (1873) (Fig. 255). It was built in the Neo-Renaissance style with eclectic elements.

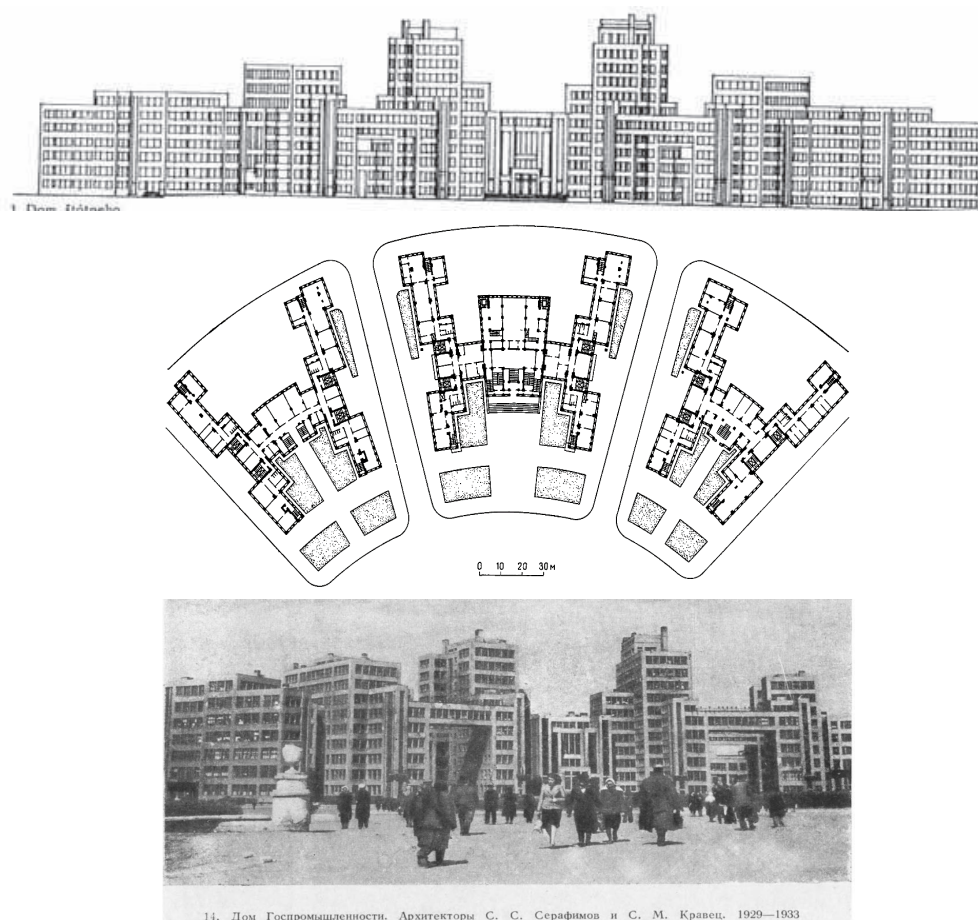


Figure 253. The building of the Derzhprom, 1929-1933

Source: A. Bondarev (2018).



Figure 254. A project of the A. Beketov Kharkiv Public Library
Source: Kharkiv State Scientific Library named after V.G. Korolenko (2023).

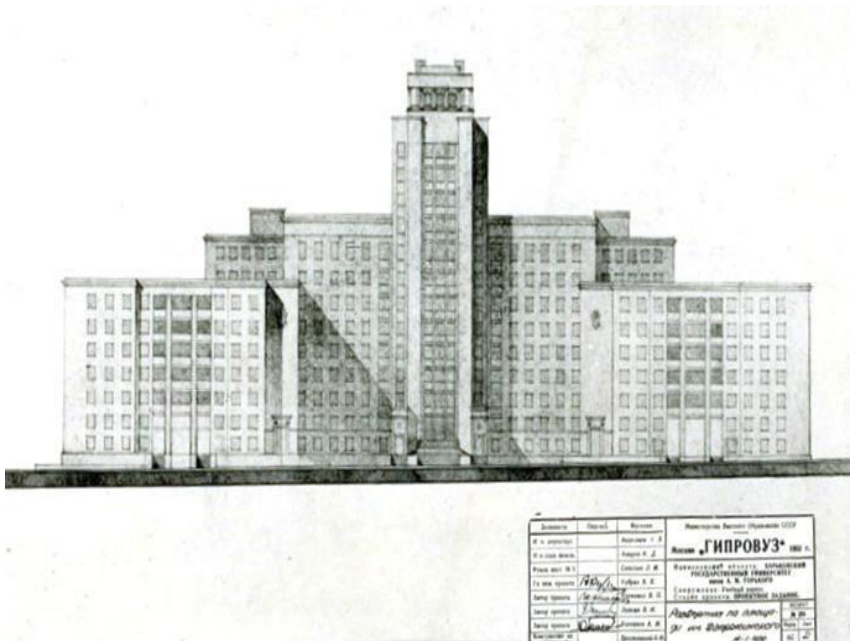


Figure 255. Approved version of the reconstruction of the main building
of Kharkiv National University, 1952
Source: O. Musiezdov (2009).

Kharkiv's sacred architecture is represented by numerous churches, among which the Intercession Cathedral, built in 1689, stands out (Fig. 256). The cathedral has a three-domed structure with one dome, typical of Ukrainian church architecture of the period. Another important church is the Assumption Cathedral (Fig. 257), built in 1777. This cathedral combines Baroque and Classicist features, reflecting the transitional period in architecture. The high bell tower of the cathedral was for a long time the tallest building in the city. The Annunciation Cathedral (Fig. 258), built in the Neo-Byzantine style, is another interesting landmark.

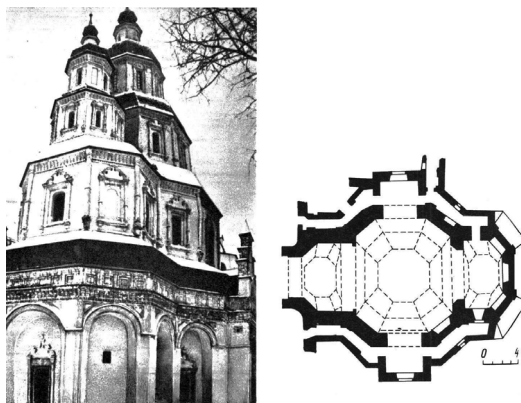


Figure 256. The Intercession Cathedral of the Intercession Monastery in Kharkiv, general view from the north-east, plan

Source: *Ukrainian baroque architecture* (2016).

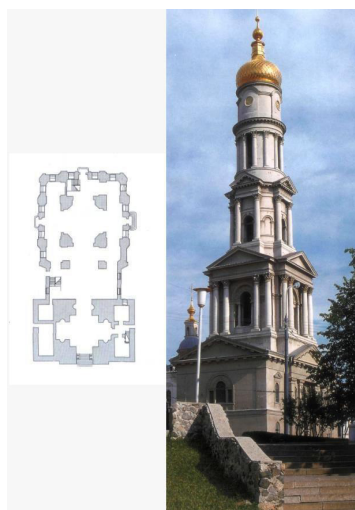


Figure 257. Dormition Cathedral, plan of the cathedral, general view of the bell tower

Source: *About Ukraine. Treasury of the Ukrainian people* (2024).



Figure 258. The Annunciation Cathedral in Kharkiv, an old postcard

Source: *Symbol of Kharkov and four centuries of changes in the history of the Annunciation Cathedral (2022).*

The architectural image of Kharkiv is also shaped by numerous residential buildings built in different periods of the city's history. Among them, a special place is occupied by the Slovo House, built in 1928 specifically for the Ukrainian creative intelligentsia. The building is made in the style of constructivism and has the shape of the letter "C", which symbolises the word (Fig. 259). This architectural technique emphasises the purpose of the building as a centre of literary life.

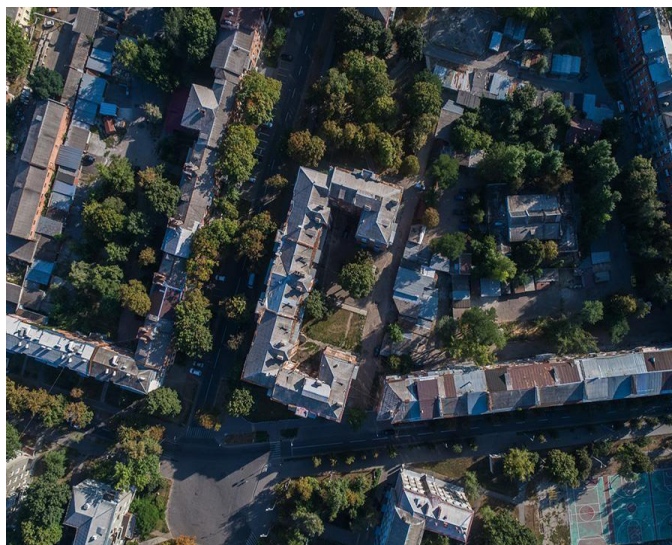


Figure 259. The Slovo House, aerial photo

Source: *A. Bondarev (2018).*

The oldest park is the Shevchenko Garden, founded in 1804 (Fig. 260). Initially, it was a botanical collection of the university, which eventually turned into a public park with fountains, gazebos and monuments. Another important site is Gorky Park (Fig. 261), opened in 1932 as an example of a socialist park for culture and recreation.



