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Ukrainian Institute of Physics and Technology Complex in Kharkiv: Rethinking Soviet-Period Architectural Heritage in Postwar Ukraine

Zespół Ukraińskiego Instytutu Fizyki i Technologii w Charkowie. Przemyślenie dziedzictwa postsowieckiej architektury w powojennej Ukrainie

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Introduction

Under mass rocket attacks, Ukrainian cities are losing the face of the urban cultural environment that has gradually and in layers shaped local urban identities for centuries.

The war on monuments is one of the aspects of purposeful actions of the Russian Federation against Ukraine. The aggressor country aims to replace objective historical reality with its phantasmagoric and pseudo-historical, biased interpretations of historical events that took place on the territories of independent Ukraine. Tangible and intangible monuments, on the authenticity and integrity of which historical scholarship relies, are objects to be destroyed as a matter of priority from the occupiers' point of view. According to some experts, the war in Ukraine can last for years. It is under such conditions, in the hell of this war, that values will be redefined and formed—which is important in terms of national culture and state-building.

The search for ways to reduce cultural losses is one of the most widely discussed topics in contemporary Ukrainian professional circles. Public discussions and various events are undoubtedly important promotional steps which positively influence the search for solutions to preserve architectural heritage during active military operations and make effective urban regeneration possible in the future.

However, the core of the preservation of architectural cultural heritage is the formation of a cultural

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policy framework for the selection and development of programs for the preservation of architectural cultural heritage. Mostly, it concerns the poorly explored architecture of Ukraine in the periods when Ukrainian lands were preceded by and strongly influenced by foreign empires and the Soviet Union. The architecture of the nineteenth and twentieth centuries is the basis of modern urban landscapes in Ukraine. Insufficient comprehension of the Ukrainian architecture of the Soviet and imperial periods and the impossibility of formulating common value criteria because of the coexistence of different cultural "optics" in pre-war times requires developing a unified methodology of working with the imperial and Soviet architectural heritage, which would be unambiguously interpreted as architecture created under colonial influence. At the same time each site should also be considered through a historical retrospective: whether the site is related to some historical experience of the Ukrainian people. And also in terms of architectural and cultural value: whether the site is unique in terms of compositional and stylistic, planning and technological solutions in a global context.

There is a necessity to develop an algorithm of measures aimed at quick and qualitative inventory of objects, which will take into account the participation of differently qualified specialists, development of documentation package, which can be used in the postwar period as a basis for work with buildings—their restoration, reconstruction or memorialization.

The purpose of this study is to use the example of Soviet-era heritage buildings of the Ukrainian Institute of Physics and Technology in Kharkiv, which have attributes of historically and culturally valuable buildings, to develop a common algorithm of actions aimed at rapid and high-quality site surveying. This is necessary to enable further work with the site and its inclusion in general cultural contexts, even in the case of its total physical destruction.

The Ukrainian Institute of Physics and Technology (UIPT), which was selected as a case for study, is a unique complex and could take its proper place in Ukraine's collection of cultural and architectural monuments. It has both the attributes of a historical monument and is non-standard as an urban formation that has a specific functional purpose, and is distinguished by its massing and spatial architectural solutions.

It is also extremely relevant to study the complex from an architectural and urban planning point of view for the following reasons.

Firstly, in recent decades there have been a large number of publications devoted to the history of UIPT's development. These works focused on the history of the Institute, the political and social aspects of the its founding and the first decades of its existence. Consideration of the architecture of its buildings, where historical processes took place, is almost outside of academic attention, though the architectural and urban planning activities and the individual architectural works of the Kharkiv interwar period are described in sufficient detail. Secondly, the peculiarities of urban layout of this complex deserve dedicated scholarly attention. And thirdly, there is no complete historical documentation of the construction and operation of the main buildings of the complex.

Methods and materials

Achieving the research objective required the use of many sources of information and the application of several research methods. The material systematization method was used to summarize the results of the study and also a logical-genetic approach was applied, which included a historiographical study of literary, documentary and archival sources. This approach made it possible to identify the UIPT complex's construction stages and those of its two main buildings: the Main and High-Voltage Buildings. Collecting graphical materials on the above-mentioned buildings made it possible to preserve information and amass evidence that will aid in documenting the existence of architectural structures and complexes in the academic and historical space. It will also provide an opportunity to preserve cultural memory and national identity.

The general problems of the preservation of twentieth-century architecture and the methods of solving them are highlighted in [Antonenko 2019, Carughi, Visone 2017]. The state of monument conservation in Ukraine and its ability to fully work with complex Soviet heritage was covered in [Cherkasova 2014, pp. 40–46; Leshchenko 2019, pp. 51–58; Ivashko 2021, pp. 935–960].

The ideas about Ukrainian national and cultural identity in the study were based on the works of some researchers [Kozlovets 2009; Cherkes 2008; Mysak 2018]. The role of civil society, in particular Ukrainian, in the preservation of cultural heritage has been described in detail in several publications [Smith 2015, pp. 179–202; Antonenko 2020, pp. 7–15].

The main sources for collecting and analyzing information about the history and work of the UIPT and the history of the life and scientific work of specific people were discussed in [Raniuk 2007, pp. 62–72; Kirillov 2018, pp. 165–168; Tolok 2005, pp. 229–243; Kachemtseva et al. 2022, pp. 19–28].

