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To the development of graphics in central asia great scientists who have contributed

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ABSTRACT

This article deals with the development of the science of graphic and graphic geometry in the Central Asian region, the scientists who contributed to the science and their works related to the science of graphics, scientists, designers and architects directly engaged in geometric constructions and graphic images and used them to express their ideas. As a result, new graphic images have emerged, improved and evolved.

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Introduction

Historical monuments and archeological excavations show that people began to draw various objects around them even before the birth of writing, and used images in their interactions. The images on the rocks created by primitive people are approximately the same as the modern rectangular (orthogonal) images. Mammoths, bison, and other animals are often depicted individually.

Since then, they have begun to draw images of structures and objects, first simpler and then more complex. First the role of painting increased, then the role of drawings increased dramatically. Thus, as the human mind developed, science and culture began to take shape. Production and architecture began to develop. These, in turn, began to add to the essence of drawings, which are the main type of graphics. The first drawings appeared during the construction of houses, castles and other

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structures.

The original drawings contained only one image, called a plan. Typically, these plans are implemented directly on the surface, instead of the structures to be built, ie the actual size.

As a result of the development of shipbuilding in Russia, more accurate drawings have been developed. In doing so, he began to use three projections depicting length, width, and height. Figure 1.8 shows a drawing of a boat with a door drawn by Peter I in 1719 using projection beams.

In the XVIII century, the drawings were made very carefully and in color. In these drawings, conditional cuts were made and the cut part of the piece was painted according to the material.

A number of ancient scientists and scholars, engineers and architects, as well as folk masters have taken the lead in the development of methods for the representation of space objects in the plane, the development of the theory of their practical application. Kant and his predecessors considered Euclidean geometry to be a single, even divine, geometry.

In 1957, in the attic of one of the ruined houses in Bukhara, a large knot of ancient manuscripts of the XV-XIX centuries was found. The number of maps and drawings in this collection, which is kept at the Institute of Oriental Studies of the Academy of Sciences of Uzbekistan, is more than thirty. These maps and drawings include plans, facades and profiles of a number of madrassas and mosques with castles, their places in the cities, and room drawings and paintings by masters of pattern making. In addition, the rich cultural history of Central Asia, images from different periods, in part, achievements in the field of irrigation, land reclamation, transport, also serve as evidence of the history of the development of graphics.

Central Asian scholars have contributed to the development of all disciplines, including graphics, no less than Greek scholars. One of these scholars is the president of the Bayt ul-Hikmat (House of Wisdom) Academy of Sciences, founded by Al-Ma'mun in Baghdad.As the American orientalist D. Sarton described, "One of the great mathematicians of all time, the founder of algebra, the astronomer Muhammad al-Khwarizmi, the son of the Uzbek people (783-850)". He wrote works on arithmetic, astronomy, history, geography, medicine and other fields. For the first time in the Middle East, Zij accurately calculated the motions of the planets and compiled mathematical and astronomical tables. At the same time, Khorezmi made an invaluable contribution to the development of graphics. He interpreted his treatises on mathematics not with formulas, but with diagrams.

He drew and commented on the maps of The Land of the Rising Sun. Al-Jabr Al-Muqabala, created by Khorezmi, is used for land surveying, digging canals and other works. In his book Alternative and Algebraic Calculations, he recommended defining the surfaces of a cube, parallelepiped, cone, and pyramid on the basis of squares and triangles.

The great Uzbek astronomer, mathematician and geographer Abul Abbas Ahmad Fergani (IX century), known in medieval European scientific literature as Alfraganus, took part in the observations of the observatory at the Bayt-ul-Hikmat in Baghdad. . There are many drawings in his works, and since then the asturial and central projection equipment (Figures 1.14. 1.15)

The great Kazakh encyclopedist Abu Nasr al-Farobi (873-950), popularly known as Aristotle II, wrote and researched more than 180 treatises in almost all fields of science. They include works in

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geometry, stereometry, astronomy, optics, mechanics, architecture and other fields directly related to graphics. According to him, geometry (ilm-al-Handasa) is inextricably linked with all sciences. These ideas are especially true of graphics. (The second part of Farobi's Origin and Classification of Sciences deals with geometry in the part directly related to graphics, and the third part deals with the science of observation (optics). It is now studied as a linear perspective.

Farobi wrote the book "Spiritually ingenious methods and natural subtleties of geometric shapes", identifying the basis of the architectural project to be important geometric methods of construction. It focuses on various geometric shapes — circles, triangles, rectangles, squares, cubes, cones, cylinders, prisms, spheres, parabolas, and more. In his 10-volume book, Kitab al-Khiyal ar-rukhaniyma wa asrar attabiiyya fida koik al-ashkal al-Hansiyya, 130 problems of geometric construction are presented in different variants and the easiest ways to solve them are shown. Farobi considers three dimensions - height, width and depth - as a characteristic feature and sign of materiality. Because Farobi himself is well versed in architecture, his Ilm al-Khiyal has a very broad meaning, including applied art, including architecture. According to al-Farabi, "There are many masterful geometric methods, including the art of directing construction by designing a raisa - al-bina, that is, a building and a structure." Farobi's book, Virtuous Culture (People of the City) discusses the composition of the city. Fozil likens the city to a healthy coin, dreaming of creating ideal living conditions for people. His research and ideas on architecture play an important role in the study of Oriental architecture, including Central Asian architecture. He also wrote commentaries on Euclid's Fundamentals and Ptolemy's Almagest. His works and research have a direct impact on the development of graphics. Another great scholar who made a direct contribution to the development of graphics was the Khorasan mathematician Abul Wafa Muhammad ibn Yahya ibn Abbas al-Buzjani (940-998). He is primarily engaged in translating the works of ancient Greek scholars. His scientific discoveries played an important role in the further development of mathematics and graphics. His works provide the foundations of theoretical works of drawing. His 13-chapter pamphlet "On geometric handicrafts for craftsmen" began with the chapters "Drawer", "On the compass and triangle". It provides extensive information on these tools and how to make them. The content of this work is mainly devoted to geometric constructions.

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