

ABOUT SCALE, PROPORTION AND IMAGE IN ARCHITECTURE ON THE EXAMPLE OF THE ORDER SYSTEM

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ABSTRACT

This article is about the role of full architecture order in the field of architecture. The main types of this order as well as its basic components have been studied. The author also tries to find out the influence of this order on the development and modern tendencies in the modern world of architecture and construction.

KEYWORDS: *Column, Base, Full Architecture Order, Pedestal, Ionic order, Enablement, Dorian order, Corinthian order.*

INTRODUCTION

Architecture is one of the most important parts of the creative activity of mankind, the works of which - residential, religious, public buildings and engineering structures - serve to meet vital needs and aesthetic requests. They are needed as food, clothing and fuel. But the works of architecture should satisfy not only utilitarian requests. The beautiful and expedient in architecture constitute a single whole. This problem is solved by architectural composition, which determines the interaction of artistic means - symmetry and asymmetry, rhythm and contrast, scale, proportionality and balance. [1]

The unifying principle that creates harmony in architecture is proportionality. "Proportion," wrote Vitruvius, "is the correspondence between the members of the whole work and its whole in relation to the part taken as the original, on which all proportionality is based." [2]

Deciphering the laws of harmony is a cherished dream of architects - practitioners, theorists, historians, art historians. The great architect Le Corbusier, attaching great importance to the disclosure of the laws of proportionality in architecture, wrote: "If an instrument for linear and optical measurements, similar to a musical recording, was found, then how much easier it would be to work in architecture." [3]

Analysis of the relevant literature

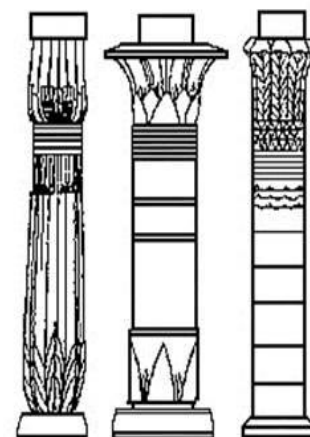
The system of proportionality of architecture, worked out by thousands of years of practice, is of interest not only in the development of theoretical problems of architecture, it is necessary for architects in their creative process. [4]

That's why, with the course projects carried out in the junior courses, the project "Architectural Orders" occupies a special place in the educational process and education of future architects. This is the first project to study the proportionalities of the rack-beam system, which contributes to the understanding of the compositional aspects of classically their architectural monuments. From the student, for the first time they get acquainted with the basics of architectural graphics, learn the basics of methodology for designing architectural objects, get a general idea of the subject design, the concept of an architectural order and its proportions. [5]

The study of architectural orders and their execution in drawings or drawings is one of the essential means that contributes to the understanding of the compositional centuries of classical monuments of art, since the order is the basic law of the construction of the architectural form, is its foundation, on which the entire European culture is built. [6]

THE MAIN FINDINGS AND RESULTS

In the history of the development of construction art, a large place is occupied by the so-called rack-beam structural system, the basis of which are racks (pillars, columns and other free-standing supports), along which beams bearing the ceiling are laid. The origin of the column refers to those times inaccessible to history, when people who had not yet emerged from the state of savagery had just begun to build their dwellings. The trunk of a felled tree, placed to support a roof of wood branches, turf or straw was the first fust of the column; a stone slab or wooden board placed at the lower end of this trunk so that it does not go deep into the ground, were the first bases of the column; the same slab or board laid on the top end of the pillar is the first capitals. From such simple elements, with the development of human culture, numerous forms of columns, different from different peoples, gradually developed. They have already acquired considerable elegance from the Egyptians, and received a certain originality from the ancient Persians, in the architecture of India and China, Japan and America. [7]



Rice. 1 Columns of ancient Egypt.



Rice. 2. Orders of ancient Persia.



Fig.3,4. Columns of ancient India and China.

But nowhere did they reach such perfection as that of the ancient Greeks, in whose architecture, having adopted a threefold type, the column became the main element that subordinated to itself the character or the so-called style of the whole building (Doric, Ionic and Corinthian). From the Greeks, the types of columns passed to the Romans, who, without changing anything significant in them, gave them some bombast and pomp. Thus, two more types arose - Tuscan and composite. Thus, this constructive system, having arisen in prehistoric times, has improved over time and found its artistic expression in the architecture of ancient Greece and Rome. The system of columns with overlapping parts of them has received its final development: the laws of its

construction have been established, an art form corresponding to this structure has been found, and the methods of construction have been established. the system in which the stone rack-and-beam structure found an expressive architectural form, we call the ARCHITECTURAL ORDER.

The name order comes from the Latin "ordo" - order, order. This name was first mentioned by the Roman theorist of architecture of the second half of the I century BC. e. Vitruvius, the author of the treatise "Ten Books on Architecture". [8]

The order has not yet lost its expressiveness and attractiveness to architects. Architects use the order not only as a constructive system, but also as a decorative element, often largely stylizing it.

ORDER CLASSIFICATION

Roman orders (canonical). In the architecture of Ancient Rome, 5 varieties of orders have developed:

1. **Tuscany** is the simplest in shape and heaviest in proportions order. It has a smooth column and a simple entablature.
2. **Doric** - this order was rarely used in Roman architecture. There are two types of order: with teeth and modulons. The frieze consists of alternating plastic elements - triglyphs and metopes. Columns with cannelures.
3. **Ionian** - this order has lighter proportions. The trunk of the column is designed by cannelures with paths. The most characteristic part of the order is the capital with volute-shaped curls. The capital on the side has a different appearance than from the facade. The side rollers formed by volute curls are called "balusters". In this order, the cornice is developed by complicating the supporting part, in which, in addition to the heel and the quarter shaft, there is a belt of teeth (lenticules).
4. **Corinthian** is the most slender in proportions. The columns are either smooth or with cannelures. The capital is sculptural in nature and has two rows of stylized leaves of "acanthus". The structure of the cornice, as in the Ionic order, with modulons under the tear slab. On the lampshade in the intervals between them there are recesses - caissons.
5. Composite – a combination of Ionic and Corinthian orders.

ORDER PROPORTIONS

In ancient Rome, the architect Vitruvius (I century BC) developed, and in Italy during the Renaissance (XV-XVI centuries), the architects Palladius and Vignola significantly clarified and detailed strict proportional systems and methods of erecting orders in construction, which allowed architects to interpret the use of a particular treatment in their own way, but without affecting their basis, i.e. the main features and proportional structure. These canons of orders are based on a single proportional system. [9]

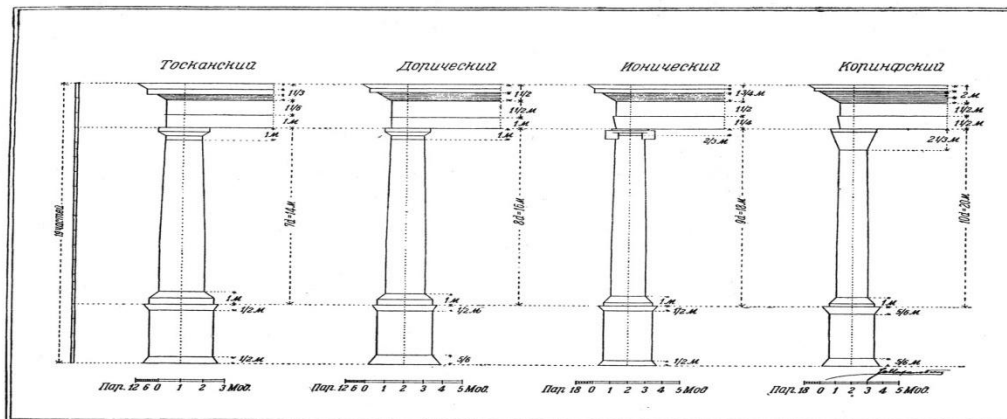
Proportions express the ratio of dimensions (length, width and height) of the structure itself and its details.

The ratio of the radii of the lower parts of the columns (i.e. modules) to their heights and to the heights of the full orders, which include, in addition to the columns, also the entablature

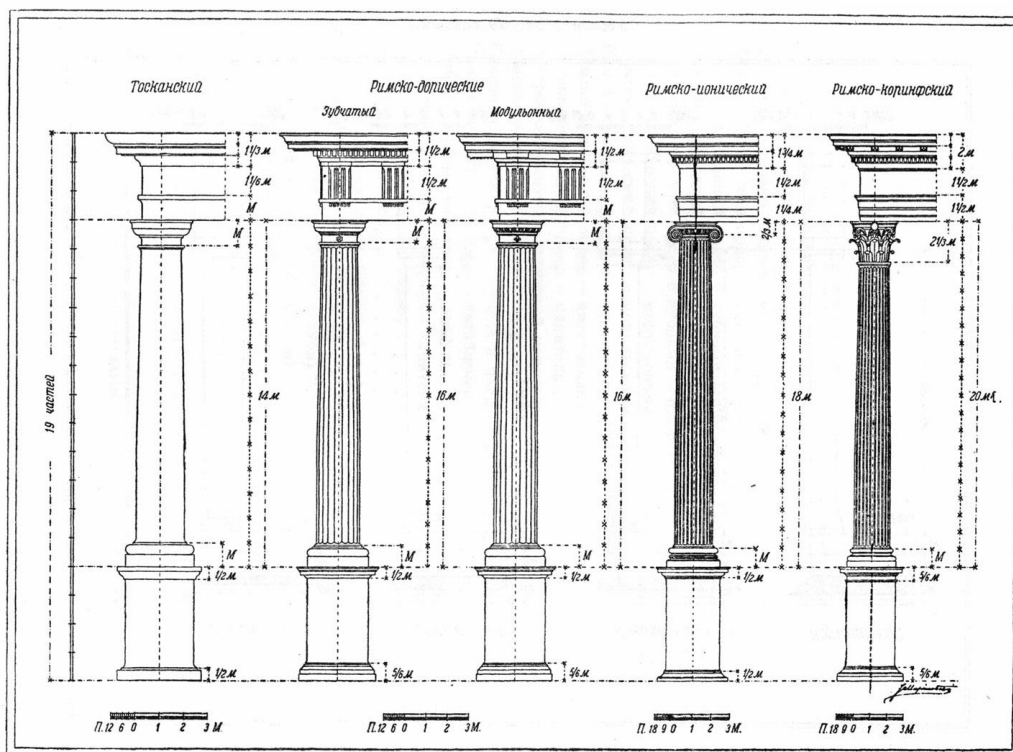
(pedestal, column and entablature), retains the general proportionality, which consists in the fact that each complete order of a given canon is divided into 19 parts in its height. These parts are distributed as follows: pedestal - 4 parts, lower (cylindrical) part of the column - 4 parts, the upper (entasis) part of the column - 8 parts, entablature - 3 parts.

Tuscan Order. The simplest in its shapes and details and the heaviest in proportions. It has a smooth column and a simple entablature. The height of the column is equal to seven diameters – 7 modules. Tapered upwards by 1/5 of the module. Pedestal height – 1 module; base – 1/2 module; capitals – 1/2 module; entablature – 1 3/4 modules. The Doric order exists in two varieties (depending on the nature of the supporting part) - the Doric order with teeth, the Doric order with modulons. The diameter of the columns is 1/8 of the height. The thinning of the column is 1/6 of the module. The rod of the column is smooth or has a number of longitudinal notches - cannelure. Along the entire circumference of the Doric column there are 20 cannelures. A feature of the Doric order is the frieze, developed by peculiar plastic elements - triglyphs. All triglyphs, not excluding the corner, were placed along the columns. Modularons are placed on the protruding part. The Ionic order has lighter proportions. The diameter of its columns is 1/9 part of the height, thinning is 1/6 of the module. The trunk of the column is designed by 24 cannelures, between which narrow gaps belonging to the main rod of the column are left - the path. The most characteristic part of the Ionic order is the capital with its currency-like curls. The capital of the Ionic order differs from all others in that it has a different character on the side than from the facade. The curls of currencies form two rollers (balusters) on the sides of the capitals. The Ionic capital has two varieties - angular and motor. The façade sides of the capitals of the corner column are not opposite, but adjacent faces. Moreover, one currency, the angular one, is made common to both faces and is directed at an equally separated angle of the entablature. A diagonal capital is a capital in which all currencies are arranged at equal to all four corners of the abaca. In this case, the capital is drawn from all sides in the same way. In the Ionic order, the cornice is developed due to the supporting part, in which, in addition to the heel and the quarter shaft, there is a belt of teeth or denticules. The Corinthian order is the most plastically developed and slender in proportions. The diameter of its column is 1/10 of the height, thinning is 1/6 of the module. In Roman architecture, the order was used for the largest temples – the temple of Castor and Pollux and the temple of Vespasian in Rome. The rods of the columns either remained smooth or had cannelures (24 cannelures). The capital of the order is of a diagonal type, so it has the same appearance from all four sides. All the eaves of the cornice, not excluding even the teardrop, are often ornamented with cuts. The complex order was created by the Romans, is a combination of the Ionic and Corinthian orders, so it is also called composite or composite. The capital is a combination of Ionic and Corinthian orders. The rest of the details are arranged according to the corinthian model and are also richly ornamented. This order found application in the triumphal arches and large public buildings of the Romans. Its proportions are the same as in the Corinthian order.

Below are the proportional order constructions.



Rice. 5. Roman orders in the masses.



Rice. 6. Roman warrants in detail.

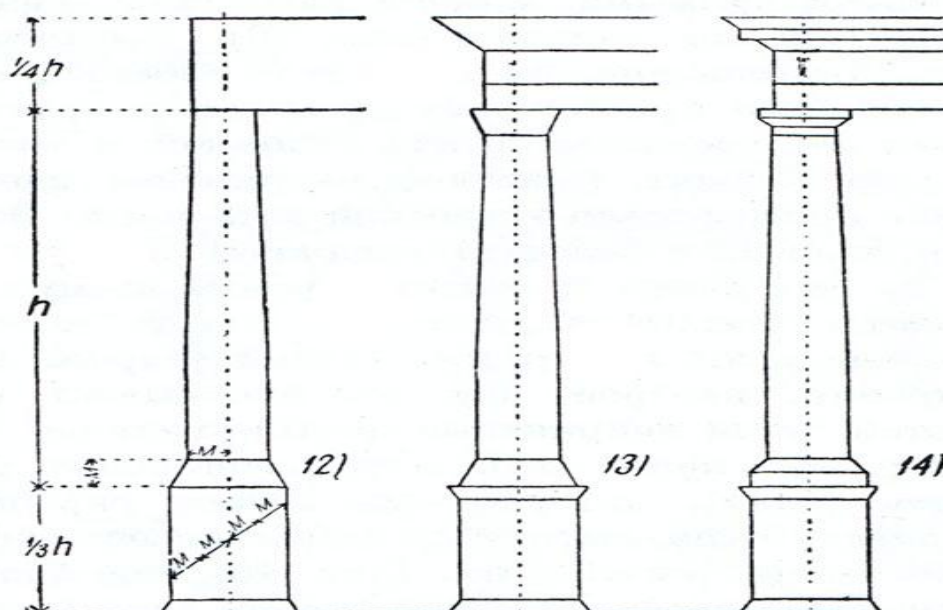


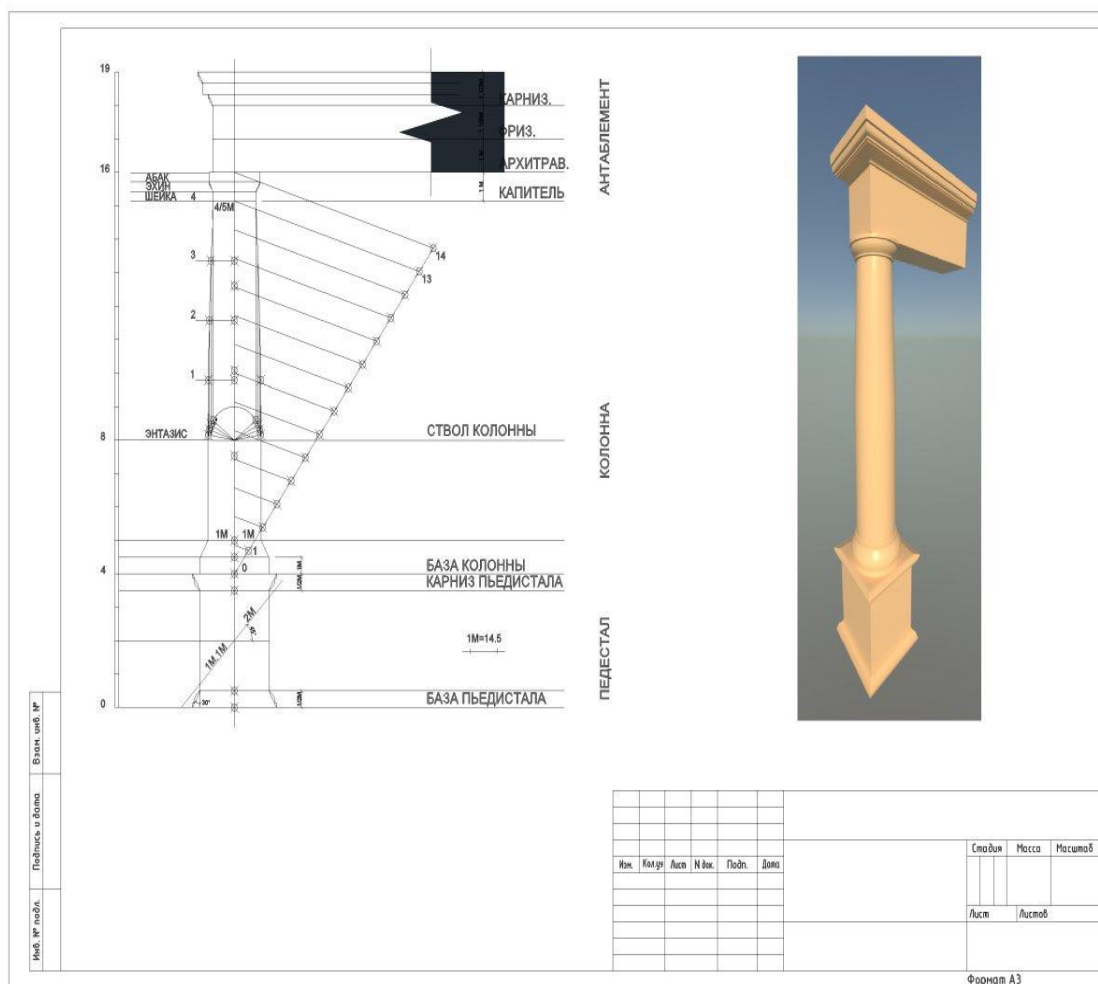
Fig.7. Sequential order construction.

The relevance of the tasks set is due to the fact that recently the domestic art history, architectural studies in particular, again shows an increased interest in the problems of order composition.

Everyone knows The use of computer technology in the future professional activities of students - designers is beyond doubt. Currently, computer technology has such technical capabilities that allow you to successfully adapt them to solving many routine problems of art, including learning the theory of composition. [10]

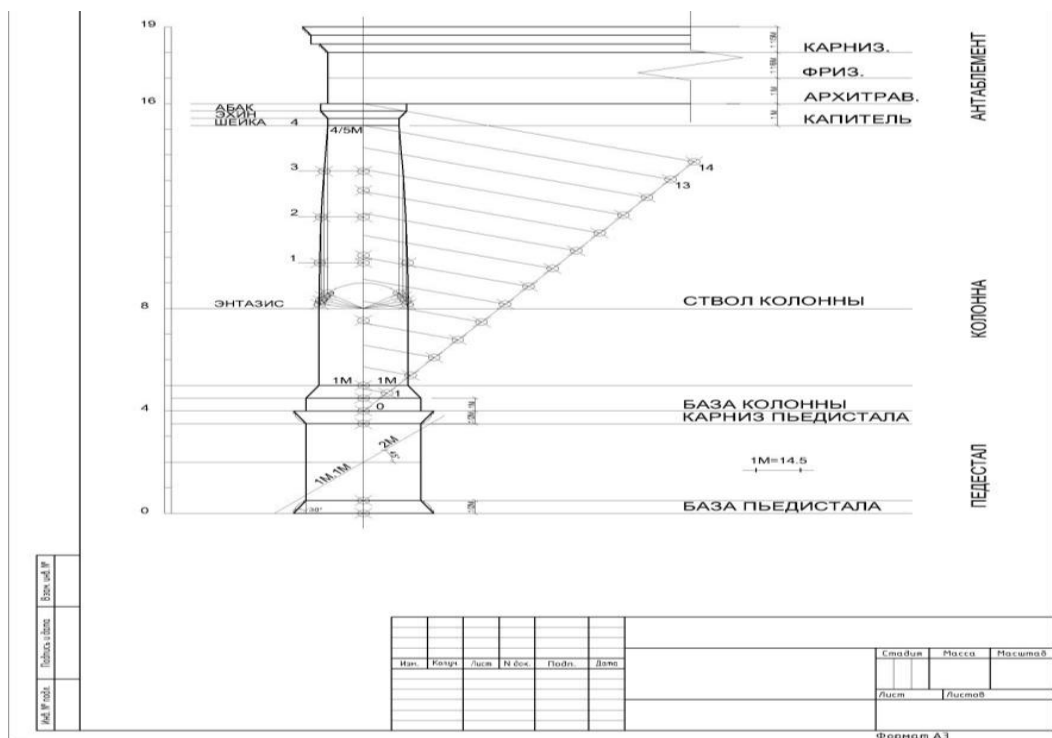
Therefore, the task of constructing architectural orders can be performed using graphical programs such as AutoCAD and 3D Studio MAX.

Below is an example of order construction in computer graphics.



Rice. 8. An example of executing a Tuscan order in 3D Studio MAX.

TUSCAN ORDER IN THE MASSES



Rice. 9. Example of execution of a Tuscan order in AutoCAD

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