The archive materials of NSC KhIPT, with drawings and photographs of the buildings in different years, were a valuable source of information and basis for the study of the architectural aspect.

The basics and steps towards the postwar preservation of the UIPT complex

Basic approaches to the preservation of cultural heritage during the active phase of a war are protective construction measures, temporary repairs and a comprehensive survey of cultural heritage. The preservation of graphical representations and verbal de-

scriptions of buildings and complexes of architectural and cultural value is extremely important for the reproduction of buildings and the preservation of cultural identity. It is for this reason that the preservation of information and the collection of evidence, which will help document the existence of architectural structures and complexes in the academic and historical space, is so crucial right now.

The survey of a structure which is not listed as a monument of local or national importance and which does not have the appropriate documentation package, but which is at risk of being destroyed, should include all those available data which will later help to attribute it.

Such documentation may include: photographic documentation; archival drawings, design files, orders, current documentation; measurements; historical descriptions—books, articles, unpublished texts; interviews with living witnesses of the era who lived near or worked at the site; design studies that included any transformations; and detailed descriptions of each of the structures.

The detailed professional descriptions of objects that are not yet accessible represent some of the most important documents, as they capture the current state of the scope of information on the object. Such documents have to include: 1) reflection of influence of historical and political conditions on spatial transformations of the building; 2) peculiarities of the building location in the city; impact on the city development; 2) detailed description of design characteristics—technical specifications, volumetric-planning, spatial and structural solutions; 3) special attention should be paid to stylistic features of the building and its analysis—whether architectural solutions are typical, whether the authors' style is traced, what features the architecture has.

In the case of the buildings of the UIPT complex, which are not included in the State Register of Architectural Monuments, there is a good reason to form a package of documents required for a qualitative postwar re-evaluation and further work. Due to the fact that in 2019, on the basis of the institute, a departmental scientific museum NSC KhIPT under the name "UIPT. Museum and Cultural Complex" was created, it was possible up to February 2022 to start operations: 1) there was an active research work with archives, 2) there was established cooperation with Ukrainian architecture colleges, carried out measurement practice with Bachelor program students; 3) together with social activists, a number of projects were implemented—cultural projects with the involvement of a community of contemporary artists, as well as cultural and educational projects; 4) there were plans to hold an international scientific conference in cooperation with DOCOMOMO Ukraine, devoted to a review of Modernist housing estates and complexes, specifically research cities; 5) a cultural and educational workshop was planned and intended to engage local young people on redeveloping the old site and an exhibition.

The near-front city of Kharkiv has been shelled by Russia almost every day since the beginning of the war and the city's archives are inaccessible. It is therefore necessary to record the current knowledge about the site, which is based on existing archival documents, photographic records, and verbal and written evidence. Furthermore, on the basis of this information, a process of reconsideration and conceptual design regarding the future of the area can be initiated.

The UIPT complex's buildings as historical witnesses of the establishment of the Ukrainian physics school. Periodization

The UIPT complex was established on October 30, 1928, at the initiative of A. Ioffe,[1] principal of the Leningrad Institute of Physics and Technology. The physicist I. Obreimov was assigned as the director of UIPT. As the head, he immediately assembled a group of talented young ambitious physicists, outlined the main directions of scientific research for the new institution, constructed a complex of buildings for the Institute, organized the purchase of new equipment and first-class instruments (most of them imported) [Ranyuk 2007, pp. 62–72].

The UIPT complex took the place of one of the most prominent centers of innovative activity of the USSR and became the first science city in the territory of Soviet Ukraine. In the 1930s, the institute became a unique site not only in terms of achievements in physics, but also in an architectural and urbanistic sense.

The development on the Technological Institute's experimental fields was started in June 1929 in the northern east of Kharkiv. The design of the site provided for its almost complete autonomy—it was a "city within a city." Next to the production and research buildings, it was planned to accommodate housing for scientists, children's educational facilities, and consumer services enterprises. Thus, on the territory of the complex there were a kindergarten, a school, a canteen, a sports ground, a store with groceries and household goods, garages and glassblowing workshops. The entire area was landscaped. The placement of housing and service enterprises next to the experimental and production buildings was intended to reduce the time scientists spent doing chores and commuting.

The spatial development of the territory and buildings of Ukrainian University of Physics and Technology can be divided into five main historical periods: 1) the establishment period (1929–1935); 2) the repression period (1936–1941); 3) the postwar rebirth period (1945–1954); 4) the late Soviet Union (1955–1990); 5) the post-Soviet period (1990–present).

The period of establishment (1929–1935) was characterized by rapid development. This period saw the founding of the scientific school of theoretical physics of L. Landau, in Kharkiv whose traditions are still continued in the modern NSC KhIPT. Joint efforts by A. Ioffe and I. Obreimov had led to the provisions of all

Fig. 1. UIPT complex scheme as in the 1930s; by K. Didenko based on a 1941 German aerial photo
Ryc. 1. Schemat zespołu UIFT, stan z lat 30. XX w.; opr. K. Didenko na podstawie niemieckiego zdjęcia lotniczego z 1941 r.

conditions that allowed the UIPT to become a leading scientific center of physics-related research in Ukraine and in the USSR at that time.

In the early years of the Institute's establishment, the researchers were able to produce liquid nitrogen, hydrogen and helium. At the time, this was a considerable achievement. There were three other similar laboratories in the world (in Leiden, Berlin and Toronto), which had equipment for research in the field of gas liquefaction. The UIPT cryogenic laboratory was the first in the Soviet Union.

