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«ҒЫЛЫМ ЖӘНЕ БІЛІМ - 2018»
XIII Халықаралық ғылыми конференциясы

СБОРНИК МАТЕРИАЛОВ

XIII Международная научная конференция
студентов и молодых ученых
«НАУКА И ОБРАЗОВАНИЕ - 2018»

The XIII International Scientific Conference
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The proceedings are the papers of students, undergraduates, doctoral students and young researchers on topical issues of natural and technical sciences and humanities.

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DISTINCTIVE FEATURES OF KAZAKH ARCHITECTURE

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Since humanity began to need shelters, people hid and survived in the mountains and caves. With the development of human feelings of self-preservation, people began to build a shelter, and then, the erection of various monuments was the first step in the foundations of architecture. This article will consider the architectural flow of the Kazakh people as a source of history about the culture and formation of Kazakhstan.

Kazakh architecture is a national branch of design, construction that provide aesthetic and artistic characteristics of modernity, buildings, structures and monuments. The Kazakh land is the heir of historical architectural treasures, such as mosques, mausoleums, complexes, monuments, necropolises, holy places, etc. The development of the architecture of Kazakhstan is closely connected with the architecture of countries of Central and Middle Asia.

In Kazakhstan, the signs of the earliest shelters of different races are related to the Paleolithic. They were found on the southwestern slopes of Karatau, in Borikkazgan and Tanirkazgan, Kanai and Terek, on the banks of the rivers of Bukhtarma and Arystanda. They belong to the 30-10 millennium BC. The earliest dwellings and settlements of sedentary tribes are in Central, Northern, Western and Eastern Kazakhstan. Margulan said that Kazakhstan is the most densely populated country of the Bronze Age (XVIII-VIII centuries BC). The dwelling of the patriarchal family of that time was a building consisting of several premises with an area up to 200 square meters [1].

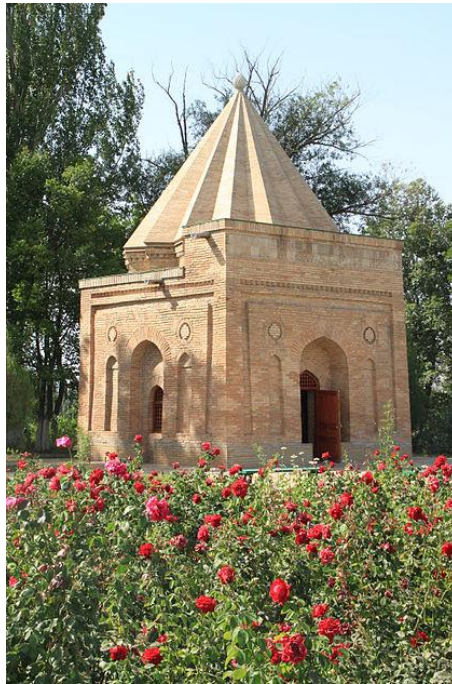
In the early Middle Ages (X-XVIII centuries) architecture changed, the ancient Turkic yurt up to the present day, having undergone comparatively minor transformations, showed the best efficiency among nomadic peoples.

Since X century, the development of the yurt has been associated with the striving of nomads to increase its capacity and practicality of transfer. In this regard, its design, lighting and smoke removal conditions, as well as architectural and artistic appearance were improved.

The tradition of erecting mounds over the grave of the deceased occurred in nomadic environments in the steppes of Central Asia earlier than in other regions. Anthropomorphic stells are indicative, and sometimes even planting trees as the embodiment of the idea of the world tree. In the X-XI centuries there were so-called «tower» mausoleums. The process started in the lower reaches of the Syr Darya in the early first millennium BC (the mausoleum «Tagisken-5», IX-VIII century BC), at the end of the first millennium in the Syr-Darya valley erected unique monumental pillar-like structures, such as Aksak-kyz, Begim-ana, Saraman-Kosa (X-XI century). Of course, this process is evidence of the maturity of folk architects that managed to materialize nomad's worldview [2].

With the spread of Islam, this tradition has intensified, although it is impossible to link the construction of tombstones with only religion. The idea of glorification, perpetuating the memory of an ancestor (considered in the nomadic society by the great debt of grateful descendants) was best expressed by the vertical. From these positions, the mausoleums of Kazakhstan, undoubtedly, cause great interest. The most famous monument of Kazakhstan architectural history of the new period is the mausoleum of Babaji-Khatun (the end of the Xth - the beginning of the XI century), with its compositional construction the mausoleum marked the beginning of a centric tent-like type of structures (Picture 1). The mausoleum is also interesting with two domes: the inner one is

hemispherical, ribbed; external - pyramidal-hipped, corrugated. An innovative engineering idea, based on the way of transferring the static forces of the rasp from the main inner spherical dome and gravity from the external high (in the Babaji-Khatun-tent) dome to the drum and walls, allowed subsequently to cover huge spaces and was received the widest distribution in Central Asia since the XI century [3].



Picture 1. Mausoleum Babaj-Khatun, (the end of X - the beginning of XI century)

The Mongol conquest interrupted the flowering of architecture in a vast region. The consequences of the invasion began to be eliminated in the central, southwestern and western regions of Kazakhstan, where a more stable tradition of construction existed and favorable historical conditions arose for this. But still in the localities were built mausoleums and domes embodying the Muslim people.