Figure 260. Taras Shevchenko Garden on the map of Kharkiv

Source: O. Chelombitko (2024).



Figure 261. Gorky Park in Kharkiv, map

Source: About the park (2024).

4.3 Lviv

4.3.1 Overview of Lviv

Lviv is one of the oldest, most iconic and multifaceted cities in Ukraine, which was central in shaping the national cultural, economic and architectural history. The name of the city comes from the name of Lev Danylovych, who became the ruler of the Principality of Galicia-Volhynia after the father. Lion symbolism can be traced not only in the name but also in the city's coat of arms: a golden lion walking through a golden stone gate is depicted on a blue field (Fig. 262). This symbolism testifies to the strength, resilience, and courage of the community, which has repeatedly defended its city from invaders. Throughout history, Lviv had different names depending on political circumstances. It was known as Lemberg when it was part of the Austro-Hungarian Empire, Lwów during the Polish rule, and Lviv remained its official name during the Soviet era (Haid-Lener, 2023; Szymiski, 2022). This change of names reflects the city's complex historical fate and multicultural character.



Figure 262. The Great Coat of Arms

Source: *Coat of arms of Lviv (2010).*

Lviv is located in the west of Ukraine, within the Lviv region, about 70 km from the state border with Poland. Geographically, the city lies at the intersection of important transit routes between the East and West of Europe, which has determined its role as an important trade hub since ancient times. The city is situated on the Lviv Plateau, a medium-altitude hill with the highest point being Castle Hill (413 m above sea level). This feature of the terrain had a significant impact on urban planning decisions, including the location of defensive structures and the layout of the city centre. The climate of Lviv is temperate continental with a significant influence of the Atlantic air masses. The high amount of precipitation and characteristic humidity create a specific microclimate that affects the preservation of historic buildings, particularly stone and brick structures.

Lviv is the largest city in Western Ukraine with a population of approximately 720,000 people as of 2023. In historical retrospect, the city's population has undergone significant changes. At the end of the 19th century, Lviv was home to about 150,000 residents, and in the interwar period, more than 300,000. The ethnic composition was traditionally diverse: Ukrainians, Poles, Jews, Armenians, and Germans (Hudzelyak, 2024). Before the Second World War, Poles, and Jews made up a significant part of the population. After the war, the ethnic composition changed significantly: the

vast majority are now Ukrainians (around 90%), with small communities of Poles, Russians, Belarusians and other nationalities. There are more than 20 higher education institutions in the city, the most famous of which is Ivan Franko National University of Lviv, founded in 1661.

The economic structure of Lviv is characterised by diversification, dominated by information technology, tourism, machine building, light industry and food processing. Lviv's economy has long been international in nature. As early as the Middle Ages, the city became an important transit centre between Central Europe, the Balkans, the Ottoman Empire and the Middle East. The industrial development of Lviv gained momentum in the nineteenth century when the city became part of the Austro-Hungarian Empire. Enterprises producing railway carriages, oil refineries, and food production factories were established (Chizzoniti & Batkova, 2022). In the 21st century, Lviv became one of the leading centres of the IT industry in Ukraine. SoftServe, Intellias, and ELEKS operate offices in the city, securing the city's reputation as an innovative centre. The tourism industry plays an important role in the modern economy. Lviv is one of the most popular tourist destinations in Ukraine due to its unique architecture, cultural heritage and the atmosphere of an ancient European city.

The historic centre of Lviv was inscribed on the UNESCO World Heritage List in 1998 (Fig. 263). Among the most famous monuments: Rynok Square (Fig. 264), the heart of the city, with 44 townhouses from different historical periods, in styles ranging from Renaissance to Baroque; Latin Cathedral (Fig. 265), a 14th-century Gothic monument that has preserved unique medieval interiors; Armenian Cathedral (Fig. 266) is a unique sacred building that demonstrates the influence of Armenian culture on the architectural landscape of the city; Opera House (Fig. 267) was built at the turn of the nineteenth and twentieth centuries in the Neo-Renaissance style and is one of the city's symbols; Boim Chapel (Fig. 268) is a Lviv Renaissance example with a unique facade decor. Lviv's cultural heritage is also manifested in numerous museums, theatres, concert halls, and a lively tradition of festivals. In particular, the LvivMozArt International Classical Music Festival (LvivMozArt/Home), the Coffee Festival, and the Lviv BookForum are well-known.



Figure 263. Map of the central part of Lviv

Source: Panoramic and tourist map of Lviv city centre in Ukrainian and English (2025).

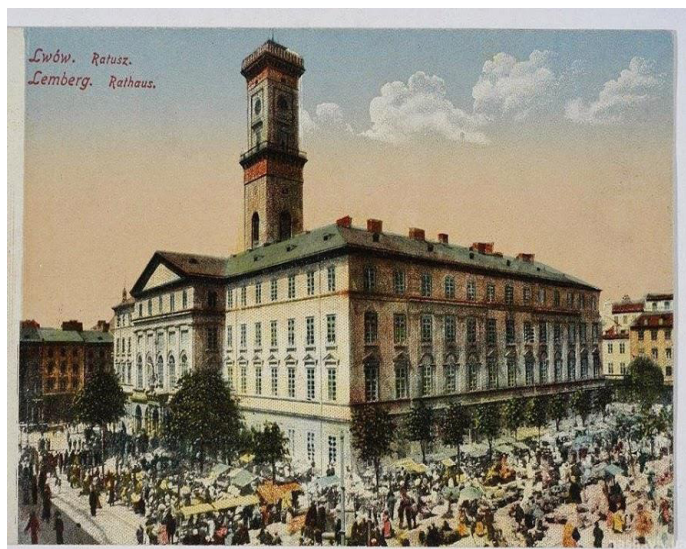


Figure 264. Rynok Square on a vintage postcard

Source: 5 facts you did not know about Market Square in Lviv (2024).

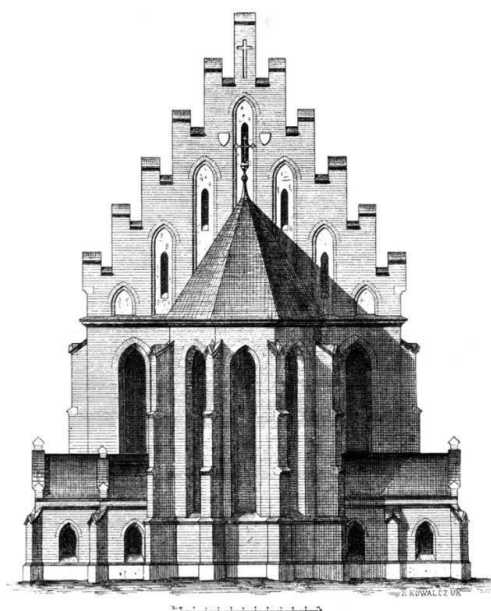


Figure 265. Graphic reconstruction of the original appearance of the Latin Cathedral, architect M. Kovalchuk

Source: S. Legin (2017a).

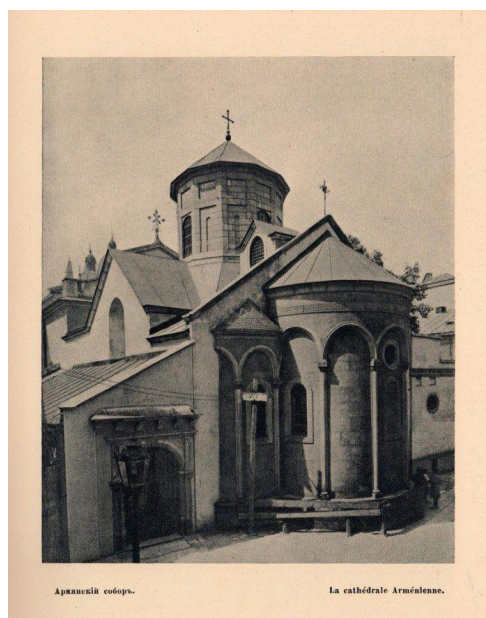


Figure 266. Armenian Cathedral, 1917

Source: *Armenian Quarter and Church (2025).*

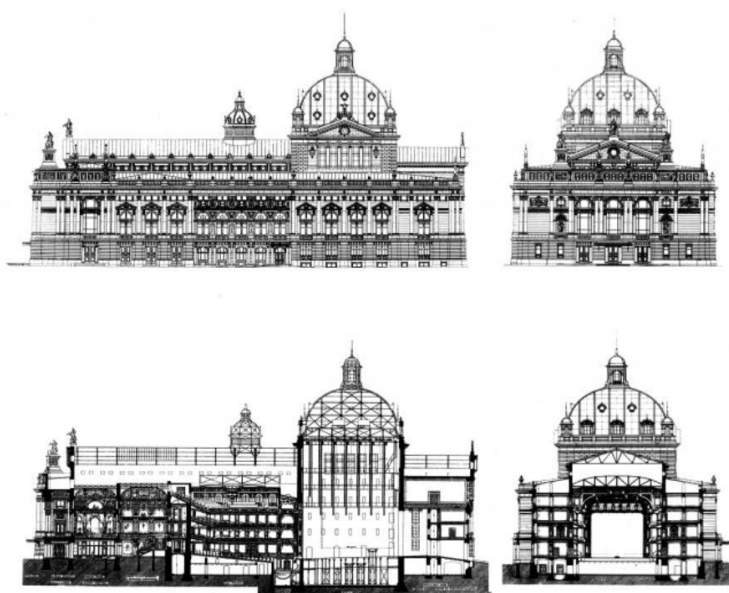


Figure 267. Architectural design of the Lviv Opera House by Zygmunt Gorgolewski, 1897

Source: *Lviv in the past and now. Rare photos of the opera house (2017).*



Figure 268. Boim Chapel, lithograph, 1900

Source: *Castles and temples of Ukraine. Boim Chapel (2025).*

4.3.2 History of urban planning and development of Lviv

Lviv founded in the middle of the 13th century, The development of the city can be divided into several key stages, each of which left its mark on its architectural character and planning structure. After the founding of Lviv by Prince Danylo Romanovych, the city quickly became an important trading centre due to its favourable location at the crossroads of trade routes between the East and the West. The initial development was wooden, with narrow streets and chaotically arranged buildings. However, after joining the Kingdom of Poland in 1349, under the reign of Casimir III the Great, a large-scale rebuilding of the city began. During this period, a regular plan of the central part of Lviv was laid out with a rectangular Rynok Square in the centre, surrounded by evenly spaced quarters. Rynok Square became the administrative and commercial centre of the city, with the most important public and residential buildings concentrated around it. The streets leading away from the square formed a clear grid that has survived to this day.