The research complex created in Kharkiv was truly unique in the 1930s. The openness of Soviet scientific thought in the first half of the 1930s encouraged the blending and mutual enrichment of knowledge between the Soviet and Western schools.

It was during this period that the basic compositional and functional structure of the complex was established. From 1929 to 1931, the Main Building, the Mathematics Building, the workshops, two residential buildings with a canteen and a kindergarten were built. Between 1931 and 1935, the High Voltage Building with a dormitory and workshops was erected in the east of the site, a school was also built, and the area was landscaped—alleys were laid out, a sports ground with tennis courts was created, and a greenhouse was erected.

The period of repression (1936–1941) was the most dramatic in the history of the scientific center—it was during this time that dozens of scientists of the UIPT were repressed, sent to camps, tortured and executed during the occupation. International cooperation and collaboration was halted. The UIPT became a closed, secret enterprise. The spatial impact was that the previously open and transparent space was transformed into a closed and segregated center—a fence was erected and a permit system was introduced. The development of the area slowed down. The only building erected at the UIPT site at this time was a comprehensive school in the northeastern part (Fig. 1).

The postwar revival period (1945–1954) was characterized by a restart of the Institute's operation, with encyclopedic scientist K. Sinelnikov becoming its director. In 1947, the UIPT changed its name and became the Institute of Physics and Technology of the Academy of Sciences of the Ukrainian Soviet Socialist Republic. The peculiarity of the period was the rapid development of previously little-studied areas in physics and the formation of these local areas.

Rethinking the key directions of the institute's operations required updating both the material and technical infrastructure and the complex's buildings as well. In the mid-1950s, work began on the design and construction of an additional site in the village of Pyatikhatki near Kharkiv. The considerable extension of the Institute's area provided new opportunities for research and development in nuclear physics.

At the same time, the Main and High-Voltage buildings on the main site were reconstructed, and new buildings were added. In 1950, the Experimental Production Facility (No. 4) was constructed, along with Building No. 5 (LUMZI – Linear Accelerator of Multiparticle Ions). In 1954, a new, separate building for a Van Graaf electrostatic generator was constructed, which was moved from the High-Voltage Building. In addition, after the war, residential buildings were

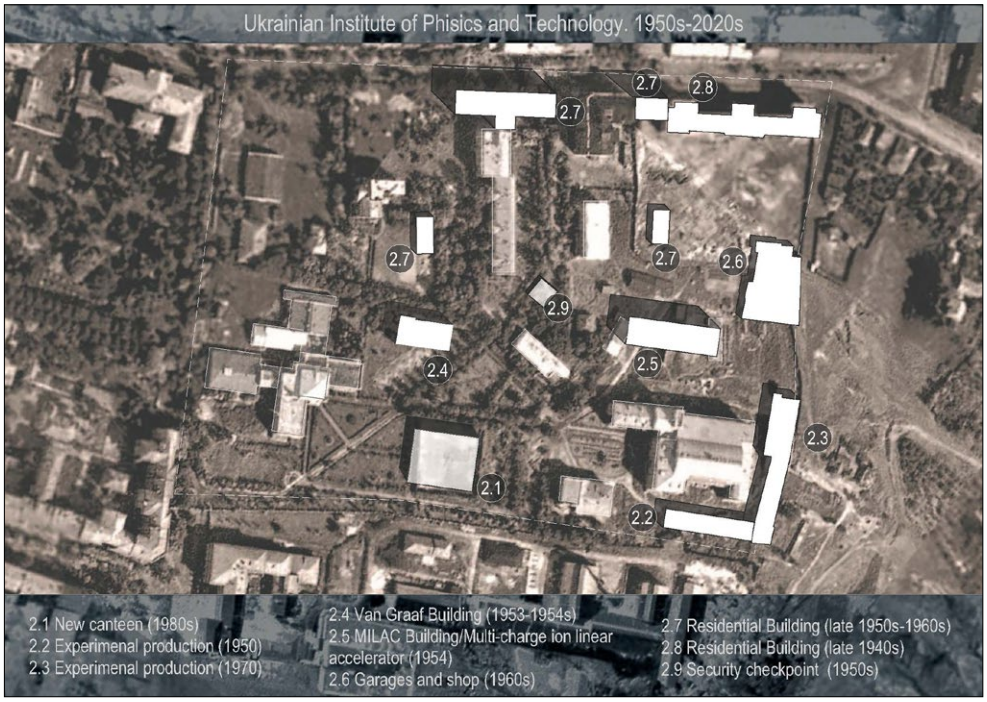

Fig. 2. UIPT complex scheme between the 1950s and the 2020s; by K. Didenko based on a 1941 German aerial photo
Ryc. 2. Schemat zespołu UIFT między latami 50. XX w. i latami 20. XXI w.; opr. K. Didenko na podstawie niemieckiego zdjęcia lotniczego z 1941 r.

completed, and two new so-called "Finnish houses"—single-story cottage-type houses for the Institute's scientific elite—were erected [Archives of the NSC KhIPT, cases 19, 20, 60, 69, 123]. A three-story apartment building was built on the ruins of the school, which had been bombed during the war (at 20 Chaykovskaya Street).

