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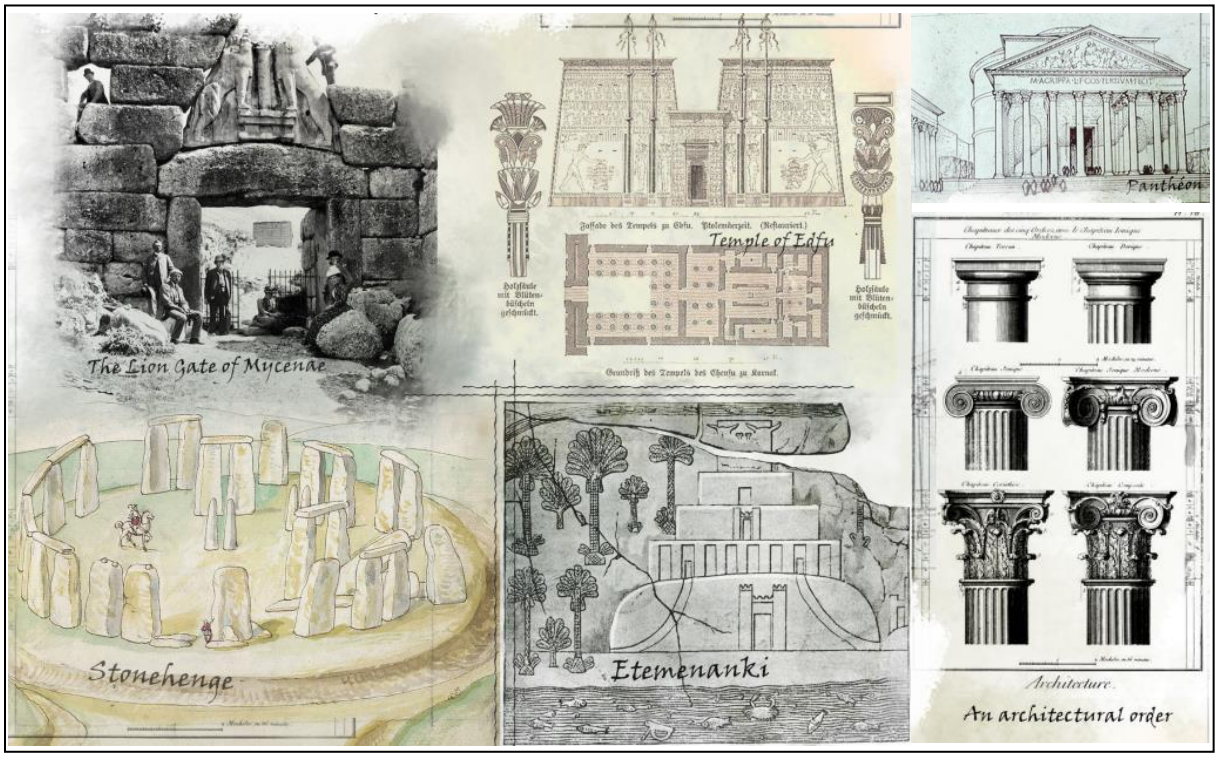

HISTORY OF ARCHITECTURE, URBAN PLANNING, ARTS AND DESIGN. THE ANCIENT WORLD

LECTURE NOTES

(for applicants of the first (bachelor) level of higher education full-time study in specialty 191 – Architecture and urban planning)

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INTRODUCTION

Necessary conditions for the formation of a modern creative personality are knowledge of the artistic and building culture of the past. The educational and professional training program for bachelors in the specialty 191 – Architecture and urban planning includes disciplines dedicated to the development of the architectural and artistic heritage created by mankind throughout centuries of history.

The discipline “History of architecture, urban planning, art and design” is mandatory.

The purpose of studying the discipline is to consider the phenomenon of world architecture of the Ancient World, to analyze monuments of architecture, urban planning, and art, based on historical experience.

The tasks of this discipline are:

– awareness of the role of the architectural heritage of the Ancient World, its importance in the social and professional activity of the architect;

– determination of features of planning of historical inhabited cities;

– identification of patterns of architectural and artistic expressiveness of monuments of architecture and art;

– recognition of artistic styles in architecture and art;

– study of structural and construction features in the architecture of historical eras.

The content of the lecture notes is based on a sequential story about the emergence of the primitive social order, historical periodization (Ancient Egypt, Mesopotamia, the Aegean world, Ancient Greece, and Ancient Rome).

The lecture note is designed to interest the applicants in the short material of the presented topics, for further independent work and working out the issues in more depth. At the end of the lecture note, a list of sources, questions for self-checking and tasks for individual work of students of higher education is presented.

1 THE ERA OF PRIMITIVE COMMUNITY ORDER (PREHISTORIC ARCHITECTURE)

The economic and political situation, favorable for the rudiments of the most primitive architecture, could develop for humanity only after the end of the ice age. Until the harshness of the climate forced a person to lead a nomadic lifestyle of a hunter, associated with a thousand accidents, he had to settle for the first and best place for the night. People found this night's shelter under the ledge of an overhanging rock or in a hut built hastily from tree branches. In those days, people did not care at all about the place of their burial, and were content with a cave, the walls of which were decorated with drawings depicting animals, for religious rites.

But the sedentary agricultural way of life, which arose because of the increase in the temperature of the earth's surface, made it possible to multiply and regulate the ways of achieving better living conditions. And on the other hand, it made possible to achieve minimal gathering of the population and elementary political organization, without which collective and organized creative work can take place. It became necessary to start building architectural structures. From this distant era, called the Neolithic (or the era of "polished stone") the remains of earth and water (pile) dwellings, traces of earthen fortifications, tombs (artificial caves), dolmens, covered alleys and probably religious buildings (menhirs, cromlechs, cists, and alleys of stones) have reached us.

Thus, over the course of many centuries, rudimentary architecture common to different latitudes gradually arose and became established (from the Atlantic to the Pacific and Indian oceans, and from Scandinavia to Sudan). It is impossible to establish the exact boundaries of the area of Neolithic architecture. Historical science has established a classification of the periods of existence of the primitive communal system depending on the type of tools for processing stone and the main types of activities that provide the main components of the survival of human society and the individual (food, clothing, and housing).

Classification of the periods of existence of the original communal system:

– **Paleolithic** (from 40–50 to 12–10 millennia BC). This is the period when, by the end of the Ice Age, human communities of up to 60–100 people, who possessed fire and unpolished stone tools, began to settle in warm areas. The main type of activity that provided them with food (along with occasional hunting) was gathering. Accordingly, matriarchy was the basis of the social order;

– **Neolithic** (from the 9th to the middle of the 6th millennium BC). This period is characterized by the presence of polished stone tools (the "stone ax" era), which made it possible to chop down thick trees, hollow out primitive boats from logs, and process horn and bone. The retreat of glaciers, the appearance of forests and forest-steppe with a variety of plant food and animal life stimulated the replacement of gathering with the beginnings of agriculture and cattle breeding, which provided not only food but also clothing (animal skins and wool). In terms of the type of organization of economic activity, the social system based on matriarchy remains the main one;

– **the Bronze Age** (from the IV to the beginning of the I millennium BC). This period gave new tools for work and hunting. Bronze arrowheads make hunting large animals more efficient, and bronze tools are the most perfect tools for processing wood and stone, which directly affected the development of architecture. Increasing the efficiency of hunting, men's work in metal mining, alloy production contribute to the formation of single-tribal communities based on the principle of patriarchy;

– **Iron Age** (IX–VII centuries BC). The first mining and metallurgical centers provided not only tools stronger than bronze, but also contributed to economic, technical, and social restructuring. The iron plow made it possible to cultivate significantly larger areas of agricultural land. It led to a struggle for land ownership with a concomitant increase in economic inequality. The invention of the wheel solved not only transport problems, but also the speed of military raids. Iron gave rise to the development of craft production of weapons and armor.

It should be note that the considered classification of the periods of primitive community formation and its dating are valid only for the most developed and

densely populated territories of the Earth. In its remote and undeveloped territories, even in the last century, isolated human communities were found that existed based on single-tribal primitive relations with the appropriate tools of labor.

There are three main types of megalithic objects: **menhirs, dolmens, and cromlechs.**

Menhir (from the Latin big stone) is a vertically installed, roughly hewn and deeply buried stone. Individual menhirs are 10–20 meters high and weigh up to 300 tons. The purpose of single menhirs is a memorial sign of some important event, battle, or outstanding personality (a tribal leader, for example, or a hero of a battle), because sometimes menhirs accompanied single burials. Menhir is the forerunner of memorial obelisks. Single menhirs are quite widely distributed in different regions of the Earth – from Scotland to Transcaucasia.

Along with this, there are so-called "fields of menhirs" – **alinmans**. They are sometimes several hundreds of small stones installed vertically in regular rows are oriented towards one large one. Alinmans are mainly found on the territory of France. They sometimes occupy territories from 1 000 km² to 3 000 km². There are all kinds of megalithic structures on the territory of Scotland and Armenia. Alinmans were probably intended for the monumental design of ritual cult ceremonies and processions. In architectural and compositional terms, alinmans became the first example of spatial-temporal solutions in contrast to the menhir. A feature of Alinman's composition is the possibility of its continuation in any direction to infinity. This is a technique that will be used millennia later in Islamic architecture, and today in metabolic architecture.

Dolmens in the initial stage of development were a composition of three large stones (two vertical and one horizontal). Then they turned into a significantly larger structure made of a significant number of vertical stones and a corresponding number of horizontal ones, covering a large space between the stones. In the largest dolmens, overlapping false vaults were used for the first time.

The purpose of dolmens as burial chambers is more certain. That indicates the presence of burials and sacrificial offerings to the deceased in the rooms of dolmens. Primitive, mostly ornamental paintings, and reliefs are found in the interiors of dolmens. They, along with concrete paintings on the theme of hunting in cave dwellings, represent the beginnings of the art of painting and sculpture. Dolmens were often covered with earth mounds, strengthening the mound from falling by stacking stones along its perimeter and arranging a secret entrance to the dolmen in the thickness of the mound. Archaeologists have established that sometimes dolmens served as dwellings. But it is possible that they were used this way later.

If menhirs and dolmens were formed already in the late Neolithic period, cromlechs are a child of the Bronze Age. It is evidenced by the more careful treatment of stones and the construction of the joints between them. According to the composition, the cromlech is a circular structure made of vertically installed stones. The stones of the outer row are connected to each other by horizontal stones (jumpers). The number of ring stones, their composition and sizes can be different. But, as a rule, triliths (a composition of three stones), which are made of the largest stones, were installed in the center of the circle. The horizontal stones of the cromlech were planted on the spikes at the top of the vertical stones with special holes selected on the lower surface of the lintels. The stones and their connecting elements are well polished using bronze tools. The most famous and comprehensively studied cromlech is in Stonehenge near the city of Salisbury (Great Britain). But similar structures are also found in Scotland and Latin America (Fig. 1.1).

The dwelling of Neolithic man was usually a small hut, rather round than square, and partially dug into the ground. The progress of civilization gave birth to the beginnings of the internal division of housing, in which a kitchen with a hearth and a sink and a bedroom began to be outlined. In different countries, the variants of this division consisted in the fact that several adjacent huts served as housing, or one

hut, divided by a partition into two separate rooms, and the bedroom floor was made slightly raised.

A prehistoric tomb is a stone hut, usually square or rectangular, sometimes round, or polygonal. If it has the shape and size of a box, it is called cystitis; if it is a large room, it is a dolmen. The area of the dolmen varies between 4 m² and 70 m², and its height is between 1 m and 3.5 m. The entrance to it is closed by a stone slab, it is usually movable, sometimes drilled with a round hole. Sometimes there are additional crypts. The room is often preceded by a hall, or rather a corridor, long and wide, usually straight, but sometimes winding. On the island of Gavrinise, it is equal to 12,5 m × 1,3 m; in Banye – 20 m × 70 cm, in New Grange – 31 m. The combination of dolmen and stone gallery is called “covered alley”. Crypts are rare.

The technical means of the builders of the Neolithic era were extremely poor. Of course, they had a hammer for breaking rubble, an ax, a pick, a semicircular chisel, saws made of flint or other polished stone. But the imperfection of these tools precluded the possibility of at least mediocre processing of stone and even wood. Prehistoric man could not strike at a stone and was happy if he managed to add at least the roughest shape to the stone with the help of a hammer. It was also impossible for her to achieve the perfection of execution necessary for the most primitive assembly of a log cabin.

However, in the presence of patience, ingenuity, time and coordinated collective efforts, people of that time managed to overcome difficulties and achieve known results. Thus, they gradually became familiar with the methods of drilling or sawing hard rocks. To do this, they subjected the stones to the destructive action of grains of sand set in rotational or alternating motion. In the same way, they achieved dissection of hard rocks. To do this, they subjected the corresponding place of the stone to strong heating, which was followed by sudden cooling.

It goes without saying that wood and earth were the first building materials of prehistoric man: for residential construction, they remained his preference. The hut was built from woven branches coated with clay. The lake dwelling consisted of piles

fastened with reed bundles. By the end of the Neolithic era, the use of unfired brick and stone began in eastern countries – Egypt and regions of the Aegean culture.

Stone formed the lower part of the building, necessary to support the clay wall. For more sophisticated buildings, only stone materials were used. For a long time, they were chosen as large as possible to minimize the work of sifting them.

Figure 1.1 – The era of the primitive communal system (prehistoric architecture)

Neolithic architecture, however, reached the limit of cultural progress available to it in the presence of exclusively stone tools. Neolithic architecture gave mankind the basic elements of building art, left to him the methods of making bricks and preparing clay with bats, methods of stone heaving, methods of lifting and

transporting heavy masses, assembly of forest materials and, finally, the construction of a false vault.

Sources: [1–3, 5, 6].

2 ANCIENT URBAN PLANNING, ARCHITECTURE AND ART OF EGYPT

2.1 Culture and history of Ancient Egypt

Ancient states were formed on relatively limited territories, which simplified their management. In this regard, ancient Egypt is particularly revealing – a country 30 km wide and 1,500 km long (along the Nile River).

The state existed for several thousand years, won victories, and suffered defeats, changed ruling dynasties. It is customary to divide its history into three eras:

– **Old Kingdom** (XXX–XXVI centuries BC);

– **Middle Kingdom** (XXII–XVII centuries BC);

– **New Kingdom** (XVI–VII centuries BC).

The end of the Old Kingdom is associated with military failures. Due to that the power of the supreme ruler weakened, and the state disintegrated into relatively independent fragments (nomes).

As a result of successful wars, a single state was formed again – the Middle Kingdom, which in the 18th century BC the Hyksos conquer.

The new kingdom was united by Pharaoh Ramses III after his victories. It retained its independence until the 7th century BC, when it was first conquered by the Assyrians, then by the Persians.

The Nile has been the lifeblood of this region for most of human history. Its fertile floodplains gave people the opportunity to develop a settled agricultural economy, as well as a centralized society that became a cornerstone in the history of human civilization. People who were originally nomads, hunters and gatherers settled in the Nile Valley about 120,000 years ago. By the end of the Paleolithic period, the arid climate of North Africa had become increasingly hot and dry, forcing the inhabitants of this region to concentrate along the riverbanks.

The religion was built on the deification of the forces of nature and, first, the life-giving power of the sun, which belonged to the main god Amun (Ra). He was accompanied by the gods and goddesses of the sky (Nut), earth (Heb), air (Shu) and others, as well as the married couple of the gods Osiris (god of the underworld and fertilizing forces) and Isis (goddess of divine love and reproductive power). Pharaohs also turned into gods after death. At the heart of the religion was the belief in the personal immortality of the soul. It was preserved if the body of the deceased was preserved on earth. In addition, his sculptural image remained the double of the deceased on earth. These features of the cult influenced the formation of a high culture of embalming corpses, and in architecture – the creation of tombs. The creation of sculptural doubles formed an outstanding school of Egyptian sculpting.

The pharaoh was the absolute monarch of the country and, at least in theory, had complete control over its land and resources. He was the supreme military commander and head of government, relying on a bureaucratic apparatus of officials to manage his affairs. The function of management was performed by the vizier, who was his right-hand man, representative, and supervised land surveying works, treasury, construction projects, legal system, and archives. At the regional level, the country was divided into 42 administrative districts (nomes).

A large part of the economy was centralized and under strict control.

Although the ancient Egyptians did not use coinage until the Late Kingdom, they had a kind of monetary barter system.

Egyptian society was highly stratified and social status was clearly defined. Peasants made up the bulk of the population, but agricultural products belonged directly to the state or the temple.