In the 16th century, Lviv experienced an economic and cultural boom, which contributed to the active construction and development of urban planning concepts. The city became a centre of Renaissance architecture in the Ukrainian lands, combining Western European influences with local traditions. At that time, many townhouses were built on Rynok Square, which belonged to wealthy citizens of different nationalities: Ukrainians, Poles, Armenians, and Jews. Each of these buildings reflected the cultural characteristics of its owners, creating a unique architectural ensemble. For instance, the Black House (Fig. 269), built in 1588–1589, is distinguished by its dark facade and rich sculptural decor, which combines Renaissance and Gothic elements. The Church of the Assumption (1591–1629) was also built during this period (Fig. 270), which became the centre of the Orthodox community in Lviv. The church combines Renaissance architectural forms with traditional Ukrainian elements, reflecting a synthesis of cultural influences.



Figure 269. A black townhouse, an old postcard

Source: *Black townhouse in the center of Lviv: The history of a unique attraction – Photos (2021).*

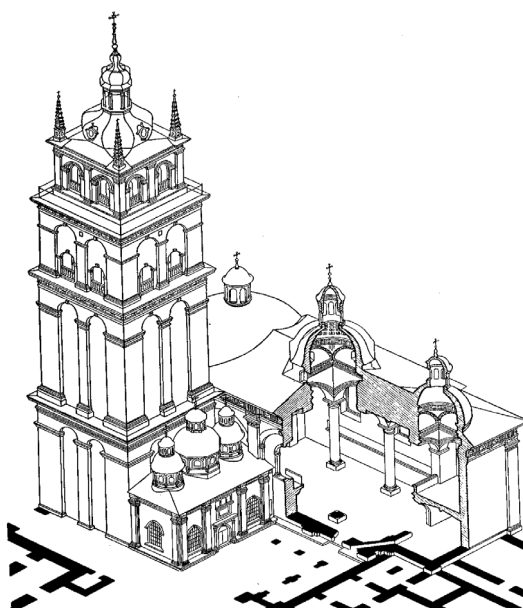


Figure 270. The ensemble of the Assumption Church in Lviv. XVI – XVII centuries.

Axonometry by Y. Nelgovsky and T. Tregubova based on measurements by J. Zubritsky,
Y. Nelgovsky, G. Logvin, P. Yurchenko

Source: *History of Ukrainian art (1967).*

After the Renaissance period, Lviv entered the Baroque reconstruction phase. One of the most prominent buildings of this period is St. George's Cathedral (Fig. 271), built in 1744-1762 and designed by architect Bernard Meretyn (Olianina, 2023). The cathedral combines Baroque and Rococo features and is distinguished by its complex facade plasticity and rich interior decoration. The cathedral complex also includes the metropolitan chambers and the bell tower, which create a harmonious ensemble on Sviatoyurska Hill. At the same time, the Church of Saints Peter and Paul of the Jesuit Order (1610-1630) was built (Fig. 272), which became one of the largest churches in the city. The architecture of the church reflects the influence of Italian Baroque, in particular, the Roman church of Il Jezu, which emphasises Lviv's European integration in the cultural context of the time.



Figure 271. The complex of St. George's Cathedral

Source: *Monastery of St. George (No. 5) (2025).*

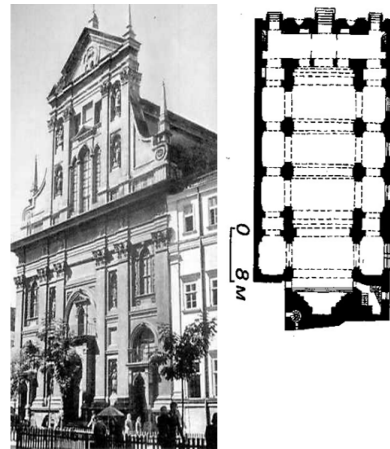


Figure 272. General view and plan of the Church of Saints Peter and Paul in Lviv

Source: *Ukrainian baroque architecture (2016).*

After the first partition of the Polish-Lithuanian Commonwealth in 1772, Lviv became part of the Austrian Empire (since 1867 – Austria-Hungary) (Gen-Konarsky, 2024). The Austrian administration introduced a centralised system of municipal management, which contributed to the modernisation of Lviv. One of the most important features of this period was the demolition of old defensive walls that had lost their defensive significance and the transformation of these areas into green spaces (Gen-Konarski, 2024). On the site of the former fortifications, promenade boulevards were created, including the current Svobody Avenue. At that time regular parks, typical for European cities, appeared in Lviv – Strytskyi Park and Bohdan Khmelnytskyi Culture Park. Lviv's architectural style underwent significant transformations at this time, with Neoclassicism, Historicism, Eclecticism, and Secession becoming dominant. The Viennese influence was evident in new public buildings, such as the Galician Sejm (now the main building of the Ivan Franko National University of Lviv, 1881) (Fig. 273) and the Main Post Office building (1887). the Lviv Opera House, built in 1897-1900 by architect Zygmunt Gorgolewski. Its construction became a symbol of the new urban face of Lviv with a combination of Renaissance, Baroque, and Secessionist motifs.



Figure 273. The building of the Galician Sejm (in 1923 will be transferred to the university).

Photo of 1898

Source: R. Zap (2015).

After the collapse of Austria-Hungary in 1918, Lviv became part of the restored Polish state. At that time, attempts were made to preserve the city's architectural heritage, but priority was given to the development of infrastructure and residential areas. Active development of new districts began: Kleparova, Zamarstynova, and Lychakova. Particular attention was paid to the development of the transport network: in 1923, the first electrified tram line was launched (Fig. 274). The architectural styles of this period were characterised by modernist tendencies. For instance, the building of the Bank of Lviv (1932) (Fig. 275), designed in the style of functionalism, became an example of a new architectural paradigm, where simplicity of form and practicality dominated.

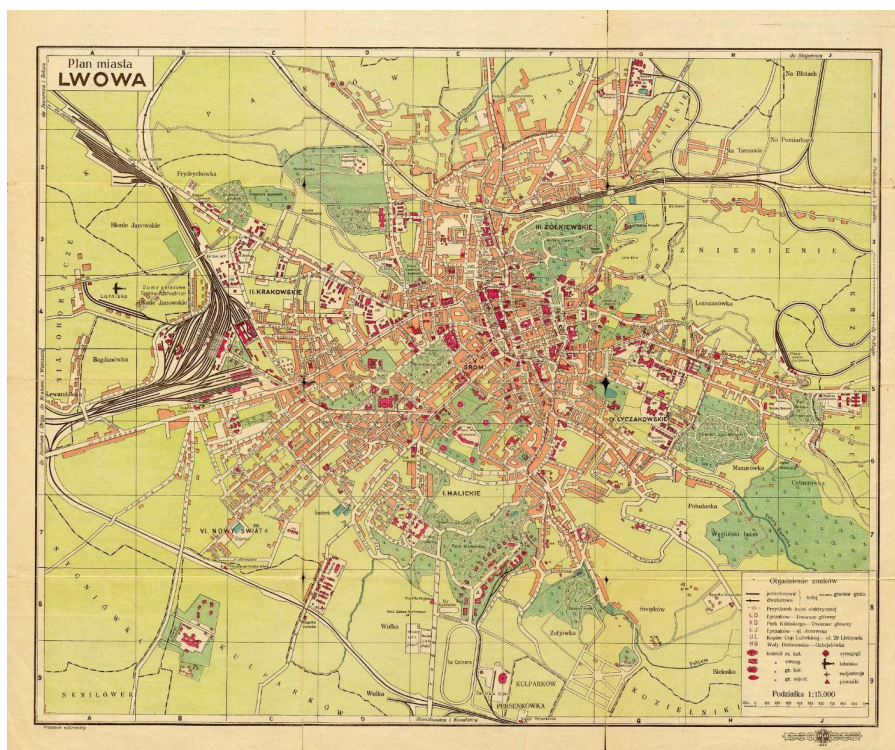


Figure 274. Lviv's Old Plan 1922

Source: *Plan of the city of Lviv* (2025).