The accession of Kazakhstan to Russia contributed to the development of a sedentary form of management, which led to a rectangular in terms of housing. Along with the local types of dwellings, which usually have adobe walls and a flat roof, one can meet chopped log houses of Russian settlers, Ukrainian mud huts and Uzbek dwellings. In the western and north-western regions of Kazakhstan, with a cold and prolonged winter, a general planning solution of the residential building is being developed, characterized by a compact arrangement of all elements. Household buildings, livestock buildings, storerooms for storage of food and inventory, combined into one large building, adjoined directly to the residential building. A light wooden covering on the poles made it possible to cover such a large structure, divided into separate rooms. Especially in the late XIX - early XX century in terms of living quarters of Kazakh people there have been quite significant changes. Instead of the former one-room hut, a more prosperous part of the population had two-room and often three- and four-bedroom houses [4]. Two minaret cathedral mosque is one of the most beautiful architectural monuments of the republican significance of Semey city. The mosque (erected in 1856-1862) is a vivid example of Muslim architecture of the XIX century (Picture 2). The building of the cathedral mosque is a single-dome rectangular structure with two minarets. The main façade of the mosque is decorated with elegant half-columns with stucco capitals. Throughout the perimeter of the building you can see the stucco molding. As for the interior of the cathedral mosque, it is decorated with horizontal towers and columns. On the perimeter under the dome part there is a color painting in green-yellow color with words from the

Koran.



Picture 2. Two-meeting cathedral mosque in Semey, 1856-1862

In 1950, an extremely common is the combination of classic and romantic trends, reflected in residential buildings, executed on individual projects.

The construction of various types of public buildings in the cities of Kazakhstan: administrative, cultural, health-improving, entertainment and entertaining institutions, canteens and restaurants, hotels, transport and production complexes, most of which were previously are not known in Kazakhstan. At the same time, a survey and study of the features of preserved civil buildings and structures in the cities of Kazakhstan show that they fully correspond to the peculiarities of Russia's architectural development of the XIXth and early XXth centuries. The study revealed the presence of almost all the basic styles of this period of world culture in the architecture of Kazakhstan. It can be said that almost all the architects of the second half of the XIXth century were eclectic stylists [5]. At the same time, it should be noted that in the late nineteenth century Russian architecture, including Kazakhstan, saw the appearance of a modern style - a fundamentally new stylistic trend. In the general flow of stylization along with modernity, there were other directions and their complex interlacing, the most interesting in the architectural and artistic respect buildings of the cities of Kazakhstan are indicative in this aspect.

With independence, the architecture of Kazakhstan began to develop on a new wave with a new breath. The transfer of the capital from Almaty to Astana allowed architects from all over the world to compete for the opportunity to realize their wildest fantasies in order to build the capital of the country in the heart of Eurasia. The world-famous architect Norman Foster got this opportunity to build magnificent Khan Shatyr and the Palace of Peace and Harmony.

In conclusion, according to the historical data we can say that the Kazakh architecture is variety. Our land has experienced several different architectural genres, if from the early Middle Ages the architecture of buildings had exclusively Muslim hints in the structure of domes and mausoleums, then from the XVIIth century a confluence began in Russia, the structures that were built during this period led to European styles like romanticism and modernity. And only after gaining independence Kazakhstan creates the basis for modern architecture.

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RESIDENTIAL GREEN BUILDING IN ASTANA IN RESPONSE TO RISING RAPID GROWTH AND DEVELOPMENT

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Environmental challenges motivate people to re-evaluate the processes of planning, designing and construction of buildings. The consequences of increasing concentrations of greenhouse gases produced by human activities are changes in the climate. According to the United Nations Environment Program report, «The building sector contributes up to 40% of greenhouse gas emissions, mostly from energy use during the life time of buildings. Identifying opportunities to reduce these emissions has become a priority in the global effort to reduce climate change» [1]. Moreover, a significant number of human illnesses are the result of toxic chemicals. There is a critical need to reduce energy consumption and to re-examine the use of building materials, construction procedures and operational processes, such as heating, cooling and lighting for buildings [3].

A building that has a significantly reduced impact on the natural environment and provides indoor conditions, which promote good human health, is called a green building [4]. Governments and a considerable number of architects, ecologists, engineers, and constructors are currently working together to develop methods to create residential green buildings and to improve the surrounding environment.

Increased interest in sustainability and the construction industry creates a good opportunity for the growth of green building in Kazakhstan. The United Nations Development Programme states «Kazakhstan’s energy sector accounts for about 80 percent of total emissions, 90 percent of which comes from power and heat generation. Residential buildings are responsible for 13.5 percent of power and 24 percent of heat demand» [2]. In Kazakhstan, the UNDP reports that the residential sector is the third-leading energy consumer after energy and manufacturing sectors.

The critical need to reduce the impact on the natural environment is improving the environmental performance of buildings. The use of green building standards in residential areas creates excellent opportunities to create a more healthy and sustainable environment for citizens and to significantly reduce greenhouse gas emissions and the environmental impact of energy consumption. However, green houses are not as easily standardized as conventional houses. Different countries and organizations have their own green building standards, which regulate, evaluate and promote the construction of green buildings.

For example, various rating systems are used for the certification of green buildings:

- Leadership in Energy and Environmental Design (LEED);
- The United States Green Building Council (USGBC) system;
- In the UK, EU, EFTA member states, Building Research Establishment Environmental Assessment Method” (BREEAM);