



THE HARMONY BETWEEN PROPORTIONS USED IN ARCHITECTURE AND THOSE USED IN ARABIC CALLIGRAPHY

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Annotation: This article discusses the process of formation of the art of Arabic calligraphy, its theoretical and practical rules based on historical sources. It analyzes the fact that our ancestors deeply mastered the Arabic language and script, and the art of calligraphy was widely used in various areas of architecture and folk decorative arts. It is scientifically substantiated that the traditions of calligraphy serve not only as an aesthetic tool, but also as an important source for the restoration of architectural monuments, their original appearance, and the scientific re-study of historical inscriptions.

Key words: Monuments, architecture, Arabic calligraphy, art, architecture, harmony, objective art.

Аннотация: В данной статье рассматривается процесс формирования искусства арабской каллиграфии, его теоретические и практические правила, основанные на исторических источниках. Анализируется тот факт, что наши предки глубоко овладели арабским языком и письменностью, а искусство каллиграфии получило широкое распространение в различных областях архитектуры и народного декоративно-прикладного искусства. Научно обосновано, что традиции каллиграфии служат не только эстетическим инструментом, но и важным источником для реставрации архитектурных памятников, сохранения их первоначального облика и научного переосмысления исторических надписей.

Ключевые слова: Памятники, архитектура, арабская каллиграфия, искусство, архитектура, гармония, объективное искусство.

Introduction: In the modern era, the protection of historical and cultural heritage sites worldwide, their repair and restoration, as well as the rational use of architecturally and artistically significant monuments, are recognized as one of the most relevant scientific and practical directions. In particular, there is a growing need for a scientific study of the history of the formation of domes in historical architectural monuments, their stages of development, and their structural and artistic features. In this regard, in recent years in our Republic, special attention has been paid at the level of state policy to the preservation, restoration, and reconstruction of cultural heritage objects. Large-scale scientific and practical work is being carried out to preserve historical and architectural monuments and maintain their original artistic appearance. In particular, a deep study of the structural composition, typological forms, artistic images, and decorative elements of domes in architectural monuments is of great importance in restoration processes.

Although methods and principles used in dome restoration are to some extent reflected in historical and architectural sources, this issue still requires comprehensive scientific research. Therefore, for the high-quality restoration of architectural monuments in Uzbekistan, it is necessary to scientifically analyze the structural and artistic solutions of domes and determine their construction technology and formation laws. Such research serves as an important scientific source for preserving the authentic appearance of historical monuments, transmitting them to future generations, and deeply studying national architectural traditions.

Main Part: Based on the concept of the unity and harmony of the universe, it is recognized that all forms of art, including architecture, are formed according to the fundamental laws of the structure of existence. In this sense, architecture is not only a practical activity that forms the material environment, but also a complex artistic system that embodies religious, philosophical, and aesthetic meanings. The use of mathematical proportions, geometric harmony, and proportional laws in building composition elevates architecture to the level of an objective art.

This approach distances architecture from random or eclectic methods of form creation and directs it toward creative principles that are in harmony with the laws of nature. As a result, architectural form and spatial composition become aligned with human aesthetic perception, spiritual understanding, and cognition of existence. Therefore, principles such as harmony, proportionality, and geometric order in architecture serve not only as constructive tools but also as important factors expressing spiritual and artistic meaning.

The unity and wholeness of the infinite and ever-changing universe are due to the will of God governing fundamental laws. At the foundation of any law lie mathematical relationships.

The manifestation of the idea of beauty, embedded by God in the human heart, soul, and spiritual world, in material life as a global aesthetic and genetic program, cannot be separated from the objective laws and principles of nature used by architects. These laws appear in the spatial structure of architectural objects, their image, exterior and interior, as an inseparable whole. The most important aspect of this approach to form creation is that the known laws and principles only began to emerge long after the earliest stages of building construction. This raises the question: if people did not initially know that such laws might exist in architecture, how did these characteristics appear in architectural forms? This is a complex issue requiring serious attention. In this matter, we must focus on the manifestation of God's idea of beauty through human spirituality and creative activity in architectural forms. Here, religious concepts and exact sciences intersect.

The laws that elevate architecture to the level of art have long interested scholars. Therefore, numerous studies have been conducted on mathematical and geometric laws, harmony, and proportionality in architectural structures.

The construction of domes is based on the use of the ellipse arc drawing principle. The method of constructing an ellipse was described in the 9th century by mathematician Al-Hasan ibn Musa ibn Shakir and Ibn Sinan (not Ibn Sina).

Al-Hasan proposed drawing an ellipse by stretching a string attached to its two focal points, with a length equal to the major axis, using a pen or marker. Ibn Sinan proposed another method: dividing a circle equal to the major axis into several vertical segments and connecting points obtained by further subdividing these segments.

In his famous work “The Key to Arithmetic,” M.S. Bulatov, in studying geometric harmony in architecture, based his research on the method proposed by Ibn Sinan and widely used it. However, according to L.I. Rempel, these two methods of drawing arches never replaced each other but were used simultaneously. Architect P.Sh. Zohidov noted that due to the complexity of the ellipse method in practice, the compass method was more widely used.

Observation of arches, vaults, and domes in Central Asian architecture shows that the larger the space, the steeper the curve of the dome or arch. This fact confirms Giyosiddin Jamshid Koshiy’s contribution in the 9th chapter of “The Key to Arithmetic,” where he proposed five methods for drawing arches and domes. This demonstrates that in constructing domes and arches, not only aesthetic harmony and proportionality were considered, but also structural strength requirements.

According to K.S. Kryukov, dome geometry is derived from fitting within rectangles with proportions such as 4:6, 4:8, 3:5, and 7:12.

The study of mathematical foundations in architecture is essential; without it, only random results can be expected. However, the geometric construction system we consider is an objective law of architecture and calligraphy.

In analyzing the laws of architecture and calligraphy, their close interconnection is evident. These laws manifest in the spatial structure, image, exterior, and interior of architectural objects as a unified whole.

The uniqueness of architectural monuments in our Republic is ensured by compositional principles underlying them. Studies show that decorative elements in architecture also utilize the “Mufradot” system of Arabic calligraphy. Therefore,

restoration of architectural monuments requires analysis based on Mufradot principles, and reconstruction of damaged or lost parts should be carried out according to these rules.

Arabic calligraphy is based on geometric shapes, using straight and circular lines. The construction of script forms is also based on ellipse principles and proportional rectangles. Similarities between architectural and calligraphic proportions can clearly be observed.

K.S. Kryukov emphasized that the width and height proportions of arches, domes, and vaults in Central Asian architecture are mutually proportional.

Among Islamic arts, the geometric principles of Islamic art remain one of the least studied areas today.

The “Mufradot”-based writing method is a highly structured system with strict rules, applied in ancient manuscripts and inscriptions on monuments.

Conclusion: Today, in the restoration of architectural monuments and Arabic inscriptions on them, violations of Arabic calligraphy rules and insufficient understanding of the Mufradot science are being observed. Such shortcomings may lead to the distortion of the essence of architectural monuments and gradual degradation of Arabic calligraphic traditions. Therefore, specialists involved in restoring inscriptions on architectural monuments must have a perfect understanding of the theoretical foundations of Arabic calligraphy, especially the science of Mufradot.

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