Figure 275. The former Lvivskyi Bank at 9 Valova Street

Source: *From the history of banks and banking institutions in Lviv (2016).*

After Lviv became part of the Soviet Union in 1939. The priority of Soviet urban planning policy was industrial expansion and the creation of a socialist housing stock. During this period, the Zaliznychnyi, Sykhivskiyi, and Levandivka districts were built up (Firsov, 2022). The architectural solutions were typical of the USSR: mass construction of panel houses, administrative buildings and infrastructure facilities. The central part of the city remained largely untouched, but the overall structure of the city changed due to the emergence of large residential areas.

After Ukraine gained independence in 1991. A return to the restoration of historic buildings was also initiated. The central part of the city, which is on the UNESCO World Heritage List, was prioritised the most. The development of new districts, such as Sykhiv, Levandivka, and Rvasne, was also initiated. The city became a centre of the tourism industry, which was reflected in the development of hotel, restaurant, and entertainment infrastructure.

4.3.3 Features of historical architectural in Lviv

One of the most prominent public buildings in Lviv is the Lviv City Hall, which was built in 1827-1835 after the collapse of the previous one. The Town Hall combines elements of classicism and empire, and its 65-metre tower is one of the dominant features of the city centre (10 interesting facts..., 2024).

Among Lviv's sacred buildings, a special place is occupied by the Dominican Cathedral (Fig. 276), built in 1749-1764 by architect Jan de Witte. This Baroque church has an elliptical plan and a monumental dome, which emphasises its majesty. The facade is decorated with Corinthian columns and sculptures of saints. The building now houses the Museum of the History of Religion (Ursu *et al.*, 2023). Another notable church is the Church of St Mary Magdalene, built in 1600-1612. This Renaissance church was part of a Dominican monastery. The facade of the building is decorated with stained-glass windows and niches with sculptures (Fig. 277). After the Second World War,

the church was used as a warehouse and later as an organ hall. Today it houses the Lviv House of Organ and Chamber Music.



Figure 276. The Dominican Cathedral in Lviv, photo of 1912

Source: *How the Dominican Cathedral was built: the history of the baroque church of Lviv – Photos (2021)*



Figure 277. Stained-glass window of the Church of Mary Magdalene designed by Jan Rosen (funds of the Lviv Art Gallery)

Source: *Church of St. Mary Magdalene (2025).*

The architecture of Lviv's residential buildings reflects the city's multinational composition and the influence of various architectural styles. One example is the Bandinelli Palace (Fig. 278), built in the late 16th century and rebuilt in the 17th century. This Renaissance building belonged to the merchant Roberto Bandinelli, who opened the first post office in Lviv. The facade of the building is decorated with carved portals and window frames. Today it houses the Postal Museum. Another example is the Shultz House (Fig. 279), built in 1909 by architect Ivan Levynskyi. This Secessionist building features an asymmetrical facade, decorative elements in the form of floral ornaments, and ceramic inserts. The house was built for the Shultz family and is a vivid example of Lviv architecture of the early 20th century.



Figure 278. Bandinelli Palace, main facade and ground floor plan. (Bandinelli Palace)
Source: *Bandinelli Palace* (2025).



Figure 279. A fragment of the facade of the Schulz House
Source: *V. Eismunt* (2018).

Lviv's industrial architecture is also of considerable historical value. One of the oldest industrial buildings is the Lviv Brewery (Fig. 280), founded in 1715. The brewery complex includes production buildings, warehouses, and administrative buildings built in different periods. Today, it houses the Museum of Brewing, which presents historical exhibits and archival materials illustrating the development of brewing in Lviv. Another important industrial facility is the Jam Factory, built in 1872. This brick building with neo-Gothic elements was used for the production of canned fruit. After a long period of decay, the factory was restored and is now used as a cultural centre, where exhibitions and art events are held (Jam Factory Art Centre).



Figure 280. Lviv brewery, photo, early twentieth century

Source: *Lviv beer is another business card of the city!* (2023).

Lviv's green areas are an integral part of the urban structure that has been formed over the centuries. The first parks were laid out in the Middle Ages, but the most active development of park art took place during the Austrian rule in the 19th century. The most famous park in Lviv is Stryiskyi Park, which was laid out in 1879 by engineer Arnold Roehring. The park is located to the south of the city centre, on the territory of the former city outskirts. Its area is over 50 hectares, making it one of the largest in the city. Stryiskyi Park was designed in a landscape style, with picturesque paths, decorative ponds and various botanical plantations. Among the park's highlights are a Chinese-style gazebo, an artificial waterfall, and a greenhouse with exotic plants (Fig. 281). Another iconic green space is the Ivan Franko Park (formerly the Jesuit Garden) (Fig. 282), which was laid out in the 17th century. It is the oldest park in Ukraine that has retained its structure to this day. In the eighteenth century, the park was modelled on classical European gardens, and in the nineteenth century, it received new alleys and sculptural compositions. The park has a rectangular layout with a central avenue surrounded by tall chestnut trees. During the Soviet period, the Bohdan Khmelnytskyi Park for Culture and Recreation was laid out and became a model of a typical socialist park complex with amusement rides, a summer stage and sports grounds. In the 1950s, the park gained popularity among the townspeople as a venue for mass cultural events.



Figure 281. Master plan of Stryiskyi Park

Source: *Lviv in the past and now. Rare photos of the opera house (2017).*



Figure 282. Ivan Franko Park (Kostiushko Park, Jesuit Garden), aerial photography

Source: *15 interesting facts about the parks of Lviv (2018).*

4.4 Odesa

4.4.1 Overview of Odesa

The name Odesa comes from the ancient name of the ancient Greek colony of Odesos, which, however, was located on the territory of modern Bulgaria. An eventual transformation of Khadjibey into a city was marked in 1795 when it was renamed Odesa. In 1794, by order of Empress Catherine II, a new city was founded on the site of the Tatar settlement of Khadzhibey, which received its modern name. Etymologically, the name was meant to symbolise the connection with the ancient past and emphasise the importance of the Black Sea territories in the geopolitical plans of the Russian Empire. Interestingly, the city was originally planned to be called Odesa in the feminine gender to emphasise its symbolic relationship with the historical Odesos (Sapritsky-Nahum, 2023). Odesa is located on the north-western coast of the Black Sea, at the intersection of important transport routes between Europe, Asia and the Middle East. Odesa covers an area of about 160 km², and its coastline stretches for more than 30 km along the Gulf of Odesa. Due to its location, Odesa has long served as the national sea gateway, which is reflected in its urban structure, the development of port infrastructure and numerous maps that marked Odesa as a strategic seaport. Its geographical location contributed to the intensive development of the city as an important trade hub, especially in the 19th century.

The population of Odesa is multinational and multi-ethnic, which has historically been due to intensive migration processes. As of the beginning of the 21st century, the city's population is about 1 million people. Historically, the city has been home to Ukrainians, Russians, Jews, Greeks, Italians, Bulgarians, Armenians, Poles, and representatives of other ethnic groups (Yavorska *et al.*, 2020). This ethnic mosaic is reflected in the cultural, architectural and everyday life of Odesa. National communities have left a visible mark on the city's infrastructure and architectural graphics. For instance, the Jewish community has created a network of educational and charitable institutions, while the Greek community has contributed to the development of trade and construction. The city's multiculturalism is also reflected in its linguistic situation: traditionally, Ukrainian, Russian, Jewish, Greek, and Italian have coexisted here.

Since its foundation, Odesa has been one of the main trading centres of the Black Sea region. The city's economic development was driven by the Odesa Port, which ensured the export of grain, oil, metal, and imports of various industrial goods. In the 19th century, Odesa became the third most important city in the Russian Empire after St. Petersburg and Moscow, primarily due to grain exports. At that time, the banking system was developing, and numerous trading companies appeared, including the Rafalovych office, which was engaged in grain trading. During the Soviet era, Odesa developed into a major industrial centre with a developed machine-building, food and chemical industry. The city also became an important centre for shipbuilding and scientific research. Today, Odesa's economy is focused on logistics, transport services, tourism and the IT sector. The port of Odesa remains one of the largest seaports in Ukraine, and the tourism industry attracts thousands of visitors from around the world every year.

Odesa is also known as a significant educational and scientific centre. The city is home to the I. Mechnikov National University, founded in 1865, as well as several technical, medical and cultural institutions. A unique phenomenon is the Odesa Literary Museum, which was opened to the public on 15 July 1984 in the palace of the Gagarin princes. It preserves the memory of numerous writers who lived or worked in Odesa, including Isaac Babel, Ilya Ilf, Yevgeny Petrov, and Ivan

Bunin. The city is known for its annual humour festival, which is celebrated on 1 April, and the image of Odesa humour has become an integral part of the all-Ukrainian cultural tradition (Odesa Yumorina 50..., 2023).

4.4.2 History of urban planning and development of Odesa

After the territory of modern-day Odesa was annexed to the Russian Empire in 1794, a decision was made to establish a port and a city. The first general plan of Odesa was developed by engineer Franz de Vollan, who proposed a regular layout with a rectangular street grid, which was in line with European urban planning traditions of the time. The central axis of the city was Primorskyi Boulevard, which connected the administrative centre with the port. This layout facilitated the rapid development of trade and provided convenient access to port facilities (Vovchuk, 2023). Since its foundation in 1794, Odesa Seaport has been a key factor in the city's economic development (Fig. 283). Already in the first decades of Odesa's existence, the port became one of the busiest in the Black Sea region, as significant volumes of grain, wine, wool and other goods were exported through it.

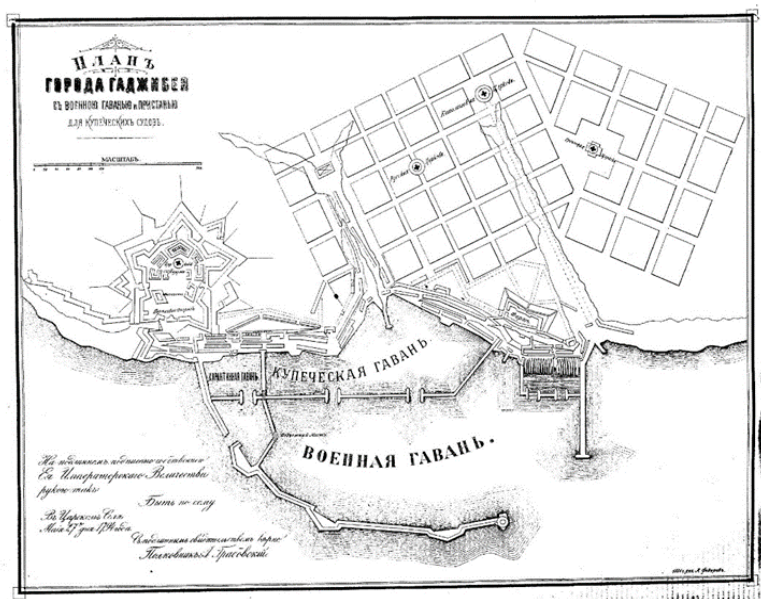


Figure 283. Plan of the city of Khadjibey (Odesa) 1794

Source: *Was Odesa founded?* (2025).

During the Porto Franco period (1819-1859), the port expanded significantly: additional berths and warehouses were built, and a system of customs warehouses was developed. In 1819, a port-franco regime was introduced in Odesa, which exempted the city from customs duties and facilitated the inflow of foreign investment and goods (Kostyk and Udovyyk, 2023). This led to rapid economic growth and a demographic explosion. The city expanded, new neighbourhoods were constructed, and public and commercial buildings were created. The architecture of this period is

characterised by a combination of classicism and empire, which provided Odesa with a European appearance. Foreign architects and engineers, in particular Italians and French, played a significant role in the development of the city. The growth of Odesa's economic activity was accompanied by the development of the city's infrastructure. Maps from 1830-1860 show a clear division of the city into functional zones: the central part with administrative and cultural institutions, the port area, industrial areas on the outskirts, and residential neighbourhoods for different social groups. In the second half of the nineteenth century, Odesa was actively built with apartment buildings designed by architects Franz Morandi, Felix Gonciorowski, and Bernardazzi.

In the second half of the nineteenth century, due to the development of railway communication between Odesa and the central regions of the empire, the port began to receive much larger volumes of cargo. In 1865, a railway connection between Odesa and Balta was opened, connecting the city with the central regions of the empire. This, in turn, stimulated the development of industry: plants, factories, and warehouses were built (Cadioli, 2025). Maps of the early twentieth century (Fig. 284) show the construction of new harbours and terminals, among which the oil harbour stood out, and became an important component of the city's economy. At this time, a voyage port was also built to accommodate large vessels. In the late nineteenth and early twentieth centuries, Odesa underwent an industrial transformation. The city expanded to the north and west, and new working-class neighbourhoods with characteristic multi-storey buildings appeared. Maps from this period show the emergence of new industrial facilities: sugar factories, oil refineries, and tobacco factories. For instance, a map of the city from 1894 (Fig. 285) shows the location of the Anatra factory, which was engaged in aircraft construction during the First World War. Many of these buildings have survived to this day and have become architectural monuments. This period also saw the development of urban transport: in 1910, an electric tram appeared in Odesa, with its routes marked on city maps (Fig. 286).

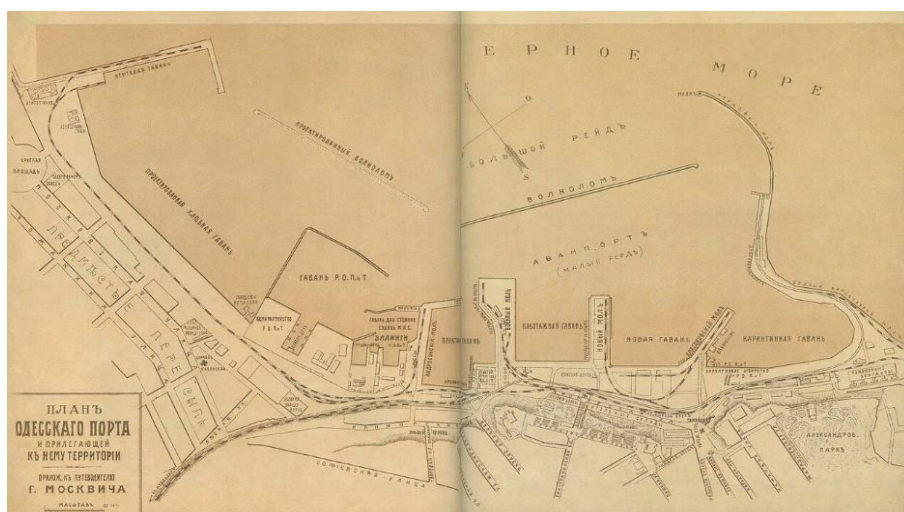


Figure 284. Map of the Odesa port, 1900

Source: *Plans and maps of Odesa. 1769-1919 (2015).*

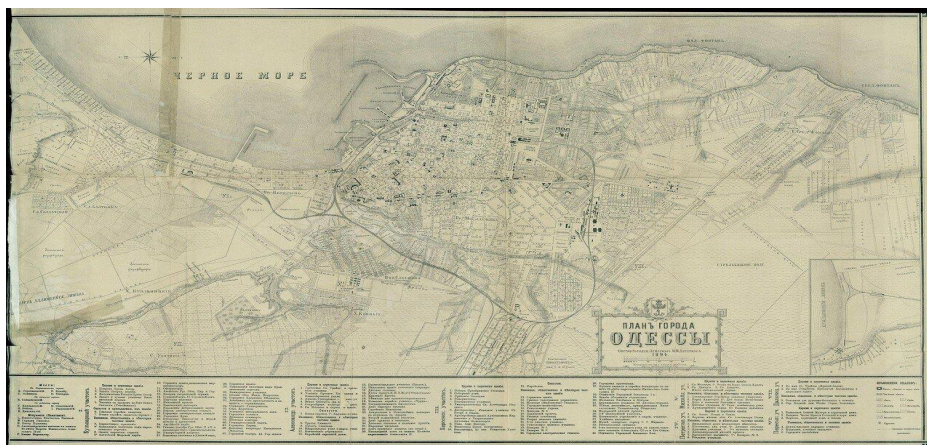


Figure 285. Map of Odesa, 1894

Source: *Plans and maps of Odesa. 1769-1919* (2015).

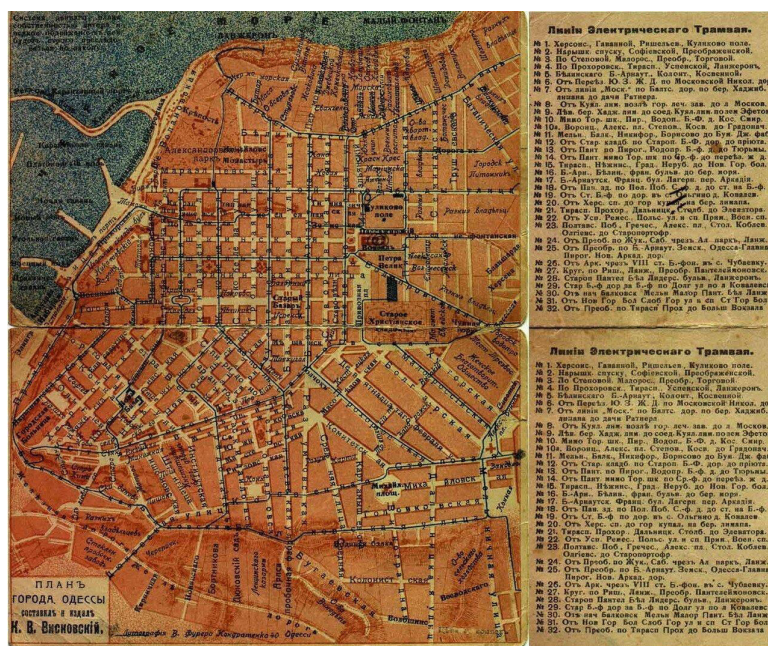


Figure 286. Map of Odesa and map of tram lines, 1917

Source: *Plans and maps of Odesa. 1769-1919* (2015).

After the 1917 revolution, Odesa became an important industrial centre of the Ukrainian SSR. In the 1920s, the city was actively reconstructed following new socialist principles. In the 1930s, new housing estates for workers were created, which showed the characteristic features of

constructivism. During the Second World War, the city suffered significant damage, especially the port infrastructure and the historic centre (Fig. 287). After the liberation of in 1944, large-scale reconstruction began. Maps of the post-war years show the rebuilding of transport arteries, the restoration of the port, and the revival of Prymorskyi Boulevard. New residential areas were built in the style of Soviet modernism. In the 1960s and 1980s, Odesa became a major industrial centre with a developed diversified industry and an important international seaport. More than 170 industrial enterprises were built during this period, contributing to the city's economic growth and urban development.

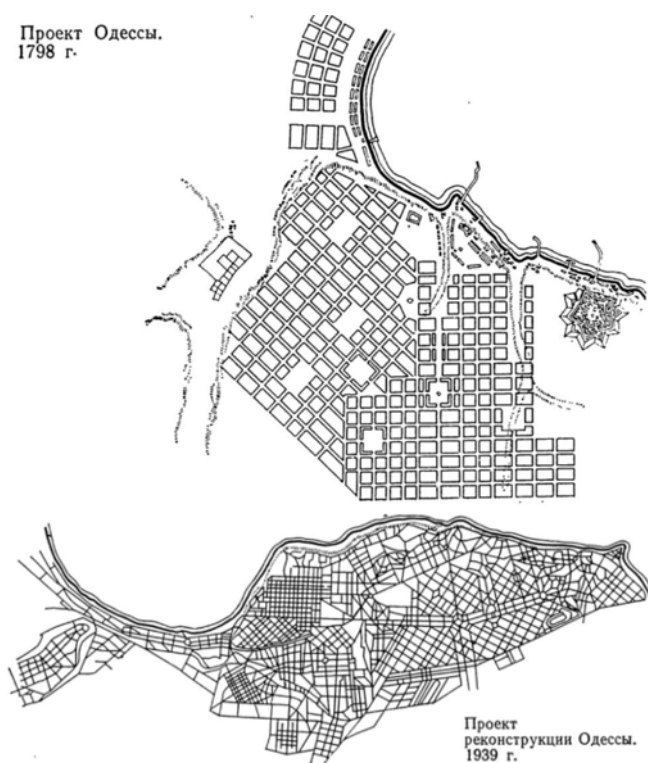


Figure 287. The projects of reconstruction of Odesa

Source: *Plans and maps of Odesa. 1769-1919* (2015).

With the declaration of Ukraine's independence in 1991, Odesa faced new challenges and opportunities. The process of transition from a planned to a market economy began, which affected urban planning policy. The 2000s saw a construction boom: modern residential complexes, shopping and entertainment centres, and office buildings were being built. At the same time, the problem of preserving historical heritage and integrating new buildings into the existing urban environment arose. In 2023, the historic centre of Odesa was included in the UNESCO World Heritage List, which underlines its unique cultural and architectural value (The Historic Centre..., 2023).

4.4.3 Features of historical architectural in Odesa

Public buildings in Odesa reflect the city's prosperity and cultural wealth. One of the most famous buildings is the Odesa National Academic Opera and Ballet Theatre (Fig. 288; 289), built in 1887 by architects Ferdinand Fellner and Hermann Helmer. The building was designed in the Viennese Baroque style with elements of Renaissance and Classicism. The interior of the theatre impresses with its luxury and sophistication, in particular, the main hall is decorated with gilding and stucco (Reva, 2023). Another notable example is the House of Scientists, the former palace of Count Tolstoy, built in the 1830s and designed by architect Franz Boffo (Fig. 290; 291). The building combines elements of classicism and empire, with rich interior decoration, including marble staircases and decorative ceilings.



Figure 288. General view of the Odesa National Academic Opera and Ballet Theatre
Source: *Opera House (2025).*

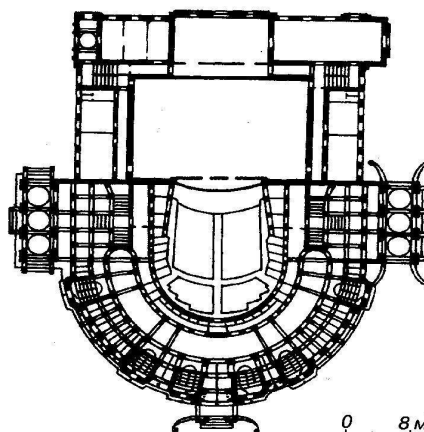


Figure 289. A plan of the first floor of the Odesa National Academic Opera and Ballet Theatre
Source: *Opera House (2025).*



Figure 290. General view of the House of Scientists in Odesa

Source: *The old palace. Facades (2025).*

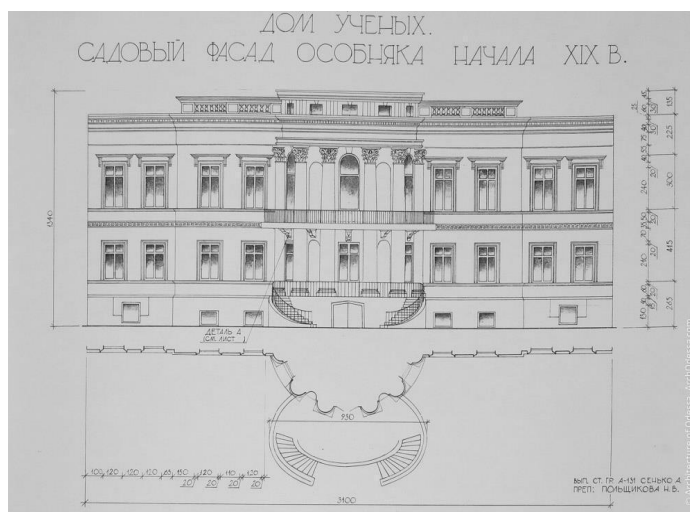


Figure 291. Drawings of the House of Scientists in Odesa

Source: *The old palace. Facades (2025).*

The religious architecture of Odesa reflects the multicultural composition of the city's population. Among the most prominent churches is the Transfiguration Cathedral (Fig. 292), built in 1794 and restored in 2003 after it was destroyed in 1936. The cathedral is designed in the classicist style, with a majestic portico and dome (Hanson *et al.*, 2024). Another important religious site is the Holy Dormition Cathedral, built in 1855 and designed by architect Louis Eaton. The cathedral combines elements of the Russian-Byzantine style with distinctive domes and decorative elements (Fig. 293).



Figure 292. Transfiguration Cathedral, general view

Source: V. Shelepin (2006).

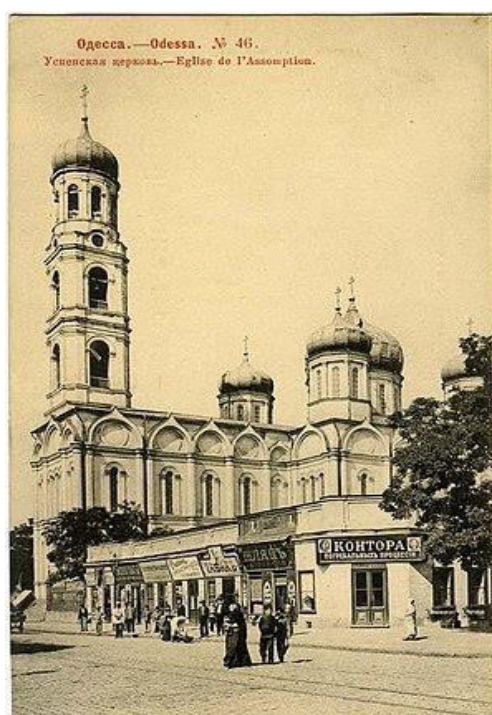


Figure 293. The appearance of the Holy Dormition Cathedral in Odesa in the early twentieth century

Source: Holy Assumption Cathedral (Odesa) (2025).

The residential architecture of Odesa is characterised by a variety of styles and a wealth of decorative elements. One of the most striking examples is the Russov House (Fig. 294), built in 1897-1898 to a design by architect V.I. Schmidt. The building was designed in an eclectic style with elements of Baroque and Renaissance, and the facade is decorated with sculptures and stucco. Another notable example is the Falz-Fein Apartment House (Fig. 295), known as the “House with Atlanteans”, built in 1899 by the architects Lev Vlodek and Semyon Landesman. The facade of the building is decorated with sculptures of Atlanteans supporting a balcony and rich Art Nouveau décor.



Figure 294. The Russov House, early 20th century photo

Source: *Odesa house of Rusov before the fire: how it looked and what has changed (2021).*



Figure 295. Falz-Fein’s apartment building, general view

Source: *Historical Odesa. House with Atlanteans (2019).*

Odesa's industrial architecture of the late 19th and early 20th centuries reflects the city's rapid development as a commercial and industrial centre. One of the most significant buildings is the former Odesa Brewery (Fig. 296). The building combines elements of neo-Gothic and eclecticism, with characteristic arched windows and decorative elements on the facade. Another example is the building of the former Anatra factory, founded in 1912 by entrepreneur Arthur Anatra (Fig. 294). The plant specialised in the production of aircraft during the First World War. The Anatra factory building demonstrates a functional approach to early twentieth-century industrial architecture. The building was constructed in the industrial modern style, with large windows for natural light and minimal decorative design.



Figure 296. Odesa Brewery, view from the south, 1910s

Source: *Odesa. Brewery of the Odesa Brewery Society (Sanzenbacher and Co.) (1890-1891, con. XIX-early. XX century) (2011).*



Figure 297. Artur Anatra Aircraft Plant is now the State Enterprise Odesaaviaremservis

Source: *The Anatra Family (2025).*

Odesa urban landscape architecture is no less interesting than its public, residential and industrial buildings. The oldest park in the city is the City Garden (Fig. 299), laid out in 1803 by the de Ribas brothers. This Park was the first example of organised urban greenery designed to address the peculiarities of the terrain. The Shevchenko Park (Fig. 300), laid out on the site of the old Khadzhibey fortress, is an example of large-scale landscaping in the twentieth century. The Park has a structured system of paths, recreation areas, and memorials, including a monument to Taras Shevchenko.



Figure 299. Odesa. City garden, 1947

Source: M. Yuzyak (2021).



Figure 300. Park of Culture and Recreation on the map of Odesa

Source: A maintenance project has been developed for Odesa's Shevchenko Park (2024).

4.5 Dnipro

4.5.1 Overview of Dnipro

The name of the city has been changed many times following historical and political conditions. The settlement was first founded in 1776 by order of Catherine II under the name Ekaterinoslav. The original plan was to create the “third capital of the empire” after St Petersburg and Moscow. In 1926, the city was renamed Dnipropetrovs’k in honour of the Dnipro River and the revolutionary Hryhorii Petrovskyi. In 2016, as part of the decommunisation process, the city was renamed Dnipro. The place name changes reflect the political transformations that have taken place in Ukraine over several centuries (Portnov, 2022).

Dnipro is in the southeastern part of Ukraine, within the Prydniprovska lowland. The city stretches along both banks of the Dnipro River, which has a wide floodplain with numerous islands, the largest of which is Monastyrskyi Island. The river is central in the transport infrastructure, being part of the Dnipro-Bug waterway connecting the Baltic and Black Seas. The Dnipro has a temperate continental climate with hot, dry summers and moderately cold winters. This climate is conducive to agricultural development in suburban areas, particularly in the cultivation of grain crops.

As of 2024, the population of Dnipro is approximately 970 thousand people. Historically, the city has been attractive to migrants due to its industrial development, particularly in the 19th century during the construction of the railway and the development of metallurgical enterprises. Dnipro’s demographic structure is multiethnic: in addition to Ukrainians, it is home to Russians, Jews, Belarusians, Armenians, Georgians, Poles and other nationalities. The Jewish community is central to the city’s socio-cultural life and significantly contributed to the development of the economy and culture.

Dnipro is traditionally considered the industrial heart of Ukraine. Its economic development is closely linked to the metallurgical, machine-building, space and chemical industries. In the late 19th century, the city became one of the leading centres of the Russian Empire’s metallurgical industry, which led to an active inflow of investments and population (Manyuk and Maniuk, 2023). In Soviet times, Dnipro was a closed city due to the location of aerospace enterprises, including the Pivdenmash plant and Pivdenne Design Bureau, which were leading in the production of aerospace equipment. The economic crisis of the 1990s led to a partial decline in the industry, but since the early 2000s, economic activity has recovered due to foreign investment and the development of small and medium-sized businesses.

Dnipro’s cultural heritage reflects its centuries-old history and geopolitical position. The city preserves monuments that demonstrate the cultural influences of different eras – from the Cossack era to the industrial era. The Dnipro region was an important centre of Cossack history. Stara Samara (now an area within the city) was an important Cossack settlement. In Soviet times, the city’s architectural face was enriched with typical constructivist buildings, including the Dnipro Metallurgical Plant complex (Fig. 301) and numerous socialist realist buildings. In the 21st century, the city has become a site for modern architectural projects, including the Menorah Business Centre (Fig. 302), which is the largest Jewish cultural complex in the world.

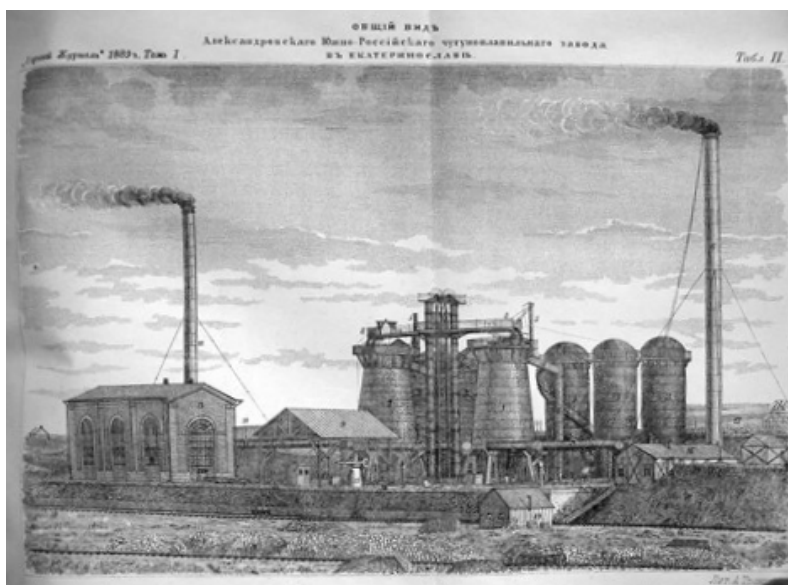


Figure 301. A general view of the Oleksandrivskiy Iron Smelting Plant in Katerynoslav, nowadays the Dnipro Metallurgical Plant, lithograph Katerynoslav Oleksandrivskiy, 1889
Source: *Dnipro Metallurgical Plant (2025).*



Figure 302. Menorah Jewish Business Centre in Dnipro
Source: *Cultural and business center in Dnipro (2025).*

4.5.2 History of urban planning and development of Dnipro

Dnipro founded in 1776. After the territories of the Zaporozhian Sich were annexed to the Russian Empire, Empress Catherine II decided to establish a new city on the banks of the Dnipro River, which was to become the administrative centre of the Novorossiysk Territory (Kariaka, 2022). The first general plan of Katerynoslav (Fig. 303), designed in 1792 by architect Ivan Starov, envisaged a city with a regular layout, wide streets, and spacious squares. The central axis of the city was to be the main street connecting the Transfiguration Cathedral with the Dnipro embankment. However, due to economic difficulties and natural disasters, the original plan was not fully implemented.

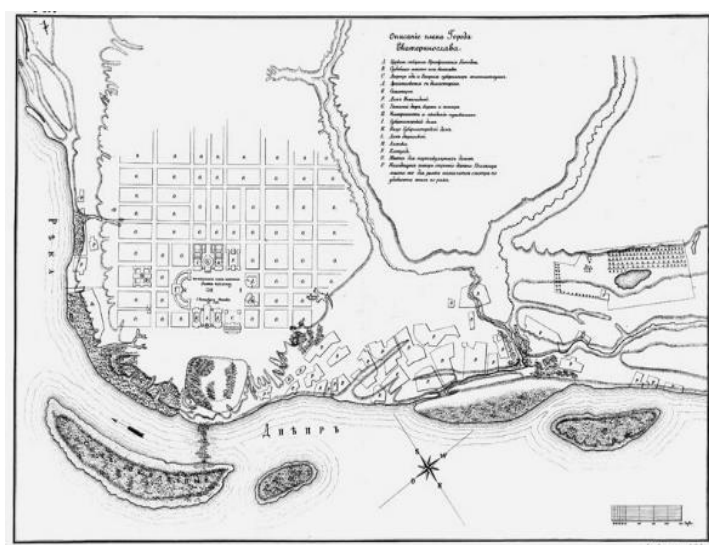


Figure 303. The first general plan of Katerynoslav, 1792

Source: M. Kavun (2017).

In the first half of the nineteenth century, Katerynoslav remained a provincial town with moderate development. The situation changed in the second half of the century with the beginning of industrialisation and the construction of the railway. In 1873, the city was connected by a railway line to Kharkiv and Odesa, which stimulated the development of industry and trade. During this period, the first industrial enterprises appeared, including metallurgical plants, which contributed to the influx of the workforce and the expansion of the city's territory. The urban planning structure of Katerynoslav underwent significant changes: new residential quarters for workers, administrative buildings, and cultural institutions were built. The architecture of this period combined elements of classicism and eclecticism, reflecting pan-European trends in architecture. At the beginning of the 20th century, the city renamed Dnipropetrovs'k in 1926, continued to grow rapidly. After the October Revolution and the Civil War, the Soviet government launched a large-scale industrialisation programme that affected urban development. In 1932, a new master plan for the city was approved, which envisaged the expansion of industrial zones, the construction of new residential areas and the development of transport infrastructure.

After the Second World War, Dnipro suffered significant damage, especially to industrial facilities and transport infrastructure. The city's reconstruction became a priority, and in the late 1940s, a new master plan was developed to reconstruct the destroyed areas and build new residential areas. The architecture of the post-war period combined features of the Stalinist Empire and modernism. In the 1960s and 1980s, Dnipro experienced a period of intense urbanisation. Population growth required the construction of new residential areas, including multistorey neighbourhoods on the outskirts of the city (Havryliuk, 2022). The architecture of this period was characterised by typical panel house designs, which made it possible to quickly provide housing for a large number of residents. At the same time, the transport infrastructure was developing: the network of trolley-bus and tram lines was expanded, and new road junctions and bridges across the Dnipro were built. However, rapid urbanisation led to several urban planning problems, including chaotic suburban development, insufficient social infrastructure, and environmental problems caused by the intensive development of industrial enterprises.

After Ukraine declared its independence in 1991, the urban development of Dnipro underwent significant changes. The transition to a market economy facilitated the emergence of new commercial and residential projects, privatisation of land plots and the development of small and medium-sized businesses. During this period, the city became open to foreign investors, which contributed to the formation of the modern architectural face of the city centre. At the beginning of the 21st century, Dnipro continued to develop as an important industrial, scientific and cultural centre of the country. Modern urban planning policy is focused on the harmonious development of historical and modern districts, preservation of cultural heritage and creation of comfortable living conditions for citizens. New trends include the development of the smart city concept, which involves the use of modern technologies to manage urban services, develop transport infrastructure and optimise energy consumption. Projects to restore old buildings, including comprehensive restoration on Monastyrskyi Island, play an important role in preserving historical memory (Fig. 304), where monuments reminiscent of the region's Cossack past have been preserved.

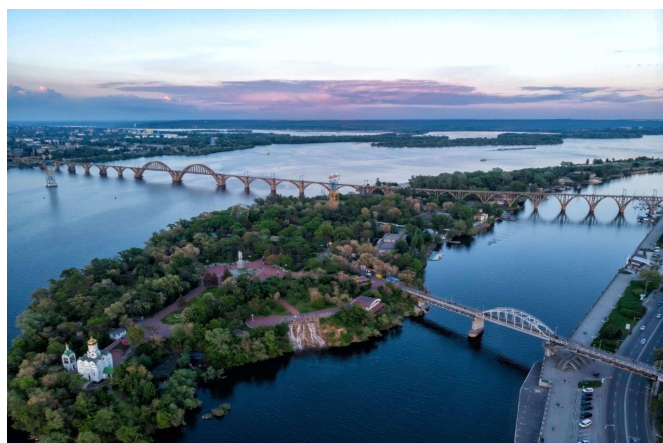


Figure 304. Monastery Island

Source: *Monastery Island* (2025).

4.5.3 Features of historical architectural in Dnipro

The Khrinnykov House (Hotel Ukraina), built in 1913 and commissioned by entrepreneur Volodymyr Khrinnykov, is a prominent example of Ukrainian Art Nouveau architecture (Fig. 305). The architect Dmytro Skorobohatov used elements of the folk style, combining them with contemporary trends of the time. The surviving architectural drawings of the facade demonstrate a wealth of decorative elements, including ornamental inserts and motifs typical of Ukrainian architecture (Ivashko *et al.*, 2024). The Astoria Hotel, built in 1912-1913 and designed by architect Lev Brodnytsky, is a striking example of Art Nouveau with elements of neoclassicism. Architectural drawings show the careful elaboration of the facades with columns and mouldings. The hotel had luxurious interiors and exquisite room décor, which emphasised its status as one of the most prestigious in the city.



Figure 305. Khrinnikov's house, general view, 1930s

Source: *Khrinnikov's house: The architectural pearl of the Dnieper (2022).*

The Transfiguration Cathedral (Fig. 306), founded in 1787 on the initiative of Prince Grigory Potemkin, is a landmark of neoclassical architecture. Architectural drawings preserved in the archives demonstrate the monumental nature of the building with its majestic portico and dome. Historical photographs from the late 19th and early 20th centuries show changes in the cathedral's surroundings and its role in the urban space.

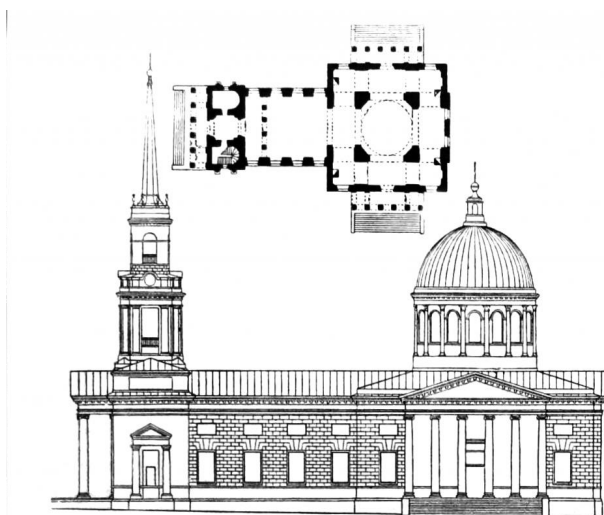


Figure 306. Plan and facade of the Transfiguration Cathedral in Dnipro

Source: *E. Goldman (2018).*

Menshikov's apartment building, built in 1910, is an example of a combination of Art Nouveau and eclecticism. Architectural drawings of the facade show asymmetrical balconies, large windows, and decorative elements typical of the Art Nouveau style. Historical photographs show the original appearance of the building with rich decoration and luxurious interiors, indicating the high status of the residents. The House with Atlanteans, built in the 1890s, is named after the sculptures of Atlanteans supporting the balcony on the facade. The architectural drawings show the detailed design of the facade with the use of Neo-Renaissance elements.

The Bote Brewery, founded in 1878 by German entrepreneur Friedrich Bote, is an example of late 19th-century industrial architecture. The architectural drawings of the main building reflect the functionality of the structure with its brick style and minimalist décor. Founded in 1944 as a key enterprise in the Soviet Union's rocket and space industry, the Pivdennyi Machine-Building Plant (Pivdenmash) has become a symbol of Dnipro's industrial power. Its architectural structure demonstrates the functionality typical of industrial complexes of the mid-twentieth century. The architectural drawings of the main workshops reflect the desire to maximise the efficiency of the production process through open, spacious halls, high ceilings and a well-thought-out ventilation system.

Hloba Park (Fig. 307), founded in the late 18th century by Cossack Lazar Hloba, is one of the oldest parks in the city. The original layout of the park included alleys, a pond, and places for recreation. In the twentieth century, the park was reconstructed, and its architectural ensemble was complemented by sculptures and attractions.

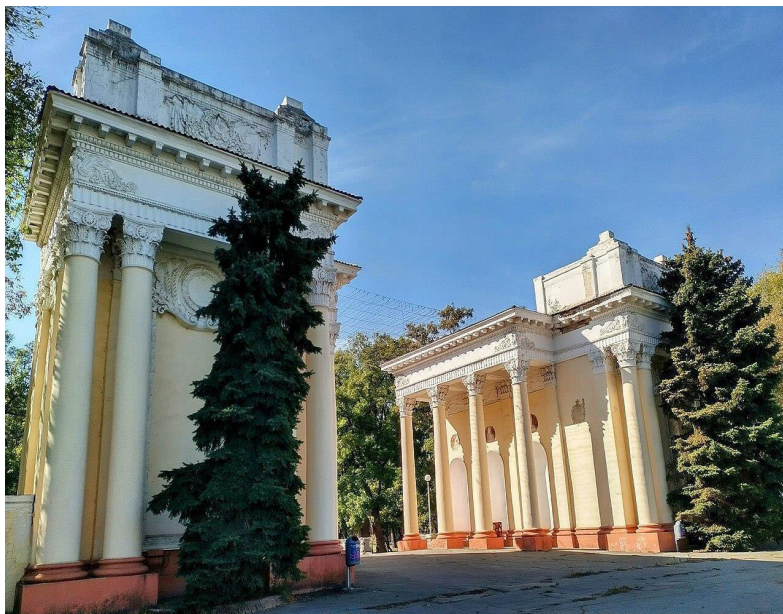


Figure 307. Dnipro, Lazarus Globa Park, main entrance

Source: *Before and after: what Globa Park looked like in the 1950s and what it looks like now (2017).*

Conclusions

The present study provides a systematic analysis of the stages of development of Ukrainian urban cartography and architectural graphics in the context of historical, cultural, religious, and geopolitical transformations. Particular attention is paid to visual representations of cities in graphic sources of different eras – from conventionally symbolic images of the first settlements to comprehensive plans of the modernist and post-Soviet eras. The artistic, technical, and material aspects of architectural graphics, its symbolism, and the role of Christianity, monastic centres, and trade routes in the dissemination of visual knowledge about the spatial organisation of cities are considered. The author analyses the key periods of formation of the national graphic tradition – Kyivan Rus, the Renaissance and Baroque periods, classical and romantic styles, modernism, and avant-garde. The main features of Ukrainian architectural graphics are identified, including decorativeness, focus on religious architecture, and the desire for stylistic synthesis. The cartographic analysis reveals the influence of imperial administrative practices (of the Russian Empire and Austria-Hungary), Soviet planning methods, and the latest independence strategies of space visualisation.

The results obtained allow us to interpret Ukrainian architectural graphics and urban cartography as a multilevel cultural practice that was in constant interaction with European artistic and scientific traditions. Throughout history, these forms of visual representation have served not only as a tool for recording space, but also as a means of conceptualising identity, historical memory, and ideas about the city. There is an organic connection between the technical means of representation, the aesthetics of the period, and functional tasks, ranging from sacred symbolism to engineering precision. Graphic sources appear not only as illustrative materials, but as key elements of urban knowledge that shaped the spatial imagination of society. The visualisation of cities in different historical periods demonstrates the constancy of cultural codes alongside the dynamics of stylistic and technological changes. Thus, architectural graphics and cartography in Ukraine are an important indicator of socio-cultural transformations and provide a basis for further interdisciplinary research in the fields of architectural history, urban studies, and visual studies.

The evolution of urban imagery in such key cities as Kyiv, Kharkiv, Lviv, Odesa, and Dnipro is described in detail. A comparative analysis of their graphic representation shows differences in the pace of urban development, architectural styles, and political and cultural influences. It has been established that architectural graphics in the Ukrainian lands not only recorded spatial transformations but also played a key role in shaping historical memory, identity, and narratives about urban space.

The findings allow us to conceptualise Ukrainian architectural graphics as a part of the European visual and urban planning tradition that combines local cultural codes with external stylistic influences. At the same time, the study revealed some gaps, including insufficient digitisation of sources and limited access to private collections of graphic materials. Further research could focus on the structural analysis of graphic archives, the study of their functional role in architectural design, and the reconstruction of spatial models of historic cities based on graphic sources.

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