Peasants had to pay a labor tax and were required to work on irrigation or construction projects under the conscription system. Artists and artisans had a higher status than peasants. But they too were under the control of the state, working in workshops attached to temples and receiving wages directly from the state treasury. Scribes and officials formed an upper class known as the “white kilt class” in

reference to the bleached linen garments that marked their rank. The upper class clearly expressed its social status in art and literature. One step below were priests, doctors, and engineers with special professional training in their field. Slavery was known in ancient Egypt, but the extent and prevalence of its use is not precisely established.

The head of the legal system was officially the pharaoh, who was responsible for passing laws, administering justice, and maintaining law and order. Although no legal code survives from ancient Egypt, court documents show that Egyptian law was based on commonsense notions of right and wrong, which emphasized the need to reach agreements and resolve conflicts.

Egypt was rich in building and decorative stones, copper and lead ore, gold, and semi-precious stones. These natural resources allowed the ancient Egyptians to build monuments, sculpt statues, and make tools and jewelry.

The sculpture of Ancient Egypt is one of the most original and strictly canonically developed branches of the art of Ancient Egypt. Sculpture was created and developed to represent kings and queens in physical form. There were also many images in the tombs of ordinary Egyptians, mostly made of wood.

Ancient Egyptian **relief** is a characteristic branch of fine art that did not lose its relevance from the beginning of the dynastic period to the end of the Hellenistic era in Egypt. Egyptian artists have never forgotten the need for integrity, organicity of the entire ensemble. One art always seems to grow out of another. The relief was usually painted, and hieroglyphs were applied to it. It was a synthesis of three arts – architectonics, sculptural modeling of the volume and painting in the colors of the real world. Hieroglyphic writing consists of hundreds of characters. It history begins approximately from 3000 BC. A hieroglyph can mean a word, a sound, or be an ineffable determiner. The same symbol can serve different purposes in different contexts. Hieroglyphs were the official alphabet used on stone monuments and tombs. They could be as detailed as individual works of art. In everyday writing, scribes used a cursive form of writing called hieratic, which was faster and simpler.

The formal hieroglyphs can be read in rows or columns in any direction (although they are usually written from right to left). But hieratic writing is always written from right to left, usually in horizontal lines. The new form of writing (demotic) became the most common style. Along with the formal hieroglyphs it is accompanies the Greek text on the Rosetta Stone.

The ancient Egyptians traded with neighbors far and near to obtain rare, exotic goods that were not available in Egypt. In the Predynastic period, they established trade with Nubia to obtain gold and incense. In addition, they established trade with Palestine. It is evidenced by Palestinian-style oil vases found in the tombs of First Dynasty pharaohs. Gods were worshiped in cult temples, which were in the hands of priests who preached on behalf of the king. A cult statue stood in the center of the temple. Temples were not places of public worship or assembly. Only on holidays and celebrations was the cancer with the statue of the deity brought outside for public worship. Usually, the god's possessions were cut off from the outside world and were accessible only to temple officials. Ordinary citizens could worship private statues in their homes, and the forces of Chaos were protected by amulets. After the New Kingdom, the role of the pharaoh as a spiritual mediator receded into the background. And religious customs shifted towards direct worship of the gods. As a result, the priests developed a system of oracles that communicated the will of the gods directly to people.

Ushebti are special figurines depicting people, usually with their arms crossed on their chests, or with any tools. They were necessary to perform various work in the afterlife instead of the master. Ushebti were usually made of wood or soft stone. The purpose of ushebti is to provide the deceased with food and to distract him from hard work.

Embalming is a method of preventing rotting of corpses or individual organs. It is used to preserve the bodies of people after their death.

A mummy is a body preserved by embalming. A mummy is a body not only of a person, but also of any other living being, subjected to special chemical treatment, because of which the process of tissue decomposition is stopped or slowed down.

The many achievements of the ancient Egyptians include mining, engineering, and construction technologies, thanks to which monumental pyramids, temples, and obelisks were built; a system of mathematics, a practical and effective system of medicine, an irrigation system and agricultural production technologies, the first known wooden boats, Egyptian faience, glass production technologies, new forms of literature. Ancient Egypt left a legacy. Its art and architecture have been widely copied, and its ancient artifacts have found their way to far corners of the world. Its monumental ruins have inspired the imagination of travelers and writers for centuries. Interest in antiquities and excavations on the part of Europeans and Egyptians arose at the beginning of the modern era. It gave rise to scientific studies of Egyptian civilization and led to a wider recognition of its cultural heritage.

2.2 Typology of architectural structures of Ancient Egypt

Egyptian archaeologists discovered a large ancient city near Luxor in 2021. It was overlooked for centuries, although it was located next to the most famous sights. The city was built more than 3.4 thousand years ago, when Amenhotep III ruled. He was one of the most powerful pharaohs of Egypt. There were three palaces that belonged to him. During the excavations, archaeologists discovered the ruins of houses made of raw bricks, the walls were sometimes three meters high. It is noteworthy that some of the rooms have been well preserved. Many household objects were discovered there (rings, scarabs, colored ceramic dishes, clay bricks bearing the seal of Amenhotep III).

The architecture of the Old Kingdom in the field of monumental construction left the tomb as the main architectural symbol of the era. They turned out to be more significant than palaces and temples. Belief in immortality forced the construction of a very durable dwelling for the deceased. It was a memorial stone tomb, in which a

sarcophagus with a mummy was placed. In this regard, in the hierarchy of the arts of the Old Kingdom, the first place belonged to memorial sculpture and architecture.

The construction of memorial churches took a back seat. And the construction of “housing for the living” became completely secondary. The contrast between the light ephemerality of the housing architecture and the tombs that have survived for 50 centuries is impressive.

Residential buildings were built either of adobe, or of reeds and coastal vines coated with clay. The urban development was cramped, the dwellings faced the narrow streets through hollow adobe walls. Family life centered around the courtyard. The rooms were small, as wooden beams for their ceilings were in short supply. The house was covered with a roll made of bamboo, reeds, covered with mats and filled with earth.

Mastaba became the first and quite massive type of tombs for wealthy people. These are rectangular in plan and trapezoidal in cross-section (with rounded upper corners) structures. They consisted of several chambers. The front chamber was open for memorial rites. The middle chamber was closed with a bricked-up statue of the deceased and gifts to him (pictures or relief images of them on the walls of the cell). And the third chamber is closed, where a sarcophagus with a mummy was placed in a “well” in the floor. The covering of the mastaba provided openings for the free movement of the soul of the deceased. The dimensions of the mastaba were 7-8 meters high.

However, the main memorial building and the main achievement of the architecture of the Old Kingdom is the pyramid – **the tomb of the pharaoh.** The pyramid is a solid stone massif with small chambers inside for the sarcophagi of the pharaoh and his family members. Sometimes, especially in large pyramids, several unloading chambers are arranged above the burial chamber. It is preventing the burial chamber from being crushed by the mass of stonework.

For the first time, the pyramids began to be built in the XXX century BC under Pharaoh Djoser. His pyramid at Baccarat is a stepped structure of six tapering,

square-based truncated pyramids. The height of the pyramid is 60 m, the author is the architect Amenhotep. The search for the optimal pyramid shape continued. The pyramid of pharaoh Snefru in Meidum was two truncated square pyramids that were placed on top of each other. The hundred-meter pyramid in Dahshur consists of the lower volume – in the form of a truncated one, and the upper one – in the form of a full pyramid, installed on the lower one without a ledge.

The final form of the tomb of the pharaohs – a single volume of a geometrically regular pyramid with a square base – was found during the construction of the Giza pyramid ensemble (XXIX–XXVII centuries BC) on the desert left bank of the Nile in the vicinity of modern Cairo. The ensemble consists of three pyramids of pharaohs Cheops (Khufu), Khafren and Mikkerin, surrounded by mastabas of nearby dignitaries. The ensemble, in addition to the pyramids and mastak, includes a twenty-meter sphinx sculpture. It carved from a stone monolith and a semi-underground memorial temple.

The tallest (originally 146 m) and perfect in shape, the pyramid of Cheops has a square base (230 m × 230 m) and occupies an area of more than 5 hectares. Khafre's pyramid is three meters lower. The lowest pyramid of Mykerinus is about twice as low. The shape of the cross-section of the Cheops pyramid is two "Egyptian" triangles paired with large legs. The other forms of intersection are an equilateral triangle. The inclination of the faces of the Cheops pyramid to the horizon is 51° 50'.

The sides of the pyramid are precisely oriented to the cardinal points.

The construction of the pyramids is large block. The pyramids were made of large (up to 2 tons in weight and volume of 1 cubic meter) roughly hewn blocks of yellow limestone on a lime solution, faced with dry polished slabs of white limestone. Only a small part of the cladding on the top of Khafre's pyramid has survived to this day. The entrance to the funeral chambers was located relatively high. It led in sloping lines to the main or additional chambers. In the Pyramid of Cheops, the inclined passage to the burial chamber for most of its length (the "Great Gallery") has an elevated height. During the construction of the Cheops pyramid, which lasted 20

years, 2 million 400 thousand stone blocks were used, and 100 thousand workers were involved in the work.

During the Middle Kingdom, the construction of funerary temples begins. The most significant of these is the mortuary temple of Mentuhotep III at Deir el-Bahr (around 2000 BC), the monarch who united all of Egypt at the beginning of the Middle Kingdom. The temple, located on the border of the desert. It has a strictly axial composition, on the axis of which the propylaea, an avenue of statues, a spacious front yard. And, the first pillared hall, in the center of which a pyramid is installed, the second pillared hall, the second courtyard and the sanctuary, are in sequence, going deep into the rock.

The exterior of the temple is formed by two tiers of wide square terraces surrounded by porticoes. A pyramid rises in the center of the upper terrace. 400 years later, in the era of the New Kingdom, the temple of Mentuhotep III will be combined into a common ensemble with the temple of Queen Hatshepsut.

In the period of the Middle Kingdom, several new compositional elements are formed, which will be actively assimilated in the temple architecture of the New Kingdom. For example, separately located obelisks, columns with a capital in the form of the head of the goddess Gator (Gatoric capital), pylons appear in front of temples. Architecture of the New Kingdom is primarily temple architecture. The tombs of the pharaohs were built secretly in the desert area of the left bank of the Nile, protecting them from robbers. Today, the latter have been replaced by archaeologists, who continue to discover burials that have not been looted. The New Kingdom is the period of Egypt's greatest glory. After driving out the Hyksos, the Egyptian pharaohs conquered Nubia, and in Central Asia – Palestine, Syria, and Phoenicia. Accordingly, the cult of the pharaoh grows, and the influence of the priesthood additionally increases. Accordingly, the influence of religion is growing and the material environment for conducting religious ceremonies is being formed. Naturally, such an environment becomes the monumental temples, which are now built on the ground, in contrast to the cave and semi-cave temples of the Middle

Kingdom. The largest ensemble of two temples dedicated to Amon-Ra was built in Luxor and Karnak in the XIII–XII centuries BC.

Temples are built following a strictly axial composition, which directs and organizes the religious procession to the temple and inside it. The general characteristic of the composition of the temples of the New Kingdom relates to three of its features:

– temples retain a quantitative style in the dimensions of pylons and columns and in their close arrangement, which depresses a person;

– temples are works of “pulsating” procession movement (with stops in front of the pylons, in front of the hypostyle hall and in front of the sanctuary);

– the axial composition of the temple leads from the sun-drenched outer space to the gloom of the sanctuary in the same pulsating way.

These features correspond to the two main ideological tasks of the temple – the glorification of the supreme power and its cosmic interpretation.

Along with terrestrial ones, the construction of rock temples continues in the New Kingdom to a lesser extent. The rock temple on the banks of the Nile in Abu Simbel (late XIV-early XIII centuries BC) is the most popular of the rock temples. Rock (semi-cave) temple of Queen Hatshepsut, built at the end of the XVI century BC by the architect Senmut on the border of the desert, in an almost vertical rock, and is a frontal continuation of the temple of Mentuhotep III in Deir el-Bahr.

Rock temples remain few in the New Kingdom. The planning system (pylons, peristyle, hypostyle, sanctuary) and decor of the ground temple remain the most repetitive and stable for many centuries. They are repeated in the huge temple in Edfu (III-I centuries BC) and in the small temple on the island of Philae already in our era, when Egypt will become a province of the Roman Empire.

The construction technique of masonry made of hewn stones on a lime mortar remains steadfastly unchanged. The carving is rougher than in the era of the Old Kingdom, which does not allow dry laying. The floor is made of stone. The lack of construction forests in Egypt allowed the use of wooden floors only in periods of

prosperity of the country due to the import of wood from Lebanon and other countries. Most often, it was necessary to use either beam stone ceilings or false erections. The Egyptians did not know the spandrel vaults, which were widely used in Mesopotamia, and performed a false construction without a spanner. There was the overlap of the span between parallel walls due to the cantilevered releases of the stones of each row of masonry until they are completely closed.

2.3 Egyptian temple

The moment when architecture for the first time in history created a large complex of luxurious temples imbued with a special sense of vitality is the era of the creation of the Temple of the Dead Khafre. A rhythmic composition of rooms was created here for the first time. In both buildings, there is a cramped room in front of the hall. A large space of the hall, which evokes a feeling of freedom is and after a narrow passage. In the main building, the rooms follow a certain gradation. After the front room, the visitor is greeted by a wide hall lined with pillars. Then he is received by a three-nave narrow and long deep hall, which finally leads him to a large courtyard with statues. An enfilade of halls opens in perspective even before entering the main hall. Then it is opposed by narrow rooms with statues that seem to delay the movement. Thanks to that the main altar, the courtyard of the pyramid and the tomb itself, which are located behind narrow passages, give the impression of an impregnable mass of the wall. There is a holistic movement in depth. Everything is kept in large sizes, based on sharp contrasts, on strict simplicity. These motifs consist of a pillared hall of three variants, an arcaded courtyard with a door to the outside, and identical box-shaped rooms.

Inside there is no ornament or relief frieze, only cult statues. The absolute advantage of right angles is not only in plan, but also in construction.

One hundred and fifty years later, the temples of the late kings of the fifth dynasty arose. They hardly change the general location. The fact that the wide and deep rooms of the main building are reduced here is explained by considerations of

economy. The fact that the repositories are more numerous and differently located is not significant and cannot be explained. But the main building shows significant progress. Khafre's large yard, which contradicted the axial composition with its width, is now drawn into the main rhythm of the building. While the statue hall used to be divided into five equal channels. Now it is condensed in the main room, the back wall of which is decorated with royal images. This is already visible near the entrance to the first door. The room, which by design is the main one in the entire building, dominates not because of its size, but because of the two niches located in front of its facade, near the entrance. Thus, a stronger, unified movement develops towards the center of the building.

Large cycles of wall reliefs appear for the first time in tomb temples of the Fifth Dynasty. Then a new constituent part appears: the yard acquires greater wealth and freedom thanks to the arrangement of the peristyle. The columns stand in front of the facade of the statue hall and, thanks to the open portico of the gate in front of the entrance, acquire a livelier appearance. The column is an invention of Egyptian art, with rich implications for all future architecture.

For Egypt earlier and more acutely than for other countries, the problem arose of replacing wood with any other material in the support, which served as the main element of its primitive architecture and remained so for light buildings even later. The country of the Nile is poor in timber, but rich in excellent building stone. Since the time when architecture took on big tasks, the old building materials (Nile silt, reeds, bricks, wood) were no longer enough, because they could not give the necessary impression of grandeur and luxury. The tomb temples of the kings of the fourth dynasty had to be preceded by long experiments in the creation of brick and wooden buildings.

They have all the forms so well thought out in the stone that no trace of any search remains. And this is of great historical importance. Because, as we will see, the architecture of Eastern Asia was never freed from bricks. Greek and Roman temples were also built from unburnt bricks for a long time, and even northern

architecture would have remained wooden if not for Roman, and then Romanesque stone architecture that influenced her. Upon investigation, it turns out that the driving force of world architecture, which introduced stone construction, was Egypt. It first influenced Crete and Western Asia, and then Greece. The history of stone construction begins with the temples of the Fourth Dynasty.

With the introduction of the stone beam, the stone pillar was also introduced, and thus a new way of creating space mobility. Large rooms can be covered with a ceiling, vary in plan, and be equipped with spans. A new element of the expression of space appears – the rhythm. This is a rhythm of a series of supports, in which the same stereometric value is reduced in perspective and repeated at equal intervals. Covering the depth, the eyes find both obstacles and points of support. Covering the height, the space receives, thanks to the support, a certain orientation.

Thanks to the play of light and shadow, the support appears to be a plastic body with light and dark planes. Thus, differentiated interior spaces with numerous spans and cuts, light and shadow arise. Soon, however, the powerful pillars used during the construction of Khafren seemed too difficult to perceive. Because they took up too much space, obscured the spans. Then they are replaced by a column. Probably this happens at the end of the reign of the fourth dynasty and its replacement by the fifth.