The late Soviet period (1955–1990) was characterized by the strengthening of scientific fields and their separation into separate research companies. The architectural, spatial and functional content of the complex slightly changed during these years. In 1961, the Van Graaf building was vertically extended by one story. In the eastern part, an experimental production building was erected in 1970 (building No. 3), a new checkpoint project was made in 1972 and an underground shelter and a new canteen building were erected on the site of the tennis courts in 1981 [Archives of the NSC KhIPT, cases 54, 51] (Fig. 2).

The post-Soviet period (1990–2022) was characterized by a gradual decline of the enterprise as a whole, caused by national economic and socio-political crises. After the collapse of the Soviet Union, a large number of Kharkiv physicists migrated abroad. Most of the experimental and production processes were transferred to a new complex in Pyatikhatki, and the enterprise changed its name to the National Scientific Centre "KhPTI" in 1993.

The old site was no longer fully operational, with only a small number of laboratories remaining in use. However, there was no need for such a large area and so many different buildings to carry out these operations. Management was faced with the pressing question of what should be on this site and in the old buildings in the future.

In December 2019, the "UIPT. Museum and Cultural Complex" was established and the decision to prepare a design of the revitalization of Industrial Site No. 1 was taken. The design proposal envisaged multifaceted and multilevel work—the study, restoration, and museification of architectural, scientific and historical heritage sites, as well as providing buildings that are no longer in use with new uses and meanings.

February 2022 marked the beginning of a new phase in the life of the complex. Like hundreds of thousands of buildings and structures in Kharkiv, it was in direct danger of being completely destroyed by massive rocket attacks from the front line. Initiatives that had been started before the war were suspended.

Architectural features of the UIPT complex: the Main and High-Voltage buildings

The Main Building of the UIPT was built during the first phase of construction in 1929–1930 to a design by architects P. Sidorov and V. Bogomolov, with the latter being a co-author of the Kommunar residential building (1932) in Kharkiv along with architect A.V. Linetsky.

The laconic, constructivist Main Building consisted of two-story blocks and a three-story central block. There were one-story outbuildings adjoining the building. There were basement rooms under the whole building. The building had huge windows, which provided good lighting for corridors, rooms and laboratories. Such solutions were relevant at a time

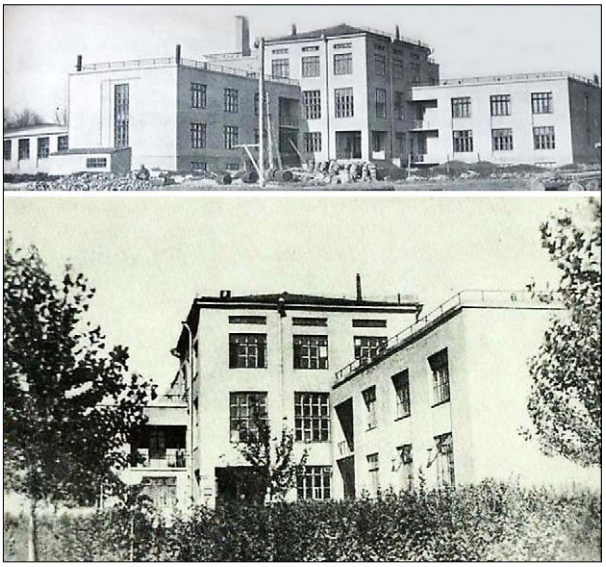

Fig. 3. UIPT, Main Building (1929–1930), photo from the 1930s, arch. P. Sidorov, V. Bogomolov; photo from the NSC KhIPT archives
Ryc. 3. UIFT, Budynek Główny (1929–1930), fotografia z lat 30. XX w., arch. P. Sidorow, W. Bogomołow; źródło: archiwum NCN ChIFT

when the electrification of the Soviet Union was just beginning (Fig. 3).

The core of the Main Building is a three-story mass formed around a staircase. It consists of a double staircase section, which provides circulation between the basement, first floor and second floor, and a single staircase section, which connects the first and second floors. Three wings of one- and two-story masses face west and north. The main entrance of the building faces southeast, the two wings flanking the main entrance face northeast and southeast.

According to the 1929 design, the third floor was the dominant structure, rising above the two-story volume of the building's several oblong wings. This dominant area housed the library and its collection, a reading room, and the laboratories and offices of scientists. Landau's office was located there. The roof of the northeastern two-story wing was accessed through the glass door of the three-story dominant mass.

On the first floor, the central part by the staircase accommodated the conference hall and the accelerator installation, while the two large wings and one small wing housed the laboratory and research facilities, laboratories and offices. The sanitary unit block, located in the north-east wing, cuts through the first and first floors.

The first floor had an elaborate and complex multi-winged structure. The elongated volumes to the right and left of the main entrance hall, with a corridor system, were flanked by offices and laboratories.

The west wing of the first floor housed the laboratories and the accelerator plant; the northeast wing housed the workshops, stockrooms, and the monocrystalline laboratory; the north wing contained the compressor and cryogenic laboratories, the hydrogen and helium liquefaction laboratories, and the gas storage room. The cryogenic laboratory was designed so that all four of its rooms were covered by a lightweight roof, which, in the event of an explosion, was to go up on rails and "sit" back down again [Pavlenko et al. 1998]. After a remodeling project in the 1950s, the roof structure of the northeastern part of the building was changed and the wing of the building that accommodated the laboratories was extended.

The basement also had a central space surrounded by a staircase and an elaborate system of elongated corridor spaces. The central basement includes the lobby and adjacent storage and ancillary rooms. The side wings of the corridor structure contain rooms for utilities, boiler room and workshops, the south wing has a fire exit. The central basement includes the lobby and adjacent storage and ancillary rooms (Fig. 4, 5).

The structural system used is a wall system with longitudinal load-bearing walls made of bricks and, according to the trends of the time, externally imitated concrete.

The laboratory rooms on all floors had to withstand heavy loads, so a question was raised about the armatures. The columns in the central part of the entrance hall were made of metal and have a very unusual background. It was decided to use iron from the battleship Empress Maria, which had sunk before the revolution in Sevastopol Bay, to build the rooms for which heavy loads were planned. The ship was cut up and the metal transported to Kharkiv. The beams from this battleship made up the six metal columns—the main internal support elements of the three-story entrance block of the building, running through it from the basement to the roof [Pavlenko et al. 1998]. The ceilings over the basement in the two and three-story parts of the building are reinforced concrete on metal beams, while the rest of the building is wooden.

The roof was of mixed construction: the central three-story part had a wooden roof—hanging rafters were used, while the two-story parts had a flat roof covered with asphalt and concrete slabs. In other parts of the building wooden rafters were used. The partition walls were also built of several materials: reinforced concrete, timber and reed. The walls of the library and conference room were built with ordinary bulrushes for soundproofing and fire safety purposes. While the walls of the building were being built, a wall of bulrush was put up in the courtyard to test the material. The wall proved to be non-combustible [Archives of the NSC KhIPT, case 15, 19].

The Main Building was damaged during the Second World War. Due to a bomb blast in the central part in the entrance hall, the metal columns of the staircase were destroyed. The reinforced concrete ceilings above the basement in the central part of the building, in the corridors and on the stairwells were partially damaged. The first floor slabs were also hit. The brick exterior walls of the entrance hall and vestibule walls were also destroyed. The roof was also partially damaged in different parts of the building.

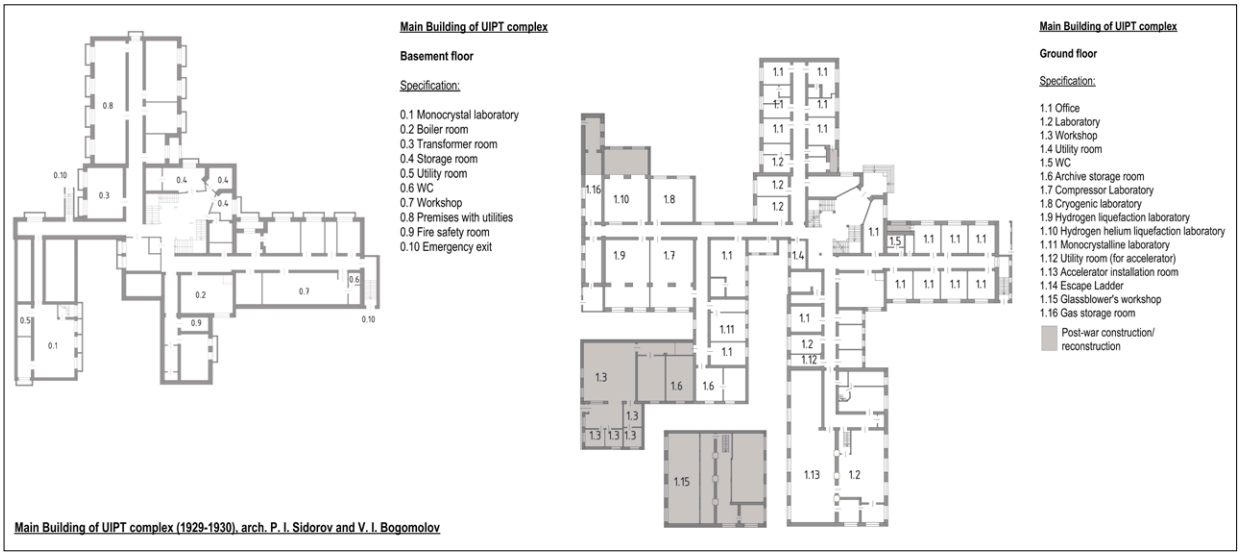

Fig. 4. Main Building, basement and first floor plans; by K. Didenko and O. Bondarchuk based on archival NSC KhIPT documents
Ryc. 4. Budynek Główny, rzuty piwnic i parteru; opr. K. Didenko i O. Bondarczuk na podstawie dokumentów archiwalnych NCN ChIFT

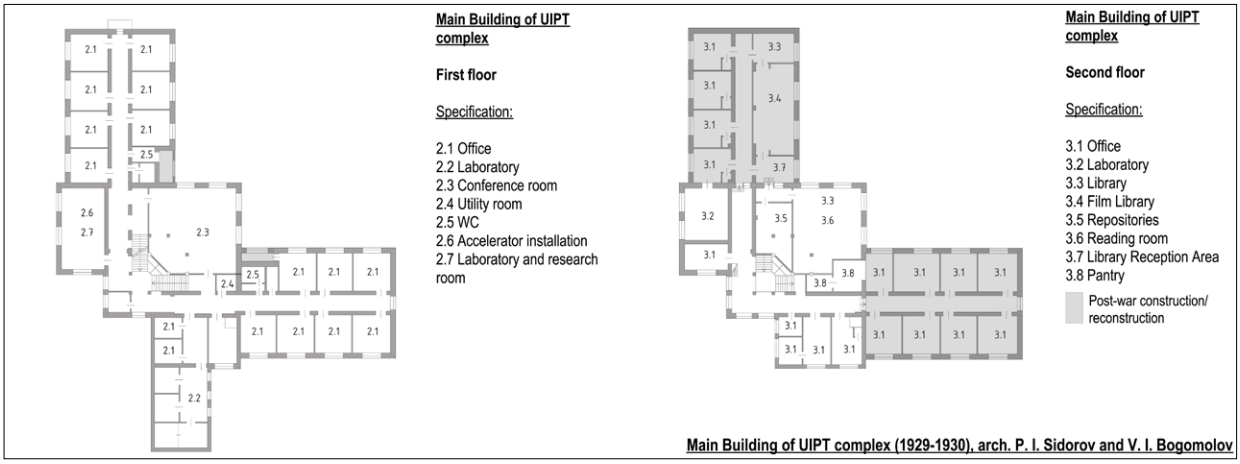

Fig. 5. Main Building, second and third floor plans, by K. Didenko and O. Bondarchuk based on archival NSC KhIPT documents
Ryc. 5. Budynek Główny, rzuty pierwszego i drugiego pietra, opr. K. Didenko i O. Bondarczuk na podstawie dokumentów archiwalnych NCN ChIFT

The building now has a slightly different appearance than it had in 1930. The reconstruction works were initiated in 1944. In the early 1950s, a remodeling project was developed, according to which two wings on the third floor were extended in the postwar years, as mentioned above. As a result of this extension to the northeast-oriented wing, the library hall was enlarged and a film library and study rooms were added. The extended southeast-facing wing accommodated offices and laboratories. On the first and second floors to the right and left of the central mass from the facade, postwar loggias (balconies) were filled in with bricks (Fig. 4, 5, 6). The purpose of that was to increase the space of the working and storage rooms. The building was subjected to some structural and spatial-compositional changes.

In the UIPT, a physics group consisting of A. Walter, G. Latyshev, A. Leypunsky and K. Sinelnikov were the first in the Soviet Union to split the atomic nucleus. The experiment was carried out in the Main building of the Institute in the autumn of 1932. Two reports were sent about the brilliant achievement to the Moscow administration. It helped to obtain new funds which were spent on the construction of the UIPT High-Voltage building. This Modernist building (under the direction arch. V. Bogomolov) was placed opposite the Main Building of the Institute in the eastern part of the complex. The construction of this building was completed in 1935 [Archives of the NSC KhIPT, case 20] (Fig. 7).

The High-Voltage Building was designed specifically for research into high voltages, which was necessary for continuing research into nuclear physics. This was the building where electrostatic generators of various sizes were produced, including a 1 million volt Van de Graaff generator, which was the largest in the world at the time. For that purpose, a large hall was designed in the building that was 25 m high, 30 m long, 25 m wide

Fig. 6. Main Building, photo from the 2020s; photo from the the NSC KhIPT archives
Ryc. 6. Budynek Główny, fotografia z lat 20. XXI w.; źródło: archiwum NCN ChIFT

Fig. 7. High-Voltage Building, left: view of the building as seen in the 2000s, right: view of the building as seen in the 1930s; from the NSC KhIPT archives, by Volodymyr Diatkov
Ryc. 7. Budynek Wysokich Napięć, po lewej: widok budynku w pierwszym dziesięcioleciu 2000 r., po prawej: widok budynku w latach 30. XX w.; źródło: archiwum NCN ChIFT, fot. W. Diatkow

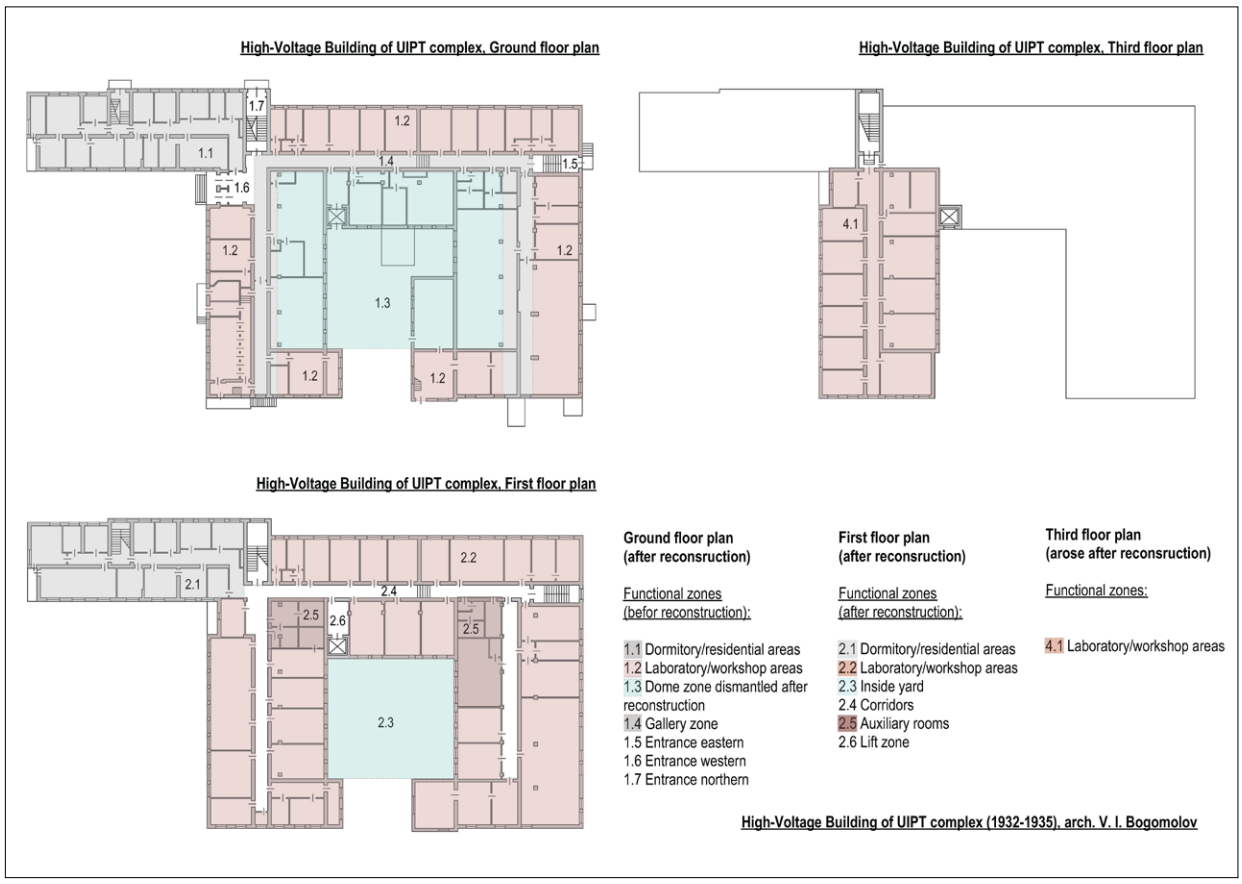

Fig. 8. High-Voltage Building, plans; by K. Didenko and O. Bondarchuk, from the archives of the NSC KhIPT
Ryc. 8. Budynek Wysokich Napięć, rysunki techniczne, opr. K. Didenko i O. Bondarczuk; źródło: archiwum NCN ChIPT

and covered by a vault. The enormous ceiling could not be made of metal to prevent electrical discharges from reaching the roof. A decision was made to design the roof as a semi-cylindrical vault with Fepple's design. Such structures were made of metal in Western countries, but in Kharkiv they were made of wood.

The mounting trusses of the High-Voltage Building were dismantled in April 1935. The generator was constructed between 1935 and 1936. It was a spherical shaped conductor with a diameter of 10.2 m and stood on three columns, each 12 m high. This electrostatic generator was the largest in the world at that time, but subsequently an even bigger one was built at the UIPT, with a voltage of 5 million volts. The inventor of the electrostatic generator, Robert Van de Graaff, visited the Institute in the summer of 1935.

According to the requirements of the time, the High-Voltage Building was designed in such a way that

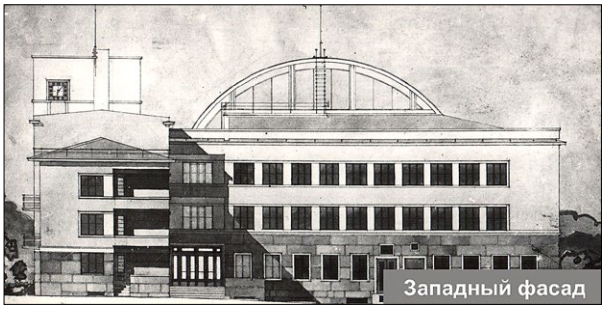

Fig. 9. High-Voltage Building, western facade, design drawing; from the archives of the NSC KhIPT
Ryc. 9. Budynek Wysokich Napięć, elewacja zachodnia, rysunek projektowy, źródło: archiwum NCN ChIPT

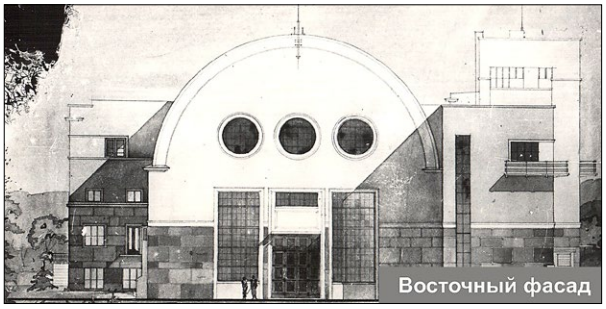

Fig. 10. High-Voltage Building, eastern facade, design drawing, from the archives of the NSC KhIPT
Ryc. 10. Budynek Wysokich Napięć, elewacja wschodnia, rysunek projektowy; źródło: archiwum NCN ChIPT

there was also accommodation for physicists next to the laboratory rooms, because "the physicist was supposed to live in the laboratory" [Ranyuk 2007, pp. 62–72].

Following the design, the great hall with its vault was the main part of the structure's plan. The hall was flanked by narrow and extended three- to four-story laboratory blocks (with basements and semi-basements) on the north and west sides. Laboratory and office spaces in these blocks were joined by internal galleries that extended around the great hall and opened up towards it through glassed slots. The parallelepiped of a three-story dormitory cut into the northwest corner of the High-Voltage Building from the west. The dormitory consisted of flats with balconies, equipped with all facilities (kitchen, bathroom and water closet). The entrance and staircase were on the axis of its northern façade (Fig. 8).

At the intersection of the dormitory and the northern laboratory block there was a staircase which, according to the design, was dominated by a clock tower. There was another staircase connecting the floors of the building at the eastern end of the gallery of the northern laboratory building.

The great hall was as open as possible to the east and south. This was helped by the relief dropping to the east. The eastern facade was characterized by a more significant scale. The lower part of the facade has masonry work, or imitation of it, of massive stone blocks, whereas the upper part has a flat wall surface. A large entrance door, almost two stories high, was planned on the axis of the eastern part of the facade. It was a wooden door leading directly into the large hall. Large vertical glazed rectangular openings were placed on both sides of the entrance. Above the entrance was a smaller horizontal glazed rectangular aperture. Above this are three large round openings in the smooth wall. The central part of the facade was crowned by a massive, semi-circular vaulted outline (Fig. 9, 10).

The walls of the High-Voltage Building and the dormitory were made of red bricks and plastered on the outside. This was done to imitate concrete, the main material of Constructivism. The foundations were of concrete. The ceilings between the floors were of reinforced concrete slabs. The staircase had reinforced concrete flights of stairs. The laboratory blocks and the dormitory had a roof with wooden rafters and metal roofing.

In the mid-1950s the Moscow Design Bureau developed a design of the remodeling of the High-Voltage Building. According to this design—the vault above the large hall was dismantled. In its place, an open courtyard was created, but with a smaller area. The northern, eastern and western laboratory buildings were extended. This was made possible by extensions to the side of the former great hall. Their gallery structure was replaced by a corridor structure. Above the western laboratory block, a third floor was constructed. The clock tower was dismantled [Archives of the NSC KhIPT, case 20].

The building was transformed in the 1950s, but without losing its Modernist appearance. The facades were designed to match the existing parts of the High-Voltage Building. They were covered with a grey terrisite plaster to match the color of the walls of the original parts of the building. The walls on the inside were also plastered and painted.

Conclusion

1. It was determined that in the context of the Russian-Ukrainian war, when available funds for the preservation of architectural cultural heritage are significantly limited, the main approaches during wartime are the erection of protective engineering structures and the accelerated surveying of all sites—which have monument status and which are valuable historical buildings. The survey should be as extensive as possible, including all available means of capturing information about the monument—such as text, video, photo, and digital data. The saved information will then become the basis for urban renewal in cities and individual urban areas, including the direction of strategic planning, and help restore valuable buildings as accurately as possible.
2. The case under study—the UIPT complex—was documented as an example of the minimum textual part of the documentation to be generated as part of a rapid survey in a war situation. It includ-

ed a description of the development of the site, in the context of key historical events, a description of the site's location in the city and its urban planning significance, and a detailed description of the two buildings from available sources that could be described as fully as possible. Examples of the most valuable materials have been published in the paper.

3. Two buildings—the Main Building and the High-Voltage Building—were given a great deal of attention. Due to preliminary work with enterprises and city archives, it was possible to describe each of the buildings in detail. The descriptions included the stages of construction and remodeling, a review of the planning structure and spatial composition, an analysis of stylistic features, information about structural elements and materials, construction technology, and data about the architects. The information provided, even should the original archival data be destroyed, could already help determine the architectural value in the postwar reconstruction of the area.

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[1] It was on his initiative that the Siberian Institute of Physics and Technology in Tomsk was founded in October of the same year.

Abstract

At present, in the context of Russia's military invasion of Ukraine and the deliberate destruction of architectural monuments, the most important challenge is to preserve major Ukrainian urban and architectural complexes. There is an urgent need for the introduction of the monuments of Ukrainian culture and architecture into academic literature. Key Ukrainian architectural sites should be highlighted and further analyzed in terms of their completeness and stylistic attribution. This paper focuses on the history of the design and construction of the Ukrainian Institute of Physics and Technology (UIPT), an important complex that certainly has high historical, cultural and architectural value. The history of the origin and construction of the UIPT is documented and the main historical stages of the creation of the complex are covered. The main functional components of the complex are identified, and its core structures—the Main and High-Voltage buildings—are highlighted.

Streszczenie

Obecnie, w kontekście inwazji Rosji na Ukrainę i celowego niszczenia pomników architektury, najważniejszym wyzwaniem jest zachowanie głównych zespołów urbanistycznych i architektonicznych Ukrainy. Istnieje pilna potrzeba wprowadzenia zabytków kultury ukraińskiej do literatury naukowej. Kluczowe ukraińskie obiekty powinny być uwidocznione i dalej analizowane pod względem ich kompletności i przyporządkowania stylistycznego. Niniejszy artykuł skupia się na historii projektu i budowy Ukraińskiego Instytutu Fizyki i Technologii (UIFT), ważnego zespołu o niezaprzeczalnie wysokiej wartości historycznej, kulturowej i architektonicznej. Udokumentowano historię początków i budowy UIFT oraz omówiono kluczowe etapy historyczne powstawania zespołu. Zidentyfikowano główne funkcjonalne komponenty zespołu oraz naświetlono jego najważniejsze obiekty – Budynek Główny i Budynek Wysokich Napięć.