ARCHITECTURE

Historical Environment of National Technical University "KhPI" as a System of Information Messages

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Annotation. The article deals with the architectural information messages of the historical environment of KhPI university. In the research it is found out that managing activity of the brain perceiving the environment makes the basis of its informational structuring. It becomes possible to project space-architectural agreement. Acquired principles (morphological and aesthetic) help to find out at full length the information peculiarities of the historical space-architectural environment of the KhPI ensemble. It is important to preserve the readable system of the historical streets, that is valuable not only for the process of communication but also to get an aesthetic pleasure of the surrounding environment.

Keywords: information, architectural message, structure, historical environment, principles.

Introduction. The architectural environment of a city forms, keeps and conveys a great deal of messages, which preserve different level of information content and consist of different texts and codes making it possible for a person to communicate and adapt within the space-architectural environment.

The most valuable in a modern urban environment is the historical part of a city that is its spiritual and cultural essence. This part of a city, that has preserved functional-typological, stylistic and space-visual structure since the moment of its creation, keeps maximum of informative content. It becomes possible due to high artistic qualities of the environment, its integrity and order. The significance of the research is due to the complete inclusion of the informative component of the historical environment into the modern informative component of the city.

Brief review of publications within the topic. The article deals with the informative principles to make up architectural message in the historical environment: morphologically structural and artistic-imaginative. The research is based on the assumptions given in the works about general theory of information (M. Mazur, K. Shennon), theory of quality information (A. Moles), methods of information analysis of city environment morphology (S. G. Chechelnitsky, O. A. Fomenko), problem of artistic information (Y. Lotman, T. Savarenskoy, A. Ikonnikova, S. A. Shubovich).

The objective of the article is to find out information principles of regeneration and adaptation of the city historical environment under the present circumstances.

Materials and methods. A. Moles in his book "Theory of Information and Aesthetic Upbringing" writes that a human being within the message looks not for logical (semantic) information, but for aesthetic one, its original essence which provokes recurrent interest to it. All together he stresses that: "There are two points of view about the message which correspond to two types of information:

a) semantic (morphological) information following the universal logics, having the structure and acquiring rigid presentation;

b) aesthetic (artistic imaginative) information that corresponds not to the universal supply of symbols but only to the supply of knowledge which is common for message sender and receiver.

One can apply it as some personal information" [3].

Basing on the analysis of the theory of information and cognitive sciences one can come to a conclusion that terminology and categories of the information theory and of other sciences somehow are overlaid upon the result of information perceiving in architecture. Within morphological and artistic imaginative information of space-architectural environment there are such principles: system-hierarchy, formal harmony, variety, the principle of information continuance, the idealization principle and the principle of multilevel structure.

Results and their discussion. The environment of the KhPI ensemble being historically valuable territory for the city has preserved within its structure as morphologically structural, so artistic imaginative architecturally informative messages. The structure of the ensemble is composed with the help of the following components: in space-visual format it is interchanging squares; in stylistic format it is "brick style" that prevails (historicism); in historically functional and typological format it is uniformity – self-estimating city centre.

The fact that this historical environment is an ensemble that has preserved most of its buildings and territory planning lets us say that the environment has the highest degree of "structure organization" (informative content).

The KhPI university is the most complete ensemble in the uphill part of the city and its informative traits are easily readable. In the university complex one can differentiate two different types of buildings. The first type is presented by the medieval redbrick institution entities of mainly three stories (Engineering block, Main Lecture-Room block, Chemistry block, Technical block, Rector block) and also one-two and four-storied buildings used for different purposes. The second one type is presented by large-sized reinforced concrete constructions with high percentage of fenestration. These are seven and fourteen-storied buildings and there are two of them: Lecture-Room block U1 and Lecture-Room block U2, new building of the library.

In general the structure of the KhPI ensemble includes about twenty buildings most of which represent "brick style" historicism of the second half of XIX century, that is marked by brick unplastered frontispiece, triangle fronts and prolong form of the buildings. Here you may

also find reinforced concrete constructions of U1 and U2 of the second half of XX century which were built during mass production according to typical projects and the new building of the library of the first half of XXI century. The buildings seriously exceed the level of the historical construction and have rigid geometric feature of their frontispiece, flat roofs and simplistic silhouette.

In the structure of the university ensemble the system backbone is designed through interchanging space of squares. The inner part of the university yard space is presented by two main parkways. The parkway leading from the north to the south is a composition axis comprising symmetric space of squares and the building of the Main Lecture-Room block. The Chemistry and Physics blocks are mirrored about the parkway axis. Such a symmetric location of the buildings lets us consider the ensemble to be an example of classical square construction. Two main squares with the monuments are in front of and behind the Main Lecture-Room block. The squares are in a thick shadow of park zone trees.

The structural elements of the KhPI buildings complex architectural environment are the passages to the yards. The entrance portals into the yards of the Lecture-Room blocks are an inherent communicative element of the architectural environment. All the opens in the blocks, except for one, are located in the historical brick buildings and are designed as half-round arches leading into the yards. Thus, arch pass ways in the Main Lecture-Room building are framed with rustication at full length, and half-rounded part is decorated with a belt of arch stones.

To the structural elements of the environment one may address the buildings with active architectural plastic. These are the "brick style" buildings. The most vivid of them are the buildings of the Main Lecture-Room and Chemistry blocks, former gas plant, etc.

Thus, the features of the structural elements of the KhPI ensemble environment are: the geometry of the building where there is dominance of horizontal and vertical lines in the form of the buildings, shadowy space of the squares with vivid symmetry, prevailing of "brick style".

Presence and interchange of the informative environmental elements let us find out the chief information principles given in the theory of information and reflecting all the laws of the environment. Such principles are: system-hierarchy, formal harmony, variety (stylistic, typological), the principle of information continuance, the idealization principle and the principle of multilevel structure.

Talking about the principle of system-hierarchy one should mention that the environment of the KhPI ensemble is quite ordered. That is why city building logics of the street and its surrounding is easily viewed. This order lets show the ensemble in the general structure of the modern city.

The principle of system-hierarchy is given through historically functional belonging as one of city building centers. Within this environment one can follow the following types of ordering: silhouette, stylistic and typological, where a great number of lecture-room blocks and laboratories in "brick style" similar within their typology compose all together an ensemble (order).

The principle of harmony is presented in the KhPI ensemble by a system of open squares and chamber spaces of inner yards. Big alleys lead to the open spaces of the squares and the entrances to the inner yards are represented figuratively by means of separate arch openings. The created harmony, chamber character of the ensemble that is in a thick greenery with its huge blocks and small-storied buildings has preserved city molding principles of the second half of XIX century.

The principle of the information variety (stylistic and typological) of the KhPI environment ensemble is realized through contrast stylistic combination of "brick style" and en bloc multistoried reinforced concrete blocks of the second half of XX century. In the functional-typological sphere the KhPI ensemble is given within low rise blocks of historicism and multistoried entities of the second half of XX century.

The principle of information continuance is based on the ability of a person to reproduce the image in the memory for a long time. Captured as a system, space architectural environment in accordance with the principle of information continuance brings minimal information that is not valuable [4]. The principle of information continuance consists of two components: metric-rhythmical characteristic and game-playing effect of the environment.

Game-playing effect of the KhPI ensemble lets us feel the environment of the city of the middle XIX century. It is realized through a variety of buildings forms, their plastic effect, compact yard spaces inside the blocks. Moreover here one can find an effect of unpredictability through inclusion of large-size firm buildings within their sense of plasticity into brick low rise environment of the second half of XX century. These large-size firm buildings dominate due to their height and they are present in many visual shots. The game-playing effect of the environment we can follow in the key-spot of the ensemble where there is an accent upon the arch opening in the building of the Department of Heating Engineering. It is different because of its rectangular form and absence of details. This opening serves to fix interesting visual shots. Entering the arch you get into colorful environment of "brick style" and leaving the arch you see multistoried en block tower of the Lecture-Room block U1 in its space. Within this distance of entering-leaving one see the brightest combination of two epochs. It is molded through the space of the arch as a swift change of shots, making you get emotional charge, game-playing effect of the environment.

The principle of information continuance also includes metric-rhythmical characteristic of the environment that serves to find out the artistic qualities of the environment and to make its elements structure more complex. Viewing the space-architectural travel through the territory of the ensemble more interesting in its composition is the trip that starts in Frunze Street near the Electro-technical block. After the gates of the Institute there is an open space of the square locked by the element that is out of the system, it is an Electro-technical block, half round building with gray frontispieces and four-column terrace. This building is the first rhythmic accent of the ensemble. Here one can see the space of the street that leads into the depth of the ensemble. Here for the first time one can see the brick buildings of the university. This very part of the street in the ensemble structure has preserved its silhouette and large-scale characteristics of the university belonging to the period of its first blocks erection. The

street within this distance is not broad; the buildings are low with a great number of trees along the sidewalk. One can feel here an atmosphere of a city of XIX century. The left side of the street is formed by the soft flow of the buildings, one-two-three-storied houses rising gradually upwards. The right side is formed by more rhythmic structure of buildings, three-storied buildings alter the two-storied. Then the street is over opening upon the main symmetric square of the ensemble behind which there is the font of the main Lecture-Room block. The Main block is marked by its rich sculptural pattern and gable roof that makes one more metric-rhythmical accent. The ensemble structure bends to the left from the square along the main parkway, where in the perspective at the end of the parkway there is one more even bigger accent that rises. It is an element out of the system; it is a dominating form of four-storied Lecture-Room block.

The idealization principle includes the categories of information maximum and contrast or information bearer likeness. Information maximum means some ideal image that can be different for different people. It implies an ability to grasp information maximum with minimal effort.

Information maximum of the environment in the ensemble structure is built through the following components. Space architectural structure of the ensemble and dominating "brick style" easily let find out the period of its creation. Information maximum is received with the help of plastic richness of the buildings preserving single stylistic mainstream. At the same time the ancient city building structure saved till today speaks for the high artistic qualities of the environment.

The idealization principle also includes the category of contrast or information bearer likeness. As for the KhPI ensemble environment one can state that the environment has a great percentage of form likeness (the brick part of the ensemble) and also the architectural forms which are vivid through the contrast (the Electro-technical block, the block U and U1). The two blocks U1 and U2 built in the second half of XX century are fourteen-storied and seven-storied reinforced concrete blocks with distinct geometry [2]. These buildings make quite pleasant contrast to the historical environment of the ensemble due to huge ribbon-like pink introductions at the fronts. The higher block U1 finishes the perspective of the central parkway being a dominant object there.

The principle of multilevel structure is molded through the categories of inner autonomy, i.e. making in the consciousness an image that characterizes this very environment [1]. This environment stimulates in the consciousness the images and associations sending you to an old tsar city. This principle includes also the category of being out of system.

In the structure of KhPI entity complex there is an element out of system. The building of the Electro-technical block built at the beginning of XX century looks

like an exclusion from the stylistic order. The block was built in 1930 according to the project of A. N. Beketov and is an example of architectural constructivism. The main entrance to the block is architecturally formed as a four-column terrace with rustic columns of square section and ionic capitals (architect S.M. Rosenfeld), which were restored after the war in the Stalinistic Empire style. This building has half-rounded form with volume domination. Its frontiers are plastered with the light concrete stucco. This building belongs to the system of buildings erected across the road from the Electro-technical block that is in Frunze Street, which are also performed in the Stalinistic Empire style.

The results and their discussions. Artistic-imagery qualities of the KhPI ensemble environment are potential, forming different emotional evaluation and associations. The attraction of the ensemble structure is realized through its location. University's being at the edge of the Uphill plateau makes it somehow a separate territory and gives unique visual development. Panorama development that leads to the slope of the hill molds a distinct silhouette on the sky background that brings an association of cosmogony opposition life – death.

At the same time the KhPI ensemble has distinct contact with the classicist past that is realized through the ensemble structure and the entities look. Symmetry, the show of the frontispiece and parkways coming directly to the squares all together remind of Nicolay II visit here that took place long time ago. The character of every block done in brick is full of individuality. Such a variety gives birth to some intrigue, desire "to read" the structure of the ensemble to the end. Shadowy parkways and seclusion of inner yards of brick blocks create some intimacy. Meanwhile squares in front of large-sized blocks which were built later mark common property. It is an atmosphere of uniting municipal territory and historical heritage – all together it provokes a vivid image of "**an old city**". The contrast of brick buildings of the end of XIX century and buildings erected in the beginning of XX century in accordance with typical projects generates structural oppositions: **old – new, private – common**.

Summary. Thus, we see that preservation of the chief principles: system-hierarchy, formal harmony, variety, the principle of information continuance, multilevel structure, the idealization principle, which are the backbone of the city historical streets system (we mean the KhPI ensemble) – is important for the process of communication. The key point of this communication is an aesthetic pleasure from the surrounding environment. It should be taken into consideration while the city reconstruction when there is irrevocable turning of complicated street system into noise. As a result the historical heritage disappears forever and the city loses what was previously its cultural and economic resource.

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Историческая среда университета НТУ «ХПИ» как система информационных сообщений
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Аннотация. В статье рассмотрены архитектурно-информационные сообщения исторической среды университета ХПИ. В исследовании установлено, что упорядочивающая деятельность сознания воспринимающего среду человека составляет основу ее информационного структурирования, позволяющего прогнозировать архитектурно-пространственные закономерности. Полученные принципы (морфологические и эстетические), наиболее полно выявляет информационные особенности исторической архитектурно-пространственной среды ансамбля ХПИ. Отмечается важность сохранения читаемой системы исторических улиц, что является важным не только для процесса коммуникации, но и для возможности получения эстетического наслаждения от окружающей среды.

Ключевые слова: информация, архитектурные сообщения, структура, историческая среда, принципы.