A column is the purest expression of the poetic essence of architecture. In ordinary life it is not needed. But wherever a form of expression of grandeur, luxury and cheerfulness is sought, the column is the main expression of the festive worldview. A column is not an abstract form. It is like a work of nature, transmitting and reflecting human experiences like no other building part.

In all nations, the temple is the “house of God”. The more human-like a deity is thought to be, the more similar his dwelling should be to the house of his worshipper. A similar phenomenon occurred in the development of Egyptian burial structures and settlements. The affinity between residential and religious architecture is obvious. In the Egyptian house, there was a yard or garden in front of the living quarters, often with a portico on the entrance wall. Own living quarters were separated and were

accessible only through a wide room. Then there was a central, almost square room, supported by columns, perhaps it rose above the other rooms.

We can see this in a well-known characteristic example of a simple temple structure – the sanctuary of the god Honu in Karnak (Fig. 2.1). This is the construction of the Twentieth Dynasty. First there is a courtyard with a portico raised above the ground, which passes to the side walls; then comes the broad transverse colonnaded hall, and then the proper living quarters of the deity, the main altar, and the four-columned peace. Just as the construction of a private house was determined by the needs of life, the size and wealth of the family, so the number, decoration, construction and setting of the living quarters of the temple depended on the number of gods to whom the building was judged and the individual characteristics of their cult. Thus, for example, in the great temple at Luxor, which, except for the first court of the era of Rameses II, is a fine Eighteenth Dynasty edifice, the number of motifs is doubled, so that wide colonnaded halls. And four-columned rooms dominate innumerable side rooms. But the basic layout remains the same, although it has been individually reworked and partly almost hidden by the large number of additions and alterations of the Nineteenth and Twentieth Dynasties.

A monumental alley led to the temple. It served as a mediator between the temple and the open landscape, bordered on both sides by long rows of rams or sphinxes. The main entrance was defined by powerful towers, pylons, on which huge flags were raised, in front of which stood obelisks. The sloping walls of the pylon also indicate its origin from a primitive earthen or stone embankment. The round ridge along the edge is reminiscent of the original thickened reed ties that served to strengthen the corners of unburnt brick buildings. Thus, they are a motif borrowed from the second period of Egyptian architecture (the age of brick), which became constructively useless in the third period during the transition to stone masonry. The facade of the pylon in the temple building, borrowed from the construction of the fortress, has the meaning of the backstage.

After passing through the gate, the polyphony of the porticoes and the hall begins. The influence of this polyphonic architecture did not reach later. The main motif, although simple, is the alternation of columns, already familiar to us from the courtyards and premises of the Fifth Dynasty era. There is neither a new rhythm of internal proportions, as in the Greek Doric temple, nor variations in the composition of porticoes, which are not enclosed in large undifferentiated spatial structures, as in late Romanesque and Gothic architecture. There is only one motive important for the further history of architecture. It was also prepared in the hypostyle hall of the era of the fifth dynasty and was carried out already in the era of the Middle Kingdom. It is a basilica elevation and independent lighting of the central part of several naves.

Thanks to this, the central axis was strengthened. And at the same time there was a new differentiation of bright and gradually darkened rooms, the contrast of which had a certain meaning in the Egyptian temple. Because the meaning of these essentially simple rooms lies in the juxtaposition of the dark sanctuary with the light-filled courtyard, in the placement of columns in front of the rooms that were in the shadow, in the clear juxtaposition of the light front plane to the dark background of the relief. Starting with the Eighteenth Dynasty, everything is deliberately done to maximize these effects. Now rows of columns are placed in a cluster, hypostyle halls look like a forest of columns. Everything is given on a gigantic scale, and when the spectator is met at the entrance by the figures of colossi, personifying the almighty power of the deity, he is lost in the immeasurable columned halls before their enormous dimensions. The gigantic was already created in the pyramids, and the first colossus in the history of art is the sphinx at Giza. But these were only isolated works. In the New Kingdom of Amenophis III, the desire for the colossal reaches its limit. Plant columns, the forms of which, either because of the further development of forms, or for the sake of greater simplification, have become more abstract, stand up as gigantic creations of a distant world for humans. The variegated magnificence of wall and column reliefs, sacred dishes, carpets and objects of worship – everything bears the imprint of the influence of religion, which long ago became mysterious and

incomprehensible. To this should be added a huge apparatus of personnel and many ceremonies; everything is in the service of romance, which surpasses any earthly measure in terms of power of impression.

That is why neither Greek philosophy nor Greek life wisdom could shake the Egyptian cult, even the Roman conqueror was not able to conquer it.

2.4 Art of Ancient Egypt

In ancient Egypt, architecture, art, and sculpture were connected by a religious cult and had a syncretic connection, that is, they served the same purpose. Sculpture was an integral part of architecture. Without murals, the walls of temples and burials would not have attribution and would not be perceived according to the status of the buried person or the deity to whom the building was dedicated.

The sculpture of Ancient Egypt is one of the most distinctive and strictly canonically developed areas of the art of Ancient Egypt. Sculpture was created and developed so that people could imagine kings and queens in physical form. Statues of gods and pharaohs were placed on public display, in open spaces and outside temples. The sacred image of the god itself was in the temple, in the altar part, in a boat or barge, usually made of precious metals, no such image has survived.

A huge number of carved figurines have been preserved (figures of gods, toys, dishes, etc.). Such figurines were made not only of wood, but also of alabaster, a more expensive material. Wooden images of slaves, animals and property were placed in tombs to accompany the dead in the afterlife.

The sculpture of the Early Dynastic Period comes mainly from the three great centers where the temples of Abydos and Coptos were located.

Statues served as an object of worship, performing rituals and had a dedicatory purpose. A large group of monuments was associated with the “Heb-Sed” rite – a ritual for renewing the pharaoh’s physical strength. This type includes the types of seated figures of the king and walking figures made in round sculpture and relief, as

well as the image of his ritual run characteristic exclusively for compositions in relief.

From the era of the Old Kingdom, many sculptural monuments have been preserved, most of which had a ritual purpose. Burials and temples abound with portrait images of doppelgängers of the dead – ka, which formed the portrait art of Egypt. Statutory compositions in the Old Kingdom strictly followed a certain number of canonized types. Standing figures with the left leg extended forward, figures sitting on a throne or bowing became especially popular. In connection with ritual purposes, the technique of complex inlaying of eyes or relief contouring along the contour of the eyelids. As well as careful decorative design of statues, which, despite the canonical composition, received an individual picturesque interpretation, was introduced a long time ago. In the tombs, small figurines depicting people at work are found everywhere. Here the canon is observed less strictly, although the masters avoid imbalance in the position of the figure in every possible way.

Significant changes in sculpture took place precisely in the Middle Kingdom. It is largely explained by the presence and creative rivalry of many local schools that gained independence during the period of disintegration. Since the twelfth dynasty, ritual statues have become widely produced. They are installed not only in tombs, but also in temples. The art of the Middle Kingdom is the era of the flourishing of plastic arts of small forms. It mostly still connected with the funeral cult and its rites (sailing on a boat, bringing sacrificial gifts). The figurines were carved from wood, covered with soil and painted.

The art of the New Kingdom is characterized by a significant development of monumental sculpture, the purpose of which now often goes beyond the scope of the funerary cult. In the Theban sculpture of the New Kingdom, features appear that are not characteristic of not only official but also secular art. In the art of the New Kingdom, a sculptural group portrait appears, especially images of spouses.

The art of relief acquires a new quality. Some genres of literature that became widespread in the era of the New Kingdom have a noticeable influence on this artistic

branch (hymns, military chronicles, love lyrics). It is not uncommon for texts composed in these genres to be combined with relief compositions in temples and tombs. In the reliefs of Theban temples, there is an increase in decorativeness, a free variation of bas-relief and high-relief techniques in combination with colorful paintings. The art of the Amarna period is distinguished by its remarkable originality, which stems primarily from the character of the new worldview. The creator of this style was sculptor Buck. The most unusual fact is the rejection of a strictly idealized, sacred understanding of the image of the pharaoh. A new understanding of portraiture now demanded a reliable transfer of the pharaoh's appearance down to the characteristic features of the body structure. The criterion of plausibility was a kind of protest the former official art, therefore the word "maat" (truth) is filled with a special meaning. The characteristic methods of depicting the pharaoh were also extended to members of his family. A frank innovation was the depiction of figures completely in profile, which was once not allowed by the Egyptian canon. The fact of preservation of ethnic features in the portrait was also new.

In the field of sculpture of the Late Kingdom, the skills of ancient high craftsmanship are partly fading. For example, portrait images on funerary masks and statues are often replaced by conventionally idealized ones. At the same time, the technical skills of sculptors are improving. This is manifested mainly in the decorative industry.

Relief images have been found since ancient times on household and cult objects, funeral stelae, but especially often on the walls of temples and tombs. In case of differences in the plots, the pictorial principle remains the same and is based on the requirements of the ancient Egyptian canon. The relief that decorated the surface was not supposed to destroy its texture. That why the height of the ancient Egyptian relief is small, sometimes less than one millimeter. There are no perspective and spatial plans. Angles are not used in the depiction of figures. Group scenes are always unfolded in one line according to the type of frieze. There are usually several such frieze belts. The flat silhouette of the drawing was emphasized with a generalized

contour close to a geometric one. The relief painting covers its areas with an even layer, while the tradition of using pure contrasting colors remains intact for many centuries. The main design of the relief compositions of this or that tomb belonged to the head of the works. Other outstanding specialists performed individual reliefs or transferred ready-made episodes to the walls, based on smaller-scale sketches. Sketches of the future composition were applied to the prepared wall, after which the masters cut out the contours and painted the relief with brushes.

The relief technique combined three stages: drawing with paint on the prepared plane, sampling the relief and final coloring. Mineral paints were used in the paintings: red ocher, yellow ocher, green ocher – grated malachite, blue – lapis lazuli, black – soot. The content of paintings and reliefs in the burials of the Ancient Kingdom can be divided into two types. Those that glorify the pharaoh, describe his great deeds, committed by him in his earthly life, his subjects. More rarely paintings dedicated to the mystery of the future life, “the life of eternal and eternal bliss”.

In the art of Ancient Egypt, two types of relief were used – bas-relief, in which the background around the figures receded, and high-relief, with a deepened contour, but the background was preserved. Inside the contour of the drawing, the master could model the image. However, at all stages of work, he was bound by a whole system of rules. Each figure combines fragments of images given in different angles, from different points of view. The torso is depicted in a front or three-quarter view, the head and legs are in profile. This approach to the image, determined by canonical rules, gives a special character to the plasticity of figures and the transfer of movement in the ancient Egyptian relief. A very small degree of variation in the poses and movements of various figures on multi-figure compositions-friezes. This gives the relief a mood of unhurried, calm sequence. In addition, such a composition was especially naturally associated with the plane of the wall, emphasizing its harsh and smooth surface.

Egyptian artists have never forgotten the need for integrity, organicity of the entire ensemble. And one art always seems to grow out of another. The relief was usually painted and signed with hieroglyphs.

Painting in ancient Egypt was part of the cult of death, so images were created with great care. To avoid mistakes, a canon was developed – a model that every artist followed. The ideal correctness of geometric shapes was observed with the help of a grid, which was previously applied to the surface for painting. The pattern of the Old Kingdom consisted of 18 squares, and later it became 21 squares. The hieroglyphs and pictograms that accompanied the picturesque images helped to make the picture even more understandable.

The ancient Egyptian canon demanded that every part of the body be depicted in such a way that it was visible in the best possible way. This leads to the fact that in one figure of a person or a god, points of view from different sides are combined. The head, arms and legs are always depicted in profile, and the eyes, shoulders and chest – in full face. Usually, the silhouette of the figure is surrounded by a contour, which makes it integral. The right profile is most often used, the left one is less common. This principle was extended to other subjects as well. For example, on a fresco from the Nebamun estate of the 14th century BC we see the pool from above, as on the plan, but the fish and birds in it are drawn in profile. The surrounding trees are directly depicted.

The artists of Ancient Egypt did not seek to convey a portrait likeness. They considered it important to talk about the social status of the depicted person. This is how the characteristic attributes of a pharaoh, warrior, scribe, peasant, and so on appear. In addition, the significance of the reproduced figures was emphasized by the scale. The pharaoh was made taller, compared to his wife or soldiers, and the figures of the servants were quite small.

The Egyptians used bright and long-lasting mineral paints, which were rarely mixed. Each basic color was assigned a certain symbolic meaning, which depended on what should be depicted with this color. For example, white color is a symbol of

the morning dawn, victory and triumph; black – symbolizes death and rebirth in the afterlife. The red color was associated with the barren land burnt by the sun and meant evil, red was written for the fratricide god Set and harmful animals; yellow – one of the favorite colors of the Egyptians – eternity and divine essence. Green is the color of hope, rebirth and youth, characteristic of the resurrected god Osiris; blue is water and new life.

Later, Egyptian culture gradually lost its characteristic features under the influence of conquerors – first the Greeks, and then the Romans. By the beginning of the new era, the eclectic art of the Fayum portrait flourished in Egypt. These images were also used for burial, but they were created during life, when a person was still full of strength. Or artists painted such an image, relying on their imagination. The Fayum portrait is characterized by the desire to convey the main features of the hero, to make him recognizable.

2.5 The culture of Hellenistic Egypt

Hellenistic Egypt, or Egypt of the Ptolemies is the period from 332 BC to 30 BC. This period is associated with the conquest of Egypt by Alexander the Great. After several centuries Egypt was conquered by the Romans, and it became a province of Rome.

In 332 BC Alexander the Great came to Egypt to conquer it, where he was proclaimed pharaoh and took on the incarnation of Zeus-Amon. Thus ended the rule of the Achaemenids in Egypt. After 9 years in 323 BC Alexander died suddenly in Babylon. His death triggered a twenty-year war between the diadoches, who fought for power in Alexander's vast empire. The result of this struggle was the division of the territories captured by Alexander. Egypt fell to Ptolemy I, who ruled in 323-283 BC, who proclaimed himself king in 305 BC. The dynasty founded by Ptolemy ruled Egypt until its conquest by the Romans.

In the management of Egypt during the Ptolemaic era, both Greek-Macedonian and Egyptian features were organically combined. All power belonged to the Tsar.

He headed a large staff of officials. This is evidenced by the large amount of office correspondence that has come down to our time. Letters and documents were kept in Greek.

In Hellenistic Egypt, the polis did not play a significant role. There were only three of them in the entire state: Alexandria, Naucratis (an old Greek colony) and Ptolemais (founded by Ptolemy I Soter). At the same time, ancient Egyptian cities were significant, although they did not have self-government: Memphis, Thebes, Herakleopol and others.

Alexandria was the largest Hellenistic city, the most important center of craft and trade in Egypt. The geographer Strabo wrote that, thanks to its favorable geographical location, Alexandria had almost the largest market in the world. Alexandria was rebuilt according to the plan of the architect Deinocrates of Rhodes and had a regular layout. The city was divided into five quarters. The palace of the Ptolemies, the theater, the Alexandria Museum, the Alexandria Library, and the tomb of Alexander the Great were in the royal quarter. The Alexandria Museum is the main scientific and cultural center of the Hellenistic world, founded at the beginning of the III century BC under the first Ptolemies on the initiative of Aristotle's student Demetrius of Faler. Scientists from many fields of science, who were invited from different countries of the Mediterranean, lived and worked in the Alexandria Museum.

The Alexandria Museion was headed by priests of the highest rank, who were personally appointed by the Ptolemies, and then by the Roman emperors. Scientists working in the museum were fully supported by the Ptolemies (later the Roman emperors). The museum reached its peak in the 3rd century, and according to some scholars – until the III-II centuries BC. Great successes were achieved in mathematics, astronomy, natural science, geography, medicine, philology and grammar.

The Library of Alexandria was founded and operated at the Alexandria Museum. The museum also included a higher school, an astronomical observatory, an

anatomical theater and several other scientific institutions. In the Roman period (after 30 BC). The Alexandria Museum is gradually losing its importance. In 272-273, during the reign of the emperor, the museum was destroyed. The Library of Alexandria was the largest and most famous library during the Hellenistic period, it was founded and operated under the Museum of Alexandria. The founder is Ptolemy II, the time of its creation is the III century BC.

After the Roman conquest of Egypt, the library retained its high importance for the new administration – until the beginning of the III century AD, its employees had the privileges of the Ptolemaic era. Alexandria had the status of an intellectual and educational center as early as the V century. There were two library collections: the main one, which was in the royal palace in the Bruheion quarter (it was damaged during the war of Julius Caesar in 48 BC); auxiliary – in the temple of Serapis (Serapeum), publicly available funds and educational literature were stored there.

The main fund of the library ceased to exist during the hostilities of 273. Bruheion was destroyed by the emperor. Since the XVIII century, a version has spread that a part of the library kept in the Serapeum was destroyed during the clashes between Christians and pagans in 391. But it is not unequivocally confirmed by ancient sources. According to legend, the destruction of library funds ended during the Arab conquest in the first half of the VII century. During the reign of the Ptolemies, Alexandria became the largest Egyptian polis of archives and proto libraries. The library was required to receive copies of all documents found on foreign ships. By order of the Ptolemies, the archives of other countries were even looted to obtain original literary and scientific materials.

The book fund of the Library of Alexandria consisted of Greek and translated Eastern literature (the number of books is different: from 50 to 700 thousand scrolls, which at that time was the largest collection in the known world). Callimachus, a famous poet and critic of the Alexandrian period, who was at the head of the Library of Alexandria (middle of the III century BC), left bibliographic tables of 120 manuscript scrolls compiled based on the funds of the Library of Alexandria. Around

the Library of Alexandria arose what is commonly compared to a university, which attracted many scientists (Aristarchus of Samos, Euclid, Herophilus and others).

It is believed that the main fund of the Library of Alexandria perished in a fire in 47 BC in Caesar's war with Pompey – during the siege of Alexandria by Julius Caesar. It was part of a campaign to win the polis. A large part of the collection, gathered by nine generations of scholars, burned when the fire that engulfed the fleet of Ptolemy XIII spread to the library warehouses.

At the end of the IV century, Christian rulers fought against paganism as a response to the Roman persecution of Christians in the previous centuries. In 391, the emperor issued a decree to Patriarch Theophilus of Alexandria to destroy pagan temples. Could the books have perished at the same time? There is a lack of concrete evidence of this in historical science. Most of it was destroyed in 415 by a crowd of fanatics, incited by Bishop Cyril of Alexandria. The book riches of the Library of Alexandria finally perished in the VII and VIII centuries. During Roman rule, Egyptian libraries were transported to Italy as war trophies, where they were burned. In 641, the library was taken over by Arab conquerors. A few books the Arabs found interesting, and when asked what to do with the rest, the caliph Omar Ibn Al-Khattab replied: "If the content of these books is in accordance with the Qur'an, then we can do without them, because the book of Allah is more than sufficient. If, on the other hand, their content contradicts the book of Allah, there is no need to keep them. Act on that and destroy them". Only the works of Aristotle survived.

Temples in Egypt have always been large economic centers. This was especially noticeable in Thevadia, where the temple of Horus in Edfa, the temple of Isis on the island of Phyla and others were located. Temples had certain privileges in the field of craft production. For example, they had the right to produce sesame oil, which was a state monopoly, and the right to manufacture special fabrics. Priests received financial aid from the treasury and collected offerings from believers.

Thebes, the Egyptian name of Waset, is the capital of Upper Egypt. The city was located 700 km south of the Mediterranean Sea, on the east bank of the Nile.

Originally, the city was called No-Ammon, or simply No. The remains of Thebes in the modern city of Luxor – the Karnak and Luxor temples – were among the first to be declared UNESCO World Heritage Sites.

On the west bank of the Nile, there are rock-cut funerary temples and necropolises of pharaohs and their relatives, as well as the colossi of Memnon. A little to the side is the above-ground memorial temple of Queen Hatshepsut.

The monumental art of Ancient Egypt remained in the distant past. However, several impressive buildings were built during the Hellenistic era as well. The main one is the Faro lighthouse – one of the "seven wonders of the world". The lighthouse was built by the architect Sostratus of Knidsky around 280 BC. on the island of Pharos to illuminate the entrance to the harbor for ships and exceeded 100 meters in height. It may have been the first lighthouse in human history, and without a doubt, it was one of the most remarkable creations of the Hellenistic world. The building stood for 1,500 years, and then was destroyed.

The painting of Hellenistic Egypt of the I-III centuries is marked by the Fayum portraits, which were created using the encaustic technique of funerary portraits. They got their name from the place of the first big find in the Fayum Oasis in 1887 by a British expedition led by Flinders Petrie.

Early Fayum portraits are made in the encaustic technique, which was very common at that time. This is a wax painting with melted paints, which is distinguished by a three-dimensional brush. The direction of the strokes usually follows the shape of the face on the nose, cheeks, chin, and in the contours of the eyes, paints were applied in a dense layer. And the contours of the face and hair were written with thinner paints. The paintings made in this way are characterized by a rare freshness of color and they are surprisingly durable. It should be noted that the arid climate of Egypt contributed to the good preservation of these works.

An important feature of Fayum portraits is the use of the finest gold leaf. In some portraits, the entire background was gilded, in others, only wreaths or headbands were made of gold, sometimes jewels and details of clothing were

emphasized. The basis of the portraits is wood of various species: local (sycamore, linden, fig, yew) and imported (cedar, pine, spruce, cypress, oak). Some portraits are made on canvas primed with glue. Approximately from the second half of the II century, wax tempera began to prevail in portraits.

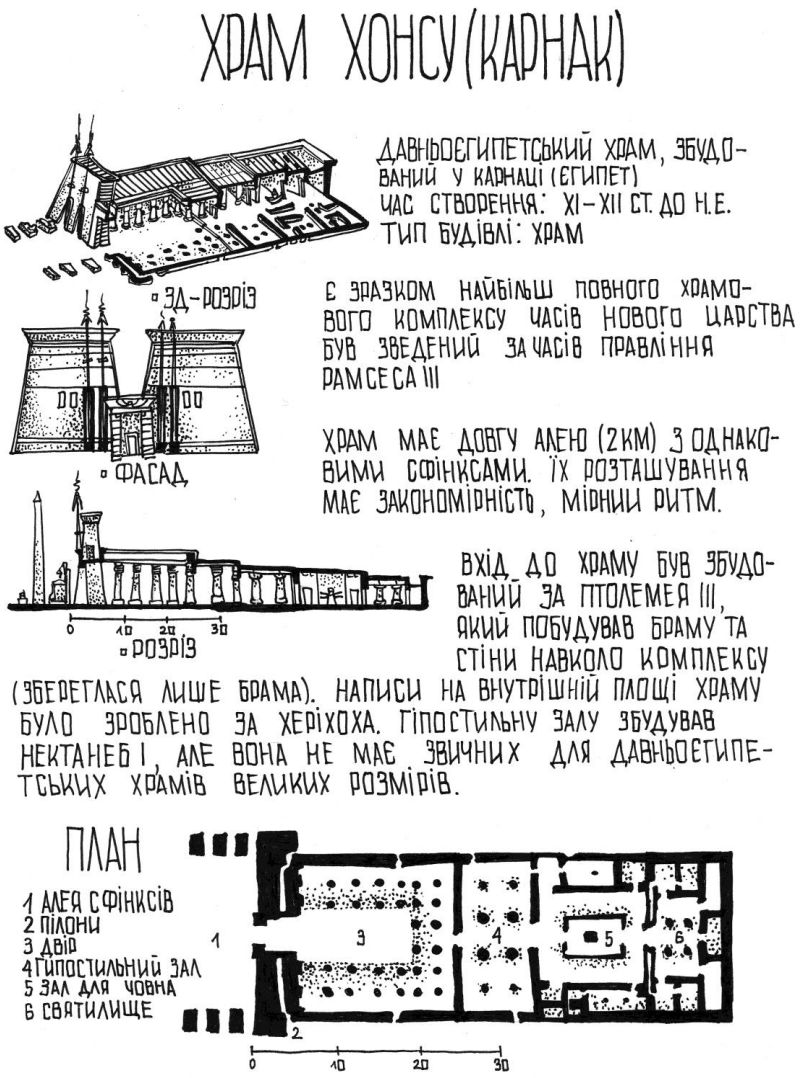

Figure 2.1 – Ancient urban planning, architecture and art of Egypt

Sources: [1–3, 5].

Late portraits of the III-IV centuries are painted exclusively with tempera. It is a technique in which colorful pigments are mixed with water-soluble binders, often using animal glue or chicken egg yolk.

Tempera portraits are made on light or dark backgrounds with bold brushstrokes and the finest shading. Their surface is matte, in contrast to the glossy surface of encaustic paintings. Faces in tempera portraits are usually shown frontally, and the performance of chiaroscuro is less contrasting than in encaustic panels. In addition, some groups of portraits were created in the mixed technique of tempera and encaustic.

Different hairstyles can be seen on the Fayum funerary portraits. They provide invaluable help in dating. For the most part, all the dead were depicted with hairstyles corresponding to the fashion of their time. Numerous analogies exist in the hairstyles of sculptural portraits.

The art of Egypt has become a rich contribution to the treasury of art of the ancient world. Ancient Egyptian architecture became a model of monumentality, grandiose building sizes, static and symmetrical in compositional methods of construction, simple in geometric forms.

3 ANCIENT URBAN PLANNING, ARCHITECTURE AND ART OF MESOPOTAMIA

3.1 Architecture of Ancient Mesopotamia

In the history of civilization, the formation of the structure of society in Central Asia occurs almost simultaneously with that of ancient Egypt. The emergence of this civilization takes place (like the ancient Egyptian one) at the end of the Neolithic, when agriculture (instead of harvesting) begins to take hold and the need for fertile lands and water for their irrigation is formed.

Mesopotamia covers the lands between the Euphrates and Tigris rivers, which flow from the Armenian Highlands in modern Turkey. Both rivers have numerous tributaries, collecting water from large mountainous areas. The climate in the region is semi-arid, wide deserts lie in the north, and silty floodplains and reed-covered shores lie to the south. The Euphrates and Tigris merge in the extreme south, pouring their waters into the Persian Gulf. In the arid climate, agriculture in the north of the

region is rainfed. And in the south, irrigated agriculture was supplemented by nomadic herders. They grazed flocks of sheep and goats, and much later camels, in the meadows near the rivers in the dry summer months and drove them into the semi-desert areas in the wet winter period.

The Mesopotamia region did not have its own building stone, precious metals or wood, so these materials were brought from the surrounding regions in exchange for agricultural products, which contributed to the development of long-distance trade. In the swampy floodplains in the south, there has been fishing since prehistoric times.

It is customary to start the **history of the ancient Mesopotamia** with the Ubayd period. In this time the first urban settlements appeared, and end either with the conquest of Mesopotamia by the Persians, or with the Arab conquest, which took place a thousand years later.

Prehistoric period. There is little evidence of Paleolithic life in Mesopotamia, and, as in other regions, they are limited to mountainous terrain.

Ancient Mesopotamia. It is the need for labor-intensive irrigation works that will accelerate the development of society in the territory of Ancient Mesopotamia – in the valley of the Two Rivers (Tigris and Euphrates). At first, small city-states were formed here – Eridu, Akkad, Ur, Lagash, Nippur, which endlessly fought with each other. By the III millennium BC states have already formed Sumer (in the south of the Biosphere Reserve) and Akkad (in the north). The states are ruled by the king-high priest. After the victories of the Akkadian king – the conqueror Sargon I – in the XXVIII century BC a single Sumero-Akkadian state is formed. An independent Babylon is emerging. In the XXI century BC Semitic king Hammurabi founds the Old Babylonian kingdom. Although the Hammurabi dynasty declined by the XVIII century BC, Babylon retains the importance of the largest political and economic center of all of Mesopotamia. But it is in continuous confrontation with Assyria, until in 689 BC the Assyrian king Sancherius I did not conquer Babylon and did not raze it to the ground. The intensive revival of the Neo-Babylonian kingdom will begin in 626 BC. In 538 BC Babylon is conquered by Persia.

In the territory of the Two Rivers, despite all the motley changes of dynasties and peoples (Sumerians, Hittites, Assyrians, Amorites), the ancient cult of the god Marduk (the heavenly autocrat, who reigned after a bloody massacre of other unruly gods) is preserved.

However, despite the continuous change of kings and peoples, the architecture of the Biennial (in contrast to the ancient Egyptian) preserves the stability of architectural and constructive forms throughout the centuries.

Urban planning in ancient Mesopotamia was carried out very intensively for three thousand years. In this regard, we can talk about Mesopotamia as a civilization of urban culture that created its own writing and literature. The legend about the Sumerian ruler Gilgamesh, created in the XXVIII century BC, belongs to the oldest literary works.

On the rather flat terrain of the Mesopotamia devoid of natural obstacles, the cities were protected by fortress walls. The most powerful fortifications, erected in the VII century BC Nebuchadnezzar, had Babylon, a city with the shape of an irregular rectangle in plan, located on the left bank of the Euphrates. But later this city spread ("new city") and to the right bank – a space surrounded by a fortress wall with a total length of 18 km appeared. The belt of walls is double, consisting of parallel walls: the outer one is 3.5 meters thick; the inner one is 6.5 meters thick. The height of the inner wall is 25 m. The walls are reinforced with towers with a step of 25 m, which are in relation to each other with an offset. An idea of the scale of the building allows you to calculate the number of towers: 360 along the inner wall and 240 along the outer wall. Outside, in front of the city wall, there was a 25 m wide moat filled with water.

The core of the city in the initial period was a temple (ziggurat), later combined into a palace-temple complex. The temple of Marduk, the ziggurat of Etemenanki, and the palace of Nebuchadnezzar were part of the sanctuary of the god Marduk (Fig. 3.1). From the east, the complex was adjoined by a procession road leading to

the sacred northern gate of the goddess Ishtar. This central district was subject to regular development techniques.

The “centrality” of the location of the palace-temple complex is quite conditional. In old Babylon, it adjoined a natural obstacle – the bank of the Euphrates and had an additional wall; thus, it took a central position only after the construction of the new city. In newly built cities, for example, Dar-Sharrukini – the suburban residence of Tsar Sargon II (“Babylonian Versailles”), built before 707 BC, a fundamentally new location of the palace-temple complex was adopted. It is located near the city wall and is placed on a high (14 meters) mounded earthen platform lined with stone. Thus, the palace center was protected from external aggression by the fortress wall, and from the uprisings of the urban blacks by the platform and deaf walls of the palace itself. The same technique of placing the palace on the platform was used in other cities.

Settlements in the cities of ancient Mesopotamia were built according to the volume-planning scheme characteristic of countries with a hot climate. Deaf outer walls and an inner courtyard is a source of natural light for the rooms of the house facing it through openings. Mesopotamia (“Beit-Khilani”) residential buildings had one volume-planning and compositional feature. The only entrance to the building was placed between two towers, which sometimes had openings for light in the upper area. This composition technique was also used in palaces, and a century later it became widely used. The two-tower entrances were originally borrowed by the Syrians, and after the Crusades they were brought by the Crusaders to Europe. There they were used in fortresses, castles and religious buildings for centuries.

Cult structures of ziggurats on the territory of ancient Mesopotamia were formed in the third millennium BC. They were reduced according to the general scheme to the middle of the first millennium. This is a step pyramid scheme with horizontal platforms at the top of each step.

The outer walls of the ziggurats, built of raw bricks and faced with burnt (or stone) slabs, had a slight inward slope. The lower part of the ziggurat was the highest,

the height of the other ledges sharply decreased towards the top, on the platform of which there was a small temple, where the priests could monitor the movement of the heavenly bodies. Their course was laid at the basis of a religious cult. Climbing from ledge to ledge was carried out by external stairs or ramps.

Ziggurats were rectangular in plan. Such was the oldest ziggurat studied by archaeologists in Ur, built in the 21st century BC (Fig. 3.2). With a base area of 62.5 m × 43 m and a height of the lower ledge of 15 m. The number of ledges in the composition of the ziggurat was not regulated. The largest and most famous ziggurat was the biblical Babylonian tower of Etemenanki (the union of heaven and earth), which had a height of nine ledges.

Mesopotamia did not have its own stone and forest. Having only sand, clay, and bitumen ("earth pitch"), local builders invented clay bricks, using unfired bricks in buildings. Then they learned how to fire them, apply a colored glaze to them, and give them a plastic facade surface. But the layered construction of the walls with an inner thick layer of unfired brick and facing of fired brick was most often used. If the lack of natural stone prompted the Babylonians to invent fired clay bricks, the lack of forest stimulated the invention of cylindrical brick vaults to cover large halls. However, they have not yet learned to connect the cylindrical vaults of adjacent rooms: each was covered by an independent vault. On top of the vaults, terraces with earth covering and landscaping were arranged. Terraces were often used for rest and sleep in the evening and at night.

The architectural and artistic features of the architecture of Ancient Mesopotamia (as well as Ancient Egypt) are primarily related to the orientation towards the colossal style. The grandiose dimensions of palaces and ziggurats with the small dismemberment of their deaf volumes contributed to the formation of the population's sense of the greatness of power.

Massifs of dull volumes and interior space were partially humanized by the rich color and expressiveness of colored ceramic decor and sculpture. The placement of this decor is also very characteristic. In addition to the crowning of the colored

ornamental frieze on the top of the walls, the lower tier of the walls (decorated and sculpted in detail) is the most visually accessible at the colossal height of the buildings. Purely ornamental motifs are also present here, but more often images of animals, guards and warriors. A specific image of a person in these ornamental belts: head and legs in profile, torso in front. The main entrance of the palace is guarded by fantastic beasts with the body of a bull, the wings of an eagle, the tail of a lion and the head of a bold bearded man. Ornamental color decor decorates not only the palaces, but also the main streets of the city. This is how the procession route to the city gates of Babylon is decorated.

Relief color decor in Assyro-Babylonian architecture decorates, but also preserves the integrity of the architectural form. So, for example, in the decoration of the city gates of the goddess Ishtar in Babylon, neither the blue glazed surface of the cladding nor the yellow-red ceramic reliefs of fantastic animals disturb their planarity and geometric clarity of forms. The entire composition is surrounded by a single decorative ribbon.

The Mesopotamian art of architectural ornamentation combined geometric shapes and images of stylized realities. In primitive Mesopotamia these were triangles, rhombuses, broken lines, and spirals. In Babylonia and Assyria there were scalloped dentils, elaborate arabesques, lotuses, palm leaves, rosettes and styles of Egyptian motifs, depictions of plants (such as the two palm trees made of cedar, covered with gilded bronze), which reached a height of up to 10 m and towered in front of the door in the harem of the Khorsabad Palace. There are also images of animals (bulls and especially lions), which were used to decorate the walls of the sacred road in Babylon.

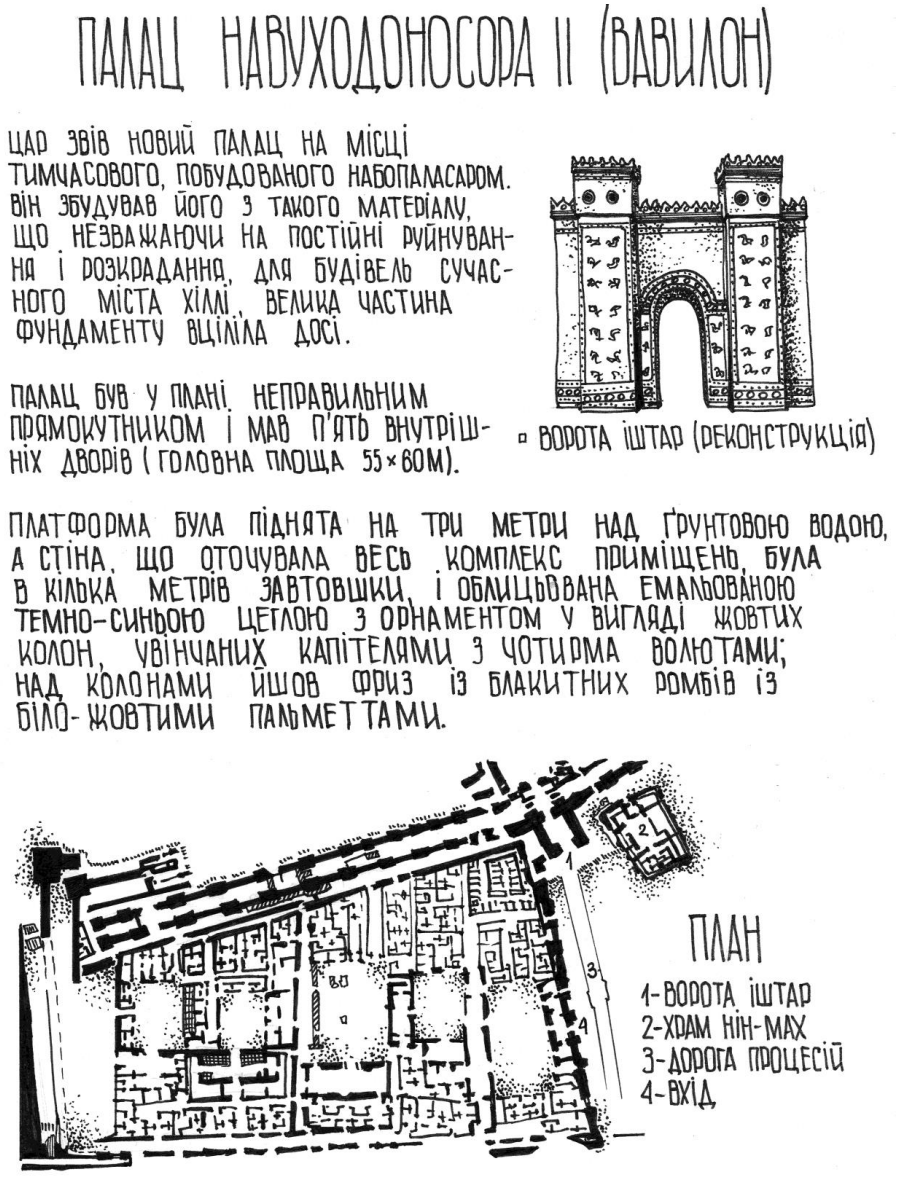

Figure 3.1 – Ancient urban planning, architecture and art of the Mesopotamia

The merit of Mesopotamian ornamentation is not only the excellent execution of artistic motifs, but also the observance of proportions. The external sculptural images were truly monumental. The internal ones adapted their sizes and reliefs to the dimensions of the room and the laws of perspective. When it was necessary, the area that was decorated was divided into a larger or smaller number of sections. And the size of the sculptural images was proportionally reduced. The enamel coating bore the stamp of a fully mature art of ornamentation. So, for example, it surrounded the

curves of the arches and created a simple and clear harmony of colors, coordinated with the degree of illumination of the given place.

Figure 3.2 – Ancient urban planning, architecture and art of the Mesopotamia

Sources: [1–3, 5, 6].

4 HISTORY OF TOWN PLANNING, ARCHITECTURE AND ART OF THE ANCIENT WORLD (AEGEAN AND ANCIENT GREEK CULTURES)

4.1 Architecture of the Aegean World

The Aegean or Creto-Mycenaean culture of society developed simultaneously with the ancient Egyptian culture in northern Africa and the Assyrian-Babylonian

culture in Mesopotamia in the III-I millennia BC and spread to the islands of the Aegean Sea, its Asia Minor coast, including Troy and the coast of Greece.

Political and cultural centers were located on the island of Crete. The architectural culture of Crete is mainly urban. Homer counted about 100 cities on the island, including the largest – Knossos and Festus. A striking difference between the Cretan (Minoan) city-building culture and all previously considered and subsequent (up to the XVII century AD) civilizations is the absence of fortifications (city walls, bastions, etc.). Perhaps it was based on the confidence of the Cretans that they were surrounded by the sea and a powerful navy served as reliable protection.

Cities, up to the capitals, had chaotic construction, which testifies to their organic growth without a prior planning scheme. Cities were built with 2–3-story buildings, with a mezzanine for access to a flat roof. Since the main material was brick, the residential buildings did not survive, but many of their images remained on the numerous ceramic tablets discovered by archaeologists. Judging from these images, the facades of the houses were often covered with decorative paintings. But the most significant phenomenon in the residential architecture of Crete was the presence of large windows in the outer walls. That is a striking contrast not only to the entire previous, but also to the subsequent architectural practice of the Mediterranean world, where the houses faced the street with blank walls, and the living quarters were open only towards the inner courtyard.

The opening of housing towards the streets testifies to the same sense of absolute security that determined the absence of fortifications in cities. The Cretan state reached its peak by the middle of the II millennium BC.

The center of large cities was the palace. At the beginning of the XX century, archaeologist A. Evans began excavating the palaces in Knossos and Festa. A feature of the Cretan architectural landscape was the absence of temples. Approximate explanations – the cult of the Cretans (like any of the ancient cults) related to the worship of the forces of nature, and their worship could be carried out in the natural environment. In contrast to the open architecture of the dwelling, the palaces

preserved the traditional arrangement of rooms around a central open courtyard. But the connection with the urban environment was unusually open.

The huge Knossos Palace (100 m × 100 m in plan), which was built in the XVII-XV centuries BC, had one large courtyard, built around the perimeter with several rows of rooms 2-3 stories high, including underground ones. The palace is oriented strictly on the sides of the world, in contrast to the Babylonian ones, which are oriented on the sides of the world with corners. In the north-western corner of the palace there is an open "theater platform", with stone steps on both sides – seats for several hundred spectators. The planning of the palace, which was built and rebuilt over the centuries, was quite chaotic. The only part of the regular corridor layout along the western side is intended for food and wine warehouses. All living and ceremonial premises are placed in a "labyrinth". There are no elements of a parade enfilade layout. The movement of the visitor through the palace is organized according to the "left-right and up-down" scheme.

The floor markings of the rooms are mostly different, so in the communication rooms there are ramps or ascents (descents) of several stairs. The absence of enfilades forces you to look for entrances to separate halls either to the left or to the right. This "labyrinth" is deliberately designed to give the palace intimacy and coziness. Since the width of the yard is from 30 m to 40 m, the natural lighting of the rooms located in the depth is carried out through small light shafts for the entire height of the building, often surrounded by columns or stairs. The different illumination of the palace premises with transitions from darkness to light and back is also one of the elements of its "labyrinth" compositional design (Fig. 4.1).

The structural system of the palace is combined. It is consisting of a load-bearing wall and a frame. Walls made of natural rough-hewn stone with mortar masonry, and with the use of well-hewn individual elements for framing openings, plinths, etc. Wall surfaces are plastered and mostly painted.

The most interesting constructions of the internal frame of the building are made of stone (originally wooden) columns and wooden floors with the use of beams. The

Cretan column – the only one in the world (until the XIX century) tapers downwards and is crowned by a capital with a very wide plate (or half shaft) of echina and a wide plate of abacus. It was believed that the Cretan column was characterized by instability. In fact, it is subject to the impressive intuition of its authors, who considered the seismicity of the territory. The column's thin, almost hinged support allows it to rotate freely during a horizontal seismic shock (instead of breaking when rigidly fixed). And the wide abacus of the capital ensures horizontal movement of the floor without collapsing.

The picturesque decoration of the palace is extremely diverse in terms of theme (ornamental images of fantastic animals or genre scenes from the life of the palace and the holidays in it). The painting in the latter is done in motion, which sharply distinguishes it from statuary Egyptian and Sumerian-Babylonian decor.

In the XIV century BC the palace and the entire building of the palace perishes for an unknown reason (earthquake, war). And although the palace and part of the buildings until the X century BC rebuilt again, a leading role in the Aegean world from the XIV–XII centuries BC passes to the Mycenaean kingdom. And the Minoan culture of Cretan architecture is replaced by a contrast to it Mycenaean.

Mycenae, like other cities of mainland Greece, are strongly fortified settlements subject to the laws of defensive architecture using the mountainous topography of the area. The palace-fortress complex (acropolis) is located on the highest point and is surrounded by stone walls. The buildings of another large city – Tirynfa – are arranged in the same way. The acropolis of Mycenae and Tiryns significantly exceed the area of the acropolis of Athens.

The palace and walls of Mycenae were built before the XIV century BC. There are monumental tombs of the kings of the XV-XVI centuries BC outside the walls.

The fortress walls of Mycenae were built of huge stones. That is why they got the name "cyclopean" masonry walls. Bridges made of one long stone are arranged above the few openings in the walls, above which a triangular stone is usually placed, which relieves the bridge from the pressure of the mass of the following rows. This

design is used at the entrance to the tomb (treasury) of King Atreus and in the “Lion Gate” of the city wall.

The name “Lion Gate” was derived from the content of the relief (two lions standing on their hind legs on both sides of the “Cretan” column) on the triangular stone above the gate lintel.

The same “cyclopean” masonry technique was used in the palace building.

Mycenaean architecture of palaces (in comparison with the palaces of Crete) is distinguished by symmetry, clarity of composition and visibility of forms. In Mycenae and Tiryns, assembly halls (megaron) are provided as part of the palace complex. The megaron in Mycenae has very large dimensions (11.75 m × 9.75 m). It is composed of three elements located on the same axis – a portico, an anteroom and the megaron itself.

Mycenaean architecture was not devoid of decoration, but it was manifested only in interiors. Cretan artists were invited to paint them. Precious stones and even gold was used for decoration. So, the dome in the interior of the tomb of Atreus was decorated with golden flowers, shining like stars in the dark sky.

From a constructive point of view, the tomb (treasury) of King Atreus is of greatest interest in Mycenae. In appearance, it resembles a barrow, and in terms of construction, it is a gapless false dome with a diameter of 14,5 m and a height of 13,2 m. The masonry of the dome begins directly from the wall of the tomb, is carried out by concentric horizontal ring rows of masonry that gradually close. The size of the rows of masonry decreases in height, which gives the optical effect of an even greater increase in the height of the dome.

The Mycenaeans not only rule in the Aegean world, but also carry out in the XII century BC the unification of the Greek kings in the campaign against Troy. However, Mycenaean rule and the demise of Mycenaean culture began already in the XI century BC during the invasion of new Greek tribes – Dorians.

Summarizing the development of the architecture of the Aegean world, the following functional-compositional, functional and constructive achievements should be noted:

– creation of open “theatre areas” of the palaces in Knossos and Festa;

– creation of interconnected volumetric and spatial elements of the megaron – portico (or propylaea), hallway, hall;

– the introduction of light shafts into the continuous wide building of palaces;

– improvement of the structures of non-spacer false summaries and domes;

– formation of the first earthquake-resistant structural system using Cretan columns.

The main features of the art of ancient Crete. Cryto-Mycenaean art is not connected with historical memories, it does not pay any attention to them. It is characterized by perfect abstractness, complete remoteness from earthly life; it does not pay attention to everyday events or contemporaries. It focuses its capabilities on glorifying the deity and those earthly beings who serve him.

Writings, which at every step accompany the monuments of Egyptian or Babylonian art and are closely intertwined with them, on the contrary, have no significance in Cryto-Mycenaean art. The buildings are nowhere provided with inscriptions, the sculpture and frescoes also do not have any explanatory texts. Even on the seals, in the vast majority, only pictorial motifs are visible. Images do not convey any events; they are only an expression of inner experience. Creto-Mycenaean culture, like a child, plays in a magical garden with rare flowers and does not think about death.

The Cretan style gradually grew out of primitive geometric elements and eventually returned to the same geometric forms. The monuments of Cretan art show all this. It is noteworthy that animals and flowers in Cryto-Mycenaean art are represented much more vividly than people.

As in all styles of the time, attention is paid only to the typical. Individual traits borrowed from nature are nothing more than appendages. Therefore, we are not at all

surprised that on the frescoes and vessels there is nowhere to see even an attempt to draw the eye into the depth of the picture or to give the figures at least a semblance of roundness. The color is fantastic. The main color of nature (green) is almost completely absent. Quite consciously, the female body is always depicted in white, the male body in dark brown. Accidental natural phenomena are diagrammed. Figures are separated from the background by sharp contours or colorful contrasts. The aspiration to merge them with the surrounding or at least connect them with it and build it compositionally is not visible anywhere. Peculiar wavy lines dissect the surface of Cretan frescoes and give them a wonderful rhythm. Stalactite-coral motifs protruding from the frames of the picture are peculiar techniques of Cretan-Mycenaean art. They remove all images from the realm of the objective and transport them to distant fairy lands.

All the images and reliefs are precisely closed with a grid, not so much from the fear of empty space, but from the desire for diversity, sparkling with brilliant bright colors. A picturesque impression is created, which testifies to unrestrained fantasies by its vagueness.

4.2 Ancient Greece

Ancient Greek history developed on a large territory that included the Balkan Peninsula, the islands of the Aegean Sea, “Greater Greece” (southern Italy and Sicily), Asia Minor and the Black Sea coast.

Its periodization includes:

– **Homeric** (XIII-VIII centuries BC);

– **Archaic** (VII-VI centuries BC);

– **Classical** (V-IV centuries BC);

– **Hellenistic period** (the end of the IV century BC – 30 AD).

The Homeric period is associated with the completion of tribal migrations of peoples (Dorians, Aeolians, Ionians) and the gradual stabilization of these processes

as the tribes settled in separate territories of the Peloponnese, the islands of the Aegean Sea, and the southern coast of Asia Minor.

The archaic period is characterized by the formation (until the beginning of the VIII century) and the development of city-states (polises) based on the active development of shipping and maritime trade, which contributed to the active colonization of the surrounding territories. In the archaic period, many achievements in the field of sciences, arts and crafts, related to the specifics of the social system of the ancient world, began. Its fundamental difference from the social system of the ancient eastern despots was private ownership of slaves and land. In ancient Greece, slaves were privately owned and were mainly engaged in agricultural work on the master's land and partly in his service in urban housing.

In Greece, tribal relations are formed. This is a step back in relation to the Cretan-Mycenaean culture, which fell under the onslaught of barbarian tribes that developed in large numbers in the neighboring territory.

In the XIII century BC new Greek states emerge, especially city-states – **polises.**

Peoples who were backward in terms of their culture became carriers of new material opportunities. At this time, large tombs, palaces, and cities were not built. Writing disappears for several centuries. Instead of fine art, craft comes to the fore.

This is how the “dark times” come for a rather long period, during which Greece goes from barbarism to the heights of classical ancient culture without changes from one nation to another.

At this time, the art of **“geometric style”** was developing. Such a painting looks as if it is made of “mounted” rings, cut with one cutter and located on one rod. Used: geometric, stylized plant ornaments. The abstract-geometric painting existed according to its own laws; it was complete as a mathematical axiom. This style was associated with the primary art of the Neolithic or Early Bronze Age. The basis of such art was the relationship between man and nature, but the art of the “Homeric period” had some differences. It consisted in technical execution: the shape of the

dishes was architectural, the patterns seemed to emphasize this shape. Geometrization reached a higher level and showed a new step in the development of mankind.

Gradually, the primitive communal system moves into a new stage of the formation of relations. **Greek mythology** begins to take shape, which replaced naive ideas about the formidable elements of nature, incomprehensible secret phenomena and the influence of these phenomena on the existence of people. The poetic fantasy of the ancient Greeks populated the surrounding world with fabulous creations (nymphs, dryads, oceanids, oreads). The world was ruled by good and wise gods who lived on Mount Olympus, they were flawless and did not know death.

Fine art, which replaces the “dark” or “Homeric” times, takes its first steps.

An important feature of ancient society was the absence of a privileged caste of priests and the prevailing religious dogma. The religious cult was uncomplicated and simple, it glorified the divine principle in man and did not exclude human weaknesses from the gods.

This determined the humanistic approach to man, the search for his physical and spiritual harmony. The first defined exceptional achievements in ancient Greek sculpture: harmonious images of people created by Myron, Praxiteles, Phidias, Skopas, which even after 25 centuries remain unique examples in the art of sculpture. The second defined achievements in philosophy, mathematics, drama, lyric poetry.

The basic artistic branches of the archaic era are architecture, black-figure vase painting and sculpture. Architecture and sculpture had certain characteristics and rates of development, while ceramic production developed rapidly and integrally. And vase painting reached its first flowering and surpassed in artistic achievements the development of ancient Greek archaic sculpture, the best achievements of which were still to come.

In the archaic period, the **temple** stood out as an architectural object. The temple and the square in front of the temple become the center of religious and social life of the polis-state. The state treasury and the best works of art were stored in the stone temple. In the archaic period, the temple lost its function as a royal sanctuary and

became the embodiment of polis self-government. The altar is taken from the temple to the square, because the temple was not built and was not a place for gatherings of believers. The venue for religious ceremonies and solemn processions was the open-air square in front of the temple. Somewhat large and majestic temples were still built in the archaic period. But the ancient Greek stone temples are always smaller compared to the cyclopean temple buildings of Ancient Egypt. Because their ideological program is not to stun and crush an individual person, but to glorify the police system and the heroic past and heroic present of the Greek community.

A typical example of an ancient Greek temple was the **periptery** – a rectangular volume of the building, surrounded by colonnades. The prototype of the periptery is a residential building with clay walls, a gable roof and wooden pillars. In the Greek temple, all these elements are reduced to a certain system of load-bearing parts, and the architecture itself has gone through a long evolutionary path. Yes, there were attempts to create a temple with a column covering the entrance door to the temple. It is logical that this option did not spread.

The art of Greece was bright and colorful. The pediments and friezes of the temples were painted with gold, purple and blue colors. They also painted the sculpture. Even the bronze sculpture had a multi-colored inlay of precious stones and metal. The painting of temples enhanced the decorativeness of buildings, triglyphs were usually painted in blue, metopes in red, and pediments in blue. The details of the sculptures on the pediments and metopes were also colored.

For Greek architects, the natural environment (the landscape around the future building) was of great importance.

The **archaic era** became the time stage when monumental sculpture began to emerge. The earliest stone sculptures appeared in the first third of the VII century BC. According to researchers, artists from Crete played a role in their appearance.

For the sculpture of that time, which has survived in small quantities, the following are characteristic: schematism, conventionality, geometricism. In the given examples, we see the frontality of the figures, insignificant dynamics, laconicism and

monumentality. Master sculptors of the archaic period preserved the shape of a rectangular stone block in the statue and modeled the figure like a relief. At the same time, the statue shows the master's interest in conveying the proportions of the human body and plastics. The most favorite theme of this time was the warrior, as the warlike mood of society was a characteristic feature of those times. Bravery and courage required constant physical training from the soldiers, this was embodied in the sculptural images of men. Life formed in the minds of the Greeks an athletic ideal of beauty, an image of a physically developed and courageous man. The creative interests of sculptors focused on the development of two main images of archaic art – a naked young man and a woman in long clothes covering the figure. In the vase painting of the middle and third quarter of the VI century BC the "black-figure style". Orientalizing style was born. The influence of the art of Phoenicia and Syria is noticeable in it. It gradually supplanted the "geometric style". In ceramics, elements uncharacteristic of the archaic style and borrowed from Ancient Egypt gradually appear (such as the pose "left foot forward", "archaic smile", a stylized image of hair "helmet hair"). Red-figure vase painting is one of the most famous styles of ancient Greek vase painting. Appeared around 530 BC in ancient Athens and lasted until the end of the III century BC. The "red-figure style" got its name due to the characteristic color ratio between the figures and the background.

Thus, in conclusion, we can say that the archaic period gave the world an order system that determined the entire further development of ancient architecture. In the archaic era, the foundations of artistic culture were laid, the Hellenistic ideal of the people, on which the art of Greek classics grew.

4.3 Town planning and architecture of Greece in classical period

Urban planning in Ancient Greece was based on the formation of city-states (polises). The Polish political system developed because of the geographical and climatic separation of the country's territory by mountain ranges and their spurs.

The planning scheme of the cities consisted of the fortified center of the acropolis, located on the highest part of the city, and the commercial and social center – the agora (square), located at its foot. The entire history of Ancient Greece is a period of continuous colonization of new territories.

Extensive urban planning experience provided the basis for the formation of the leading theoretical principles of urban planning. They are usually associated with the name of the mathematician and architect Hippodamus. He lived in the V century BC. He laid out urban planning principles in his scientific work and designed the construction of the cities of Piraeus, Furia and Miletus.

In fact, a number of these principles were implemented earlier (for example, in the planning of Selinunt in the VII century BC). But only Hippodamus brought them together from the entire complex of urban planning problems. For example, choosing a place for a new city, zoning its development, determining the dimensions of streets and their alignment. When choosing a place, the presence or proximity of a convenient bay, sources of water supply, prevailing wind direction, and so on were decisive. The layout of the streets was designed considering favorable winds and unobstructed precipitation. The width of the streets was determined by their purpose: secondary streets – 3,5 m, main streets – 7 m, and the main thoroughfare connecting the cities – 15 m.

A significant contribution of Hippodamus was the **zoning** of the city's territory and the improvement of the regular system of its construction. The central part of the city was devoted to economic and social needs. On the periphery, on both sides of the center, there was a regularly planned settlement, with the division of the territory into almost square blocks. The zoning system has become widespread and creatively used in the future.

Typology of buildings and structures. The Greeks created new types of public open and closed buildings and structures. The closed ones include all types of temples, halls of public gatherings (boulevards, ecclesiasterias), semi-open galleries and open buildings (theaters and stadiums).

For the construction of **theaters**, mountain slopes were chosen, which ensured the placement of spectator seats in an amphitheater. And for stadiums and hippodromes hollows were chosen, which allowed two-sided placement of spectator seats. Well-preserved theaters have survived to our time and are used as intended for concerts of opera singers and theatrical productions (the theater in Epidaurus, the Greek theater in Syracuse, and others). Theoretical studies prove that the original ancient Greek theaters of that time did not yet have a clear geometric shape. It will become traditional (practically canonical) only in the III century BC.

In addition to the **theatron (amphitheatre)**, during the construction of the theater, a round platform **(orchestra)** was necessarily placed in the center, on which the choir was located, which commented on the events taking place on the stage.

In the classical period, the stage was a **two-story building** stretched out in front of the theater (amphitheatre), under the portico of which the action took place. In the era of Hellenism, a **proscenium** was added to the stage – a one-story structure, on the surface of which the stage action was partially carried.

Theatron, if the topography allowed, was located along a concentric arc of a circle, occupying a little more than half of it, and ended at the ends with retaining walls. The capacity of the theaters reached 14,000 spectators (the theater in Pergamum), and the diameter of the Theatron was 115 meters (the theater in Epidaurus).

By the radii of the circle, the theater was divided into wedges, the passages between which simplified the way to the audience seats.

The acoustics of most ancient Greek theaters are impeccable. Unobstructed visibility was provided by the rise of the audience seats, and visual perception was provided by the raised level of the stage, special shoes of the actors (shoes), which increased their height. Since the theaters accommodated thousands of spectators, the facial expressions of the actors could not always be seen by the audience in the back rows. So pre-prepared masks of the actors for various emotions (fear, laughter and

others) came to the rescue. The development of theatrical art was stimulated by the brilliant dramaturgy of **Sophocles, Euripides, and Aristophanes.**

The architecture of Greek housing is extremely closed. The streets are surrounded by blank walls of buildings with small entrance openings. The inner space contrasts with the outer space. The visitor enters the friendly open space of the prostagland (a deep loggia courtyard), which sometimes has a pool with rainwater in the center. In the richest houses, the prostate is built up from all sides, turning into a peristyle, elegant landscaping, surrounded by a colonnade and a space decorated with fine plastic. All living quarters have entrances and are illuminated through openings facing the prostate and peristyle.

Thus, the architecture of the dwelling emphasizes the contrast of the ancient social system: the openness of public life – numerous squares, public meeting halls and large entertainment institutions – theaters, stadiums, etc., along with the closedness of private life.

The unprecedented experience of Greece in creating new types of **religious buildings.** In terms of volume and planning, they start from the megaron. It is a front rectangular room illuminated through a doorway, preceded by two columns and sections of longitudinal walls (antis) protruding beyond the end wall with a doorway.

This is how the simplest type of religious building was formed – Antae temple. Its fundamental difference from the megaron is a single volume, while the megaron is surrounded by other rooms. Ants built small temples and treasuries in large cult complexes. As cult construction developed, other types of temples developed: **prostyle** – with a portico at the entrance to the temple, **amphiprostyle** – a temple with two porticos (at each of the end walls), **periptery** – a volume surrounded by a colonnade along the entire perimeter and **dipter** – with a double colonnade. Along with rectangular temples, round temples were also built – tholos with a circular colonnade.

The leading type of temple became the peripterial. It was formed already in the archaic period (temples in Paestum and Selinunt), and in the classical period it played a prominent role in large cult ensembles.

Diptera will become widespread during the Hellenistic period, mainly in Asia Minor centers.

The origin of the main type of temple – peripterial – was formed under the influence of the constructions of mass residential buildings. It was built, as a rule, with raw brick walls. To protect them from rain, the roof was made with large overhangs, which were supported by wooden racks of the gallery along the contour of the building.

Temples were built of natural stone and placed on a high stylobate platform. The dwelling of the deity (the cella) was built on it. The cella is a rectangular room that was illuminated only through a doorway.

The cella was dominated by a statue of the deity to whom the temple was dedicated. The building, as a rule, had a gable tiled roof, the longitudinal overhangs of which were supported by a stone colonnade. The triangle formed by the slopes of the roof and the entablature of the portico of the end walls of the temple was called the pediment and was framed by the profile of the cornice of the entablature. The triangular plane inside the pediment was called **“tympanum”**, it was usually decorated with a sculptural relief on the themes of the exploits of the god. The altar was located outside in the open area in front of the entrance to the temple. The dimensions of the temples were relatively small, human sized. The highest temple of the Greek metropolis – the Parthenon on the Athenian Acropolis was only 10.43 m high periptery. The temples were placed on the highest favorable areas of the territory in complete harmony with the surrounding landscape.

Limited physical dimensions, a close connection with nature gave the Greek temple humanity. It is sharply distinguished them from the frighteningly colossal temples of the Ancient East.

The Athenian Acropolis is the pinnacle of the art of community center composition. This fortress in the center of Athens on a high rock was created back in the Mycenaean era, when the royal palace was located here. Over the centuries and wars, the construction of the acropolis was destroyed until it was finally damaged during the Greco-Persian war. After the successful end of the war, the Greeks practically rebuilt the acropolis in a short period of time. At the same time, with the establishment of democracy, public monuments, temples and statues were placed on the Acropolis, and at the foot of the rock on its slopes (theaters of Dionysus, and later Herod Atticus).

In connection with the new socio-economic relations in the Hellenistic era, public buildings of various purposes became widespread. Along with temples, they are distinguished by their monumentality and thoroughness of execution.

Halls for meetings of people's representatives (ekklesiasteria) and city councils (buleuteria) were especially widespread and received rich plastic decoration mainly in the Hellenistic era. **Gymnasiums** designed for sports and educational activities, **stadiums, libraries.**

4.4 The appearance and development of the Greek order

The main charm and humanity of ancient architecture was given by its orderly forms. The order is an artistic (tectonic) embodiment, according to certain aesthetic laws, of the elementary stone post-beam structure, which is the basis of the construction of the colonnade. In the Greek order, I found a kind of artistic reflection and its historical constructive prototype – a wooden gallery around the house.

Greek architects created two main types of order – Doric and Ionic. Later the Corinthian joined them. The order is formed by columns and a horizontal entablature resting on them. In turn, a column consists of a trunk and a capital in the Doric order, and in the Ionic and Corinthian – from the base of the column, its trunk and capital. The capital contains a supporting part (echin – in the Doric Order) and a wide abacus stone slab, on which the architrave directly rests – the lower part of the three-part

entablature system. Its intermediate part – the frieze, in contrast to the undecorated structural architrave, has a plastic decoration, as does the upper part of the entablature – the cornice that crowns it, the overhang of which provides drainage from the roof.

The Doric order developed in mainland Greece in Argos and Sparta, it is characterized by restraint and severity. Strict simplicity and nobility of forms with minimal decorativeness. The Doric column even lacks a base: its trunk is installed directly on a three-step stylobate. The Ionic order developed in colonial Greece on the coast of Asia Minor. The interaction with the East affects the tendency towards decorativeness: hence the column with curled volutes in the capital, and the decoration of the entablature and the capital with egg-shaped Ionics. The Corinthian order will be mainly used in the Hellenistic era in the eastern provinces, and then (very widely) in the architecture of Ancient Rome. In the Doric – the leading and most ancient order – the origin of the wooden structure can be clearly traced: the ends of the ceiling beams are protected by facing tiles with triglyphs, and the spaces between the beams are covered with decorative tiles – metopes.

Naturally, when translated into stone, the geometry of the wooden post-beam structure changed. The pitch of the columns decreased, since the stone beams of the architrave do not work well for bending, and the cross-section of the columns increased, which already carry stone, and not light wood the entablature constructions.

Greek architects made many visual and optical “corrections” to the geometry of the order and the compositions based on it. The trunk of the column has a variable thickness, which gives it a certain “swelling” (entasis), graphically illustrates the increase in load and tension to the base. Grooves on the trunk of the column – grooves – emphasize its work on vertical compression. In multi-column porticoes, the lower line of the entablature is slightly curved upwards (curvature of a straight line) so that the optical illusion of “sagging” of the entablature does not arise. The extreme columns of the portico, projected not on the walls of the cell, but on the air

environment, are slightly thickened and inclined towards the center of the portico to eliminate the illusion of its collapse. The size of the extreme span of the portico (intercolumnia) has also been changed.

All the curvilinear lines of the order – the profile of the echina, the entasis, and the curvature are drawn by the Greeks according to complex curved curves. It is not for nothing that the ancient architects gave the image of the column an anthropomorphic meaning. Yes, in the I century BC, the ancient Roman architect Vitruvius compared Doric columns – with male, Ionic – with female, and Corinthian columns – with a girl's figure. Such associations are not accidental and are confirmed in several compositions where the columns are replaced by human figures – corses (caryatids). The proportions of orders are different: from the heaviest in the Doric to the lightest in the Corinthian. At the same time, the Greeks did not canonize proportional ratios. The ratio of the height of the column to its diameter at the base or the ratio of the height of the entablature to the column varies not only depending on the era (heaviest in the archaic period), but also on the general compositional design and purpose of the object.

Buildings and architectural ensembles in ancient Greek architecture were in the city according to its functional zoning into public and residential zones. At the same time, in the archaic and classical periods, the main attention was paid to the public area with the main temples, theaters and other public buildings.

The picturesque beginning of Greek architecture

Asymmetry. The Greeks do not imagine a building outside of its surrounding landscape and its surrounding other buildings. It never occurs to them to level the ground. They accept with minimal modifications the plot that nature gives them. Their concern is the desire to connect the architectural work together with the surrounding landscape. Greek temples are worth attention not so much because of their location as because of the art of construction.

The temple on Cape Sunia is built on a steep cliff, the temple in Croton is at the end of the cape. The temple in Segest is above a ravine. The temples of Selinuntu rise

on two hills, between which the water surface of the sea bay spreads. The temples of Akraganta are built on a rock rising above the sea. This preservation of the natural topography of the soil precluded symmetry in the grouping of buildings.

Symmetry was impossible also for another reason: temples were built gradually on sacred places already occupied by older buildings. It was necessary to limit them in the space not occupied by older religious buildings. Architecture was subject to these limitations and took advantage of them. The impossibility of a symmetrical plan caused the picturesqueness of the Acropolis and Altis or the groups discovered by the excavations of the French School in Athens, Delos and Delphi.

Equilibrium of the masses: the example of the Athenian Acropolis

This fortress in the center of Athens on a high rock was created back in the Mycenaean era, when the royal palace was located here. Over the centuries and wars, the construction of the acropolis was destroyed until it was finally damaged during the Greco-Persian war. After the successful end of the war, the Greeks practically rebuilt the acropolis in a short period of time. At the same time, with the establishment of democracy, public monuments, temples and statues were placed on the Acropolis, and at the foot of the rock on its slopes – the theaters of Dionysus, and later Herod Atticus (Fig. 4.2).

The ensemble of the acropolis is revealed to the viewer when he climbs the rock and passes through the Propylaea – the ceremonial gate of the acropolis. The Propylaea, built by the architect Mnesicles in 437–432 BC, consists of two museum buildings connected by six-column Doric porticoes on the outer and inner sides of the ensemble. In turn, the side buildings blocked by porticoes face the inner space of the Propylaea with an Ionic colonnade. Thus, the city and the acropolis of the Propylaea are addressed by a solemn, strict Doric, and the limited space of the passage is addressed by an intimate, elegant Ionic. Entering the ground of the acropolis, the visitor first saw the colossal sculpture of the patroness of the city – the goddess **Athena Promachos** (warrior) by **Phidias**. And to the right of her was the largest

temple of the ensemble – the peripterial **Parthenon**. It was dedicated to the goddess **Athena**, in the cell of which was placed the second statue of Athena.

The authors of the **Parthenon**, the architects **Ictinus** and **Callikrates**, built the temple in 447–438 BC. They placed it in such a way that when entering the acropolis, the visitor sees the temple in the most favorable perspective for perception, from the corner. The eight-column Doric portico and the longitudinal side of the periptery in perspective reduction are opened at the same time.

The Parthenon (the largest ancient temple of mainland Greece) has a plan size of 30,86 m × 69,51 m: the order height is 10,43 meters, the diameter of the columns at the base is 1,9 meters. The Parthenon dominates not only due to its physical dimensions, but also due to the integrity of the peripternal composition, which corresponds to the heroic ideals of classical Greece.

The rectangular volume of the building is divided into two unequal parts with separate entrances. The large one is the cella of Athena the Virgin, the smaller one is the treasury of the Athenian Union of Cities, which stored the treasury of union policies, collected for the needs of the war with the Persians. In connection with the large span of the cella and treasury, additional columns were introduced into them to support the ceilings. Accepting the limited space of the cella, the architects used a two-tiered Doric colonnade in it, which corresponded to the scale of the interior composition. In the treasury, which had a purely utilitarian purpose, they used a simpler technical solution – single-tier columns.

The synthesis of sculpture and architecture in the Parthenon is represented not only by the statue of Athena in the cella, but also by the numerous sculptural decorations of the facades. The tympans of the temple are filled with multi-figure compositions: on the west – a scene of Athena's dispute with Poseidon for the rule over Attica, on the east – a scene of the birth of Athena from the head of Zeus. Sculptural reliefs on mythological themes decorate the metopes.

To the left of the Propylaea there is a view of another temple of the **Erechtheion** ensemble. The Erechtheion was built in 421–406 BC. It contrasts with the Parthenon

not only in size (11,63 m × 23,5 m by the stylobate), but also in an extremely complex composition due to the location of the temple on a steep terrain (the northern and western facades are 3 meters higher than the eastern one) and is dedicated to two deities – Athena and Poseidon.

Erechtheion's composition is resolved in the Ionic order, which is co-scaled with its dimensions, extremely asymmetric, diverse and expressive. The three Ionic porticos of the temple are different in size, placed and drawn. The largest northern portico is set back from the outer wall and bathes in air space. The western one is built into the plane of the wall, the eastern one is traditionally located. In the southern portico facing the Parthenon, the columns are replaced by slender figures girls (caryatids) carrying an entablature. Thanks to this, there is no contradiction between the Doric of the Parthenon and the Ionic of the Erechtheion, but the effect of an artistic juxtaposition of the anthropomorphic sculptural composition and the generalized form of the colonnade of the periptery.

The last of the temples preserved on the Acropolis is a small **temple of the goddess of victory Nika Apteros** (wingless) with the dimensions of the stylobate 5,4 m × 8,14 m, with columns of the Ionic order 4,04 meters high. The temple was built by the architect Kallikrates in 449 BC according to the amphiprostyle scheme on the high ledge of the acropolis rock to the right and outside of the Propylaea. Thus, the temple of Nika, despite its small size, rises above the city, facing the Parthenon with its eastern portico.

The ensemble of the Athenian Acropolis is completely asymmetrical, the placement of sculptures and temples on it is subject to more complex laws of harmony between them and the surrounding nature. At the foot of the acropolis there is a large market square (agora) and a large peripterial temple of Theseion, similar in size to the Parthenon, but with heavier proportions of the Doric order.

4.5 Dorian temple

The Temple of Apollo in Fermi is one of the oldest surviving archaic peripteries. It has a lot in common with the temple of Hera in Olympia in planning and construction techniques. But it is even more elongated in terms of the periptery, which was 38 m long and 12 m wide.

The Temple of Apollo was built in the VII century BC but underwent some modifications in the next century. The walls of this temple were made of raw material, the columns were made of wood. The entablature was also wooden, except for the metopes, which were large terracotta slabs richly decorated with paintings. Fifteen columns stood along the sides of the temple of Apollo, five on the front sides. The internal structure of the temple relates to the odd number of columns on the facade sides. The interior was divided into two unequal parts: a small opistode, a very long, narrow cella, completely open from the entrance side. Cella was longitudinally divided into two naves by ten columns standing in a row. Separated from the cella by a blank wall, the opistode was also completely open from the entrance side, with two columns standing along the axis. The axial division of the cella by columns in the temple of Apollo dates to ancient times.

This arrangement of columns was found in temples of the IX-VIII centuries BC. This order was inherited from the buildings of the Aegean era.

The Temple of Hera (Heraion) in the sanctuary of Zeus in Olympia is one of the oldest Doric peripteries. From this temple we have the foundations, the remains of the colonnade, the basement part of the walls and fragments of ceramic decorations. At the same time, it clearly expresses the most characteristic features of early Doric buildings. But it was rebuilt three times. And we have only the remains of the third temple. The oldest temple, dated at the end of the VIII century BC, was a rectangular cell with an inner row of supports and pronaos; it still had an external colonnade and was similar in plan to the next few. During the construction of the second temple, the area of the building was increased, the foundations were laid out of properly hewn squares. It had a pronaos, a naos and an opisthodomos, surrounded by a colonnade

(6 columns x 16 columns). Its construction dates to the end of the VII century or the beginning of the VI century BC.

Soon, a new reconstruction of the temple was carried out. In the third Herayon, the plan of the second temple was completely preserved, its foundations and materials were used. Thus, the second and third temples are very similar.

The third Heraion stood on a two-stepped base measuring 18,75 m × 50 m behind the stylobate. A narrow naos stretched from east to west with a pronaos and an olisphodom were framed by colonnades. The walls of the temple were laid out on a plinth 1 m high, made of limestone. The outer side of the plinth consisted of high slabs placed on the edge – orthostats, the inner side – of four horizontal rows.

The Temple of Zeus in Olympia is one of the most revered temples of Ancient Greece, the first true example of the Doric order. It served as the center of the architectural ensemble of ancient Olympia and was dedicated to the supreme Olympian god Zeus. The building is considered one of the highest achievements in the development of the Doric periptery.

Paestum, the so-called Basilica. Only the outer colonnade of this temple survived without destruction, restrained from all sides by the entablature. The odd number of columns on the facade (nine) no longer seems abnormal after the discovery of even more ancient temples in which the facade is dismembered in the same way. In one of the openings of the outer colonnade, you can see the last remains of the cella of the temple. Traces of the southern longitudinal wall are visible on the ground to its end part – anti, which remained intact. From above, it ends with a circle that protrudes far and casts a deep shadow. Only anta remained from the other longitudinal wall. These antis, along with three columns, support the entablature of the portico. The odd number of columns corresponds to a row of columns that divides the temple inside into two long naves. Of them, only three columns survived, directly behind the entrance wall with two doors. The shape of these columns attracts attention. Although they taper from the very beginning, their diameter in the upper

parts decreases faster than in the lower ones. Their profile forms a noticeable curve (entasis).

A small ridge runs around the top of the column, followed by a recess with foliated ornamentation, and then the capital. This sequence of identical parts further emphasizes the connection between the Doric and Cretan styles. But, compared with the Cretan echinus, the Dorian flattens out. It was not caused by considerations of a constructive order. This artistic design was supposed to reveal the idea of a certain function of the columns in the structure of the temple. The recess under the capital concentrates the vertical force of each column in one place.

The southern six-column Temple in Paestum. Compared to the Basilica, its forms are somewhat moderate. The overall appearance of the temple is complemented by the superstructure, which has been preserved on the western facade. The flat covering above the architrave has a rounded profile. The frieze above it is completely unique. Currently, only metope slabs protrude from the stones of the frieze. Triglyphs, which protruded even more than the metopes, were once placed in the niches located between the metopes. The horizontal cornice, also completely weathered, obviously did not have a significant projection. The pediment is also very original. An unusual recess in the form of three stepped cassettes on the inner side of the roof eaves slabs, which protrude far. The completion of the corners is unusual. Here, the last protrusion, bending, turns into an almost horizontal line and repeats.

On the same vertical is the upper joint where two architrave beams converge. While the axis of the triglyphs falls either on the upper joint or on the middle of the architrave. Whoever entered the temple had to first pass the outer portico, then the portico of the cella, two columns deep, and finally enter the cella.

Temple of Apollo in Corinth. About the antiquity of these remains of Greek architecture, which belong to the first half of the VI century BC, say fifteen columns of its longitudinal walls, which correspond to only six on the facade. The ledges, except for the protrusions under the last columns of the southwest corner, have completely disappeared. The main lines of the cell can be recovered from traces on

the ground. The architrave, consisting of two bands, is high, the echin projects strongly forward. The profile with a wreath of leaves in the Paestum capital has disappeared. The distances between the extreme columns at the four corners were smaller, and the aisles were narrower than between the other columns. However, they have a difference in the width of the gaps between the columns on the longitudinal and transverse sides.

These fluctuations in the ratios of the above and other parts show that the subsequent canonization of architectural forms was the result of a long development.

The temple in Segest. The fluted columns of this temple, behind which the walls of the cella have not been preserved, testify to the diligence and precision of buildings in the era of advanced Doric. Metopes and triglyphs, united into a single whole in the form of a frieze, stretch around the entire portico. Only at the corners do the triglyphs of both sides meet. Their real participation in the design is very important. With the same width, the metopes and the distances between the triglyphs are the same everywhere. The same distance between the triglyphs also meant the same axial width of the columns. But the logic of the frieze design required that the metope be supported by triglyphs on both sides; therefore, there should have been triglyphs on the corners. A solution was found for the corner column, the distance was reduced.

The corner spans were pushed closer to the columns adjacent to them, so that the corner triglyph fell over the outer half of the corner column. In the temple in Segesta, we see this construction spread over both first spans from the corner. It is very noticeable that the third triglyph does not coincide with the axis of its column. During the construction of the building, it was impossible to violate the clarity of individual forms, which at the same time created the harmony of the whole. But the triglyphs fell into the shadow zone of the eaves. Hence the need for their coloring. The triglyphs were dark blue, from below they seemed almost black and sharply separated from the metopes. This language of colors goes on and on. Clear relationships are

created in the lower part of the eaves under the roof, where the droplets are highlighted with blue paint on a red background.

4.6 Classical and Hellenistic art of ancient Greece periods

From the first decades of the V century BC the culture of ancient Greece enters the period of its highest flowering, which was associated with the complete victory of ancient democracy. Wars with mighty Persia (500–449 BC) became a severe test for the Greek people. The defeat of the Persians convincingly proved the superiority of the social organization of the city-states of Ancient Greece. During the Greco-Persian wars, a maritime union of city-states was formed (it included approximately two hundred cities). The primacy in this union belonged to Athens.

The prosperity of the city of Athens in the middle of the V century BC inextricably linked with the activities of Pericles. Pericles ruled Athens for fifteen years as the first strategist. Athens became the largest economic, political and cultural center of Ancient Greece, so the best poets, historians and philosophers flocked to the city. In the spiritual life of Athens, the formation of a democratic system coincided with the flowering of Greek theaters, the works of Aeschylus, Sophocles and Euripides. In the images of myths, the Greek tragedy depicted the heroic struggle of the people against external enemies. If the tragedy clearly showed the way to the harmonious development of the personality, then fine art embodied in artistic images the result of this development – a typical generalized image of the human hero, who perfectly became physical and moral beauty.

The works created by sculptors and artists in this period became models for imitation for many centuries. They began to be considered exemplary. Thus, the art of the V-IV centuries BC received the name, **Greek classics.**

A great role in the history of classical art of Ancient Greece was played by the sculptural decorations of the temple of Zeus in Olympia, made of Paros marble in 470–456 BC. The names of the authors remain unknown. These sculptures are kept in the Olympia Museum. The twelve labors of Hercules were depicted on the metopes

of the temple, on the eastern pediment – the myth of the origin of chariot races, on the western – the scene of the battle of gods and heroes with wild centaurs. The composition of the pediment is characterized by unity of design and high skill of execution.

The sculptures occupy the entire field of the pediment, the length of which exceeds 26 m, and the height is 3 m. In the center of the composition, the sculptor placed the figure of the god of light and the arts, Apollo, who brought victory to the Lapifians. Tall, slender Apollo personifies the heroism and courage of a person. On the left is Peyripha clutching a sword, and next to her is Deidamia pushing away the centaur Eurython, who is clinging to her, with her elbow. To the right of Apollo stands the Athenian hero Theseus. The faces of the heroes are calm and courageous, while the faces of the centaurs are distorted with rage and anger. The superiority of the mind over the elements is the idea behind the sculptural composition.

Affirming the dignity and greatness of a citizen becomes the main task of Greek sculpture of the classical era. In statues cast from bronze or carved from marble, master's strived to convey a generalized image of perfect human beauty. In the creative imagination of sculptors, this ideal is primarily associated with the appearance of a young athlete.

The great achievement of the classical art of Greece was the ability to convey the natural and relaxed pose of a person, free from the conditions of archaic art.

In the V century BC bronze became the favorite material of sculptors. Because its carved forms well conveyed the beauty and perfection of the proportions of the human body. The two greatest sculptors of the V century BC worked in bronze – **Myron** and **Polycletus**. Their statues, glorified in ancient times, have not survived to this day. They can be judged from the marble copies made by Roman masters five hundred years after the creation of the originals, in the I–II centuries BC.

Myron spent most of his life working in Athens. The heyday of his work falls on the second quarter of the fifth century BC. Among his works, the statue **"Discoball"** was the most popular, made between 460 and 450 BC. The statue

glorifies the winner of athletic competitions. Clasping the disk in his right hand, the naked boy leaned forward. The hand with the disk is taken back to the edge. It seems that in a moment the athlete will straighten up, and the disc thrown with great force will fly to a long distance. Myron's innovation was that he was one of the first masters of Greek art to convey the feeling of movement in sculpture. In the "Discoball" pose, several consecutive movements seem to be merged: a swing, a momentary stop before the throw and a hint of the throw itself. In the image of the athlete Myron, the human capacity for active action is revealed.

If Myron was fascinated by the problem of a convincing image of movement, **Polycletus** set other goals in his work. When creating statues of athletes, he sought to find the correct proportions based on which the human body can be built in sculpture. In his search, he proceeded from a careful study of life. The sculptor created an artistic image that became a norm and an example for subsequent generations.

Polycletus embodied his ideal of an athlete-citizen in a bronze statue of a young man with a spear, cast around 450-440 BC. The powerful naked athlete **"Doriphor"** ("Spearman") is depicted in a calm and majestic pose. He holds a spear in his hand, which rests on his left shoulder, and, turning his head slightly, investigates the distance. He transferred all the weight of his body to his right leg. The master overcame stiffness and conditional immobility thanks to the system of balance of body parts. With true realism, the master conveyed the wonderful musculature of a developed body in bronze. Courage, clarity of spirit and readiness for a feat are manifested in a calm face. Polycletus most vividly expressed the ideal of his era in sculpture – a comprehensively developed whole person. The master maintains the opinion that every person should improve. The impeccable perfection of "Doriphorus" made him a model of human beauty in the eyes of the Greeks.

The third great sculptor in the V century BC in Athens was **Phidias.** Phidias perfectly mastered the art of bronze casting. The sculptural decorations of the Parthenon, created by Phidias together with his talented students Alcamian,

Agoracritus and Callimachus, relate to legends about the life and exploits of the goddess Athena, the patroness of the city of Athens.

Phidias reinterpreted ancient legends and expressed the mood of his era in them. Phidias successfully solved the problem of interconnection of the architectural appearance of the building with its sculptural decoration. The multifaceted talent of Phidias was fully reflected in the sculptures of the Parthenon's pediments. In his art, he does not give a direct depiction of the events of real life. His images carry clarity of spirit and moral strength. They speak of a person's ability to overcome life's contradictions and achieve perfection. The beauty and humanity of the gods created by the sculptor made them close and understandable to contemporaries. The creativity of Phidias is the pinnacle of Greek classics.

In the IV century BC classical simplicity and clarity are replaced by a more complex understanding of the diversity of human life. Sculptors create works that reveal the various boundaries of a person's mental world. These features were expressed by the following masters: Skopas, a native of the island of Paros, the Athenian Praxiteles, and Lyssippus from the Peloponnesian city of Sicyon.

Skopas worked in 380-330 BC in different cities of Greece. He participated in the work on the Halicarnassus Mausoleum and in the decoration of the Temple of Artemis in Ephesus. Skopas was attracted by images full of powerful energy and passionate tension. Skopas chooses the moment of greatest tension of human feelings. For Skopas, movement becomes an expressive means of conveying the inner state of the hero. The master considered the possibility of perceiving the sculpture from different points of view, which enriches the content of the artistic image. With this technique, the master achieves the impression of amazing vitality and deep experiences of human nature. Skopas' favorite material is marble.

Praxiteles celebrates the joy of life and the sensual beauty of the human body. The only work of Praxiteles that has survived in the original to this day is the statue of Hermes, the herald of the gods of Olympus and the patron of travelers. It represents one of the late works of the sculptor and dates to 330 BC. Praxiteles

admires the flexible and flowing lines of the youthful figure, the perfect proportions and the calm noble movements of Hermes. This image does not have the heroic strength and courageous rigor of the athletes of the V century BC. But it attracts with its grace and poetic spirituality. The sculptor perfectly felt the artistic possibilities of the material and skillfully used the ability of marble to create a picturesque play of light and shadow with the finest processing.

The realistic discoveries of Scopas and Praxiteles influenced the development of Greek sculpture of the IV century BC.

Lyssippus was the third great sculptor of this era, his creative activity covers almost the entire IV century BC (from 370 to 300 BC). Along with mythological images, the historical events of our time were reflected in the works of Lyssippus. The innovative character of Lyssippus' art consisted in the fact that he sought to bring his images closer to reality, to give a more concrete life situation. The new system of proportions of the human figure introduced by the sculptor relates to this. The master's quest was most vividly expressed in the statue of "Apoxyomenes" – a young man dusting himself off after gymnastic exercises. Lissippus makes the viewer go around the sculpture to perceive it from different points of view. The impressions that change at the same time help to get a complete picture of the nature of the complex movement.

Greek art placed the **image of a person** at the center of artistic creativity.

At the beginning of Hellenism, Greek art did not come as a single trend. Antiquity ceased to be unified.

The art of Hellenism is not a unified whole. Currently, there are independent art schools in Alexandria, Pergamum, Greece, on the island of Rhodes, and in the cities of Syria. The best works of Hellenistic sculptors more fully reflect the most exciting problems of the era. In contrast to the calm willful purposefulness of classical art, the images of Hellenism carry enormous emotional tension and passionate pathos. These features marked the **statue of the goddess of victory Nika**, which was erected on the island of Samothrace around 190 BC. It was built by residents of Rhodes in memory

of the victory they won over the fleet of the Syrian king. Carved from Paros marble, the figure of the goddess stood on a high rock above the sea. The mighty and majestic Nika, in clothes fluttering in the wind, is presented in an unstoppable forward movement. Her beautiful figure shines through the thin transparent chiton, which impresses the viewer with the wonderful plasticity of her elastic and strong body. The confident step of the goddess and the proud flap of the eagle's wings give birth to a feeling of joyful and triumphant victory.

The pathos of struggle, characteristic of Hellenism, found perfect expression in the grand sculptural composition that decorated the **marble altar in honor of Zeus**. It was built around 180 BC on the acropolis of Pergamum. This monument was dedicated to a specific historical event. At the end of the III century BC the Pergamon king Attalus I repelled the invasion of the Galatian tribes. An altar was built in memory of his victory. The building itself was a high plinth on which a slender Ionian portico rose. On one side, a wide-open staircase was cut through the plinth, leading to the upper platform, where the altar was located. A relief frieze 120 m long and 2.3 m high stretched along the plinth in a continuous ribbon. The exceptional wealth of images and the unusual dimensions of the frieze make it an outstanding work that has no equal in ancient art. The whole world of human feelings finds plastic expression in the reliefs of the Pergamon altar. It is rightly considered one of the unsurpassed peaks of world art. The increased interest in different aspects of reality, the desire to reveal the diversity and richness of life phenomena contributed to the establishment of new genres in Hellenistic sculpture. Among them, an important place is occupied by decorative statues that decorated gardens and parks, royal palaces and villas of rich slave owners.

Multi-figure groups with intricate mythological plots. All this testifies to the broadening of the horizons of the sculptors, who turned to new topics.

Along with searches, there are clear **signs of decline**. An excessive fascination with domestic accuracy often degenerates into petty narrative. Such images of the old are characteristic of the masters of Alexandria. At the same time, the sculptors of

Rhodes clearly chose bloody, nerve-wracking plots and gravitated towards deliberate, spectacular theatrical techniques. Sometimes the masters of Hellenism turned their gaze to the past, to the sublime images of the Greek classics. Under their influence, such wonderful works of art as the statue of the **goddess Aphrodite**, found in the XIX century on the small island of Melos, appear. It was created by master Alexander around 120 BC. This now famous statue went down in history under the name **Venus of Milos**. The half-naked figure of the goddess is carved from Paros marble, her hands were lost in ancient times. In this statue, the best achievements of Greek art merged. It gives birth to a feeling of bright harmony; shows what kind of purity and moral perfection a person can achieve.

In the I century BC the Hellenistic world, weakened by wars, aggravation of class struggle and slave uprisings, declined. **Tragic themes** come to the fore in art, which indirectly reflect the conflicts and contradictions of the era. Portrait is becoming one of the leading genres of art of this time. While preserving the principles of typification and generalization characteristic of Greek art, the masters reveal the features of a person's appearance and his state of mind in a much more individual way. One of the outstanding examples of portrait art is a **bronze head** from the island of Delos. It belonged to a statue cast around 90 BC. With extreme softness, the sculptor models the features of the elderly man's face. The contrast of dark green bronze and sparkling eyes gives the portrait amazing vitality.

The last significant monument of Greek art is a sculptural group depicting the death of the Trojan priest **Laocoon and his sons**. It was created around 40 BC the three Rhodian masters – **Agesander, Athanodorus and Polydorus**. This group was discovered in 1506 among the ruins of one of the imperial palaces of Ancient Rome and enjoyed great fame in all European countries for several centuries. The plot of the sculpture is borrowed from the legendary legends about the fall of Troy. The Rhodes masters reveal the physical and moral suffering of the hero with great power.

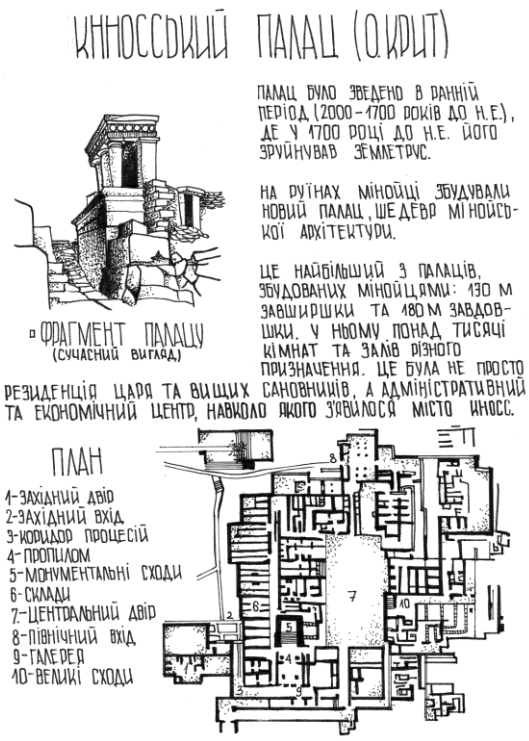

Figure 4.1 – History of urban planning, architecture and art of the ancient world (Aegean and ancient Greek cultures)

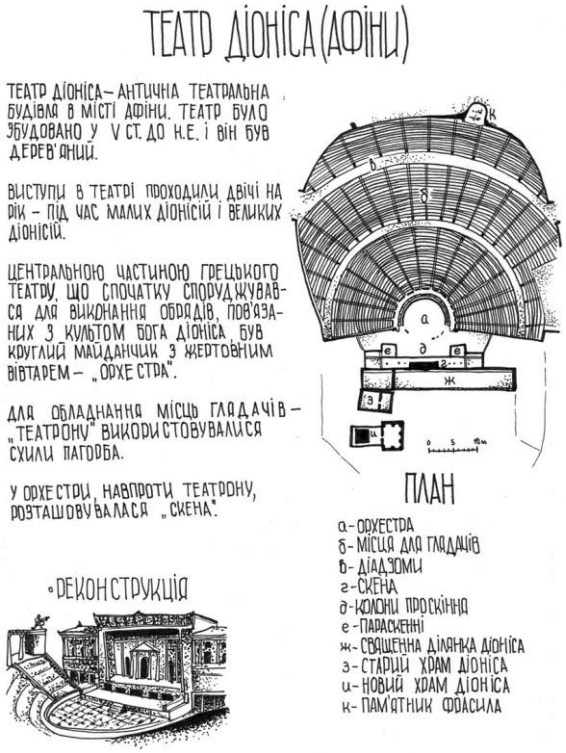

Figure 4.2 – History of urban planning, architecture and art of the ancient world (Aegean and ancient Greek cultures)

Sculptors' interest in a highly emotional, dramatic plot is indisputable evidence of the influence on the spiritual life of the Greek world that the political events that accompanied the decline and demise of the Hellenistic states had. In the II-I centuries BC legions of Rome conquer the countries of the Eastern Mediterranean, and from now on not only a new period of world history begins, but also a new chapter in ancient art – the art of Ancient Rome.

Sources: [1–3, 5, 6].

5 HISTORY OF TOWN PLANNING, ARCHITECTURE AND ART OF ETRUSKS AND ANCIENT ROME

5.1 Architecture of Ancient Rome. Etruscans

The history of Ancient Rome covers more than twelve centuries, from the VIII century BC to the V century AD. It left humanity with the richest cultural and artistic heritage. The treasury of world culture includes the poetic works of Virgil, Horace, Ovid, the historical works of Livy and Tacitus, the materialistic philosophy of Lucretius, the oratory of Cicero, the merciless satires of Martial and Juvenal. The Roman legal system played a prominent role in the development of legal thought. Masters of Ancient Rome created grandiose architectural ensembles and new types of engineering structures that were unknown to previous civilizations of the ancient world, realistic sculptural portraits and wonderful frescoes, mosaics and works of art. Roman art completes the development of the art of the ancient world. It inherited and creatively reworked the best achievements of ancient Greek and ancient Italian art. Roman masters were inspired by the traditions of their predecessors. But they managed to preserve their original style and their creative individuality.

The culture of Rome, like its art, grew primarily based on the civilization created by the peoples of ancient Italy. The most developed in political and cultural terms were the Etruscans. The history of the origin of the Etruscans and the secret of their language have not yet been completely solved. Many modern researchers believe that the Etruscans came to Italy from Asia Minor in the IX-VIII centuries BC.

The Etruscans were famous as experienced farmers. They drained the swamps, turning them into fertile lands, widely used artificial irrigation. They carried on a brisk trade with Egypt and Phoenicia, Carthage and the cities of Greater Greece, Spain and Sicily.

In the VIII–VI centuries BC Etruria extended its sphere of influence to the entire western half of the Mediterranean. The largest cities of the Etruscans grew on the trade routes – Cere, Tarquinia, Veia, Volsinia, Clusius. They were surrounded by powerful fortress walls with towers. The roads, bridges and canals built by the Etruscans testified to the high development of construction technology.

At the head of the city-states of Etruria were kings and slave-owning nobility, among which an influential priesthood stood out. Often, aristocrats, using mercenary units, made raids on neighboring lands to seize production or enslave the population. Until the VI century BC a union was formed that united the twenty largest cities of Etruria. The religious center of this federation was the temple of the god Voltumna, near the city of Volsinia, where annual traditional holidays took place, and the heads of Etruscan cities elected a high priest. From the VI century BC Etruscan civilization is increasingly influenced by Hellenic culture through the Greek colonies in southern Italy. The Etruscans borrowed the Greek alphabet, theatrical art, and mythological ideas from Ancient Greece. Gold coins were minted according to the Greek model. Aristocrats of Etruria admired black-figure vases. Like the Greeks, the Etruscans worshiped twenty gods. But in their religious worldview the deities of death and the afterlife played a special role, as well as divination by lightning, the flight of birds and the entrails of sacrificial animals.

The main place in the pantheon of the Etruscans was occupied by the triad of supreme gods – Jupiter, Juno and Minerva, who were revered in many cities under Etruscan names. Temples with three cells were built in their honor. The doctrine of the world structure, developed by Etruscan priests, had similarities with Greek and Babylonian legends about the creation of the world. The flourishing of the funeral cult brings the Etruscans together with the culture of the ancient eastern peoples.

They kept the ashes of the deceased. Most often, the lids are decorated with figurines of warriors or images of a human head. Large terracotta sarcophagi with sculptural figures of the deceased on the lids became widespread in the art of the Etruscans.

The temple architecture of the Etruscans differed from the Greek in many respects. Architects of Ancient Greece in the VI–V centuries BC built mainly periptery type temples from limestone and marble. The Etruscans used much less durable materials. Stone was used only for the foundation, the frame of the building was made of wood, and the walls were made of raw bricks. The temples stood on a high base – a podium to which multi-step stairs led. A deep portico was the main feature on the main facade of the building. The Etruscans decorated their religious buildings a lot with reliefs and terracotta statues, common throughout the ancient world during the Archaic period. In the VI century BC terracotta plastic reaches extraordinary perfection.

In the VII–VI centuries BC Etruria masters created original ceramics that were popular in all Mediterranean countries. Amphoras, jugs and bowls made on the potter's wheel were fired so that the smoked clay turned black. This technique was called "bucqueronero", which means "black earth" in Italian. Then the vase was polished with a hot stone and decorated either with imprinted relief images or drawings stucco figures of animals or birds.

The technique of bronze casting has also reached high perfection. Images of beasts and fantastic animals were especially fascinating to Etruscan sculptors. The statue of the Capitoline Wolf, famous in the history of Rome, belongs to the art monuments of Etruria. Myths say that two twin brothers, who supposedly in 754 BC founded the city of Rome, was raised by a she-wolf as a child. In memory of this event on the Capitol, one of the seven Roman hills, at the end of the VI or the beginning of the V century BC a statue was installed. With great observation, the sculptor depicted the body of a predatory beast with retracted sides and ribs protruding through the skin.

The she-wolf's mouth is open, ears are alert, front paws are elastically tense. The true interpretation of the animal's body is combined with conventional decorative execution of individual details: curls of wool on the back resemble a patterned ornament. Figures of children next to the she-wolf have not survived. Perfect skill in depicting animals makes the sculptors of Etruria the best animalists in ancient art. Like the ancient Egyptians, the Etruscