

USE OF GEOMETRIC PATTERNS AND THEIR TYPES FROM ELIMINATIONS OF DRAWING AND APPLIED ART IN ARCHITECTURAL FACILITIES

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Аннотация. В статье представлены теоретические сведения о развитии эстетической культуры и пространственного воображения учащихся с использованием элементов рисунка и прикладного искусства, а также элементов геометрических узоров в нашей исторической архитектуре.

Ключевые слова: рисование, прикладное искусство, эстетика, программное обеспечение, графика, инженерия, архитектура

Annotation. The article presents theoretical information about the development of aesthetic culture and spatial imagination of students using elements of drawing and applied art, as well as elements of geometric patterns in our historical architecture.

Key word: drawing, applied arts, aesthetics, software, graphics, engineering, architecture.

Our ancestors used the elements of drawing and applied art in memorial monuments so wisely and on an artistic level that, as mentioned above, it covers all areas of architecture.

In recent years, further development of national culture in the Republic of Uzbekistan, creation of a new history of Uzbekistan, preservation and promotion of tangible and intangible cultural heritage, further popularization of folklore and amateur art, Systematic measures have been taken to ensure active integration into the space, innovative development of culture and arts.¹

Analysis of ancient architectural monuments and geometric patterns of Uzbekistan. Along with information about the masterpieces of world architecture, the development of applied arts and drawing begins with painting.

The ancient Egyptians were able to show the shape and size of these structures, albeit in the simplest way, in the construction of dwellings, palaces, and temples. Ancient papyri, granite paintings, and preserved murals reflect the concepts of ancient peoples in the field of drawing, as evidenced by the surviving plans of cities,

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O'zbekiston Respublikasi Prezidenti Sh. Mirziyoyev Toshkent sh.,2020-yil 26-maydagi PF-6000-son [Farmoniga](#) asosan.

plans and facades of buildings, and other documents. The first works on graphics appeared 300 years ago. Euclid's *Optics*, for example, contains a number of axioms and theorems about the conditions under which bodies are "built." The beginning of the Middle Ages left no evidence of the development of imagery. These methods only began to improve during the Renaissance.²

Architecture and art in the IX-XII centuries formed the basis for the formation and development of large centralized states in the country, the strengthening of statehood, spiritual life, the development of science, but also the development of material culture. In Samarkand, Bukhara, Urgench, Termez, Uzgen and Merv, many palaces, mosques, madrasas, minarets, mausoleums, teams and caravanserais were built.

During the period under study, in addition to architecture, a number of waterworks were built, including girders, bricks, water-resistant building materials — dams, bridges, cisterns, and gutters. These facilities testify to the high level of development of science and industry in the country. 1.5 mln. The construction of the Khanbandi Reservoir, which has the capacity to store 1 million cubic meters of water, is proof of this. According to the sources, for the construction of such waterworks it was necessary to calculate the vertical and horizontal pressure forces of water, and because it was built in the mountains, it was necessary to calculate the forces of frequent earthquakes mathematically, and this work was successful. carried out. Along with the architecture of this period, the painting and fine arts associated with it also developed rapidly. Decorating buildings with carved columns and beams, and painting the walls with painted, plaster patterns became a widespread practice. Gradually, the art of painting began to shift from intricate geometric and floral patterns to depictions of people and animals.

The art of painting was very developed in ancient Termez. The carvings from the time of Hakim Termezi's mausoleum are especially valuable in this regard. It has a unique style in the form of sebarcha, reminiscent of the Samarkand method. During this time, the art of calligraphy became widely used not only in copying books but also in decorating buildings.³

Geometric pattern. A geometric pattern made up of countless lines that intersect at different angles and angles is called a girth. Girix is a Persian word meaning a knot. Intricate pattern type. It has specific divisions, and each division has its own structure. Geometric pattern elements consist of four parts - triangles, rectangles, polygons and curves. Thousands of patterns can be created by comparing

² CONDUCTING CLASSES ON FINE ARTS BASED ON INFORMATION AND COMMUNICATION TECHNOLOGIES
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³ Toshpulatov, Faxriddin Uralovich, Ramazon Erkin Ogli Norqochqorov, and Xayriniso Nurmumin Qizi Maxmudova. "XALQ AMALIY SAN'ATINING CHIZMACHILIK FANI BILAN BOG'LIQLIGI." *Academic research in educational sciences* 2.2 (2021).

these input elements. From the repetition of the distributions, a complete pattern composition is formed. There are some difficulties in creating a geometric pattern. This requires a good knowledge of Mathematics and Geometry. Here are some suggestions on how to look or get an appointment for antique items.

1. Create a pattern composition by moving the girix elements together.
 - a) Create a pattern composition by moving the rectangles together Figure 1.a;
 - b) create a pattern composition by moving the triangles together Figure 1.b;

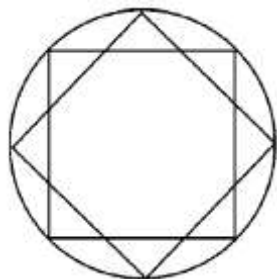


Figure 1.a.

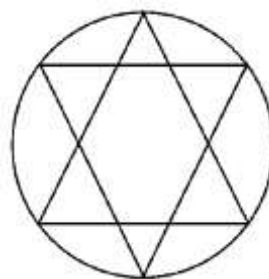


Figure 1.b.

- d) create a composition based on the displacement of regular polygons;
- e) create a composition by placing curves on each other.
2. Create a composition by continuing some aspects of the Girix elements.
3. Create a new composition by modifying some aspects of the pattern elements in the composition.
4. Create a new composition by combining two different Girix elements.
5. Create a new composition by removing some pieces from some of the girix compositions.
6. It is possible to create a new composition by dividing the Girix compositions into several independent compositions.
7. Girix flower from the bottom of the rope or rod when creating pattern compositions.

It is impossible to describe without leaving a leaf. It is necessary to distinguish the branch with the rope. Care should be taken not to draw too many copies on the distribution. It is necessary to keep the ratio of pattern elements. The composition is based on the ganch carving, it is necessary to pay attention to the density of the pattern and to maintain the ratio of ground spaces between the patterns.⁴

The Girih will have a specific content and character. Just as every plant has a name in nature, so does a plant have its own name. If the girih consists of 5 faceted stars, it is called a 5-faceted girih. if the entrance girih consists of 5 and 6 faceted star-shaped elements, it is called a 5-6 rack girih. If it consists of 6 and 10

⁴ Faxriddin Uralovich Toshpo'Latov, Ra'No Barat Qizi Turoпова Bolalarni o'yin texnologiyalari asosida kasb-hunarga qiziqishlarini shakllantirishda rivojlantiruvchi o'yinlar // Science and Education. 2021. №4. URL: <https://cyberleninka.ru/article/n/bolalarni-o-yin-texnologiyalari-asosida-kasb-hunarga-qiziqishlarini-shakllantirishda-rivojlantiruvchi-o-yinlar> (дата обращения: 28.04.2021).

faceted star elements, it is called a six-pointed star. 5, 8 and 12 faceted five if it consists of stellar elements eight, twelve racks girih is called Figure 2.

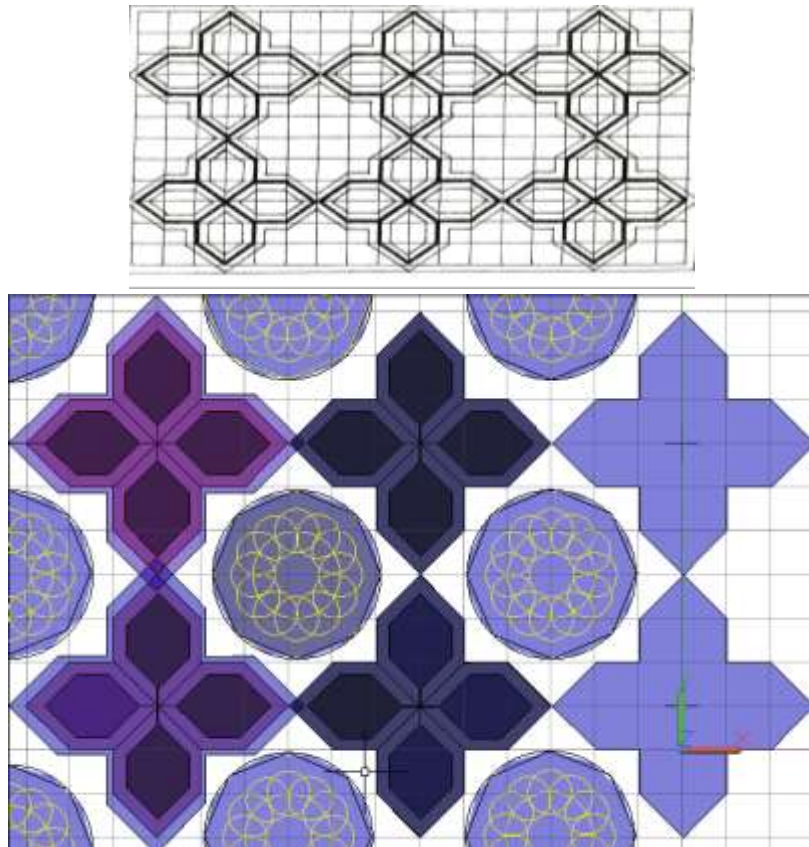


Figure 2.

In modern buildings, such examples of girih can be seen in the "Beautiful" breath, "Guliston" restaurant, "Circus" building, "History" museum, "Hotel Uzbekistan" and other places. . World-famous scholars and poets such as Ferdowsi, Abu Ali ibn Sino, Al Khorezmi, Abu Rayhan Beruni, Umar Khayyam, Alisher Navoi, Babur advocated that the beauty of buildings should be decorated with imaginary ornaments, which should be created in accordance with natural landscapes. not in vain, of course,

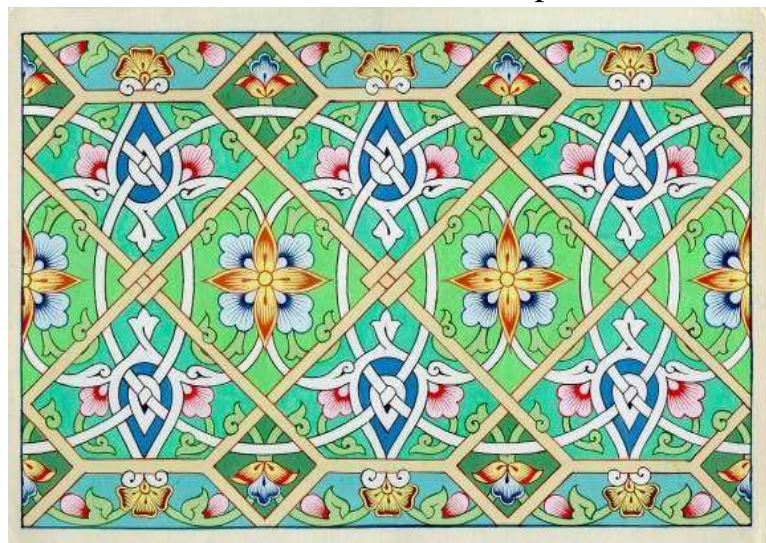


Figure 3.

Samples from grih and patterned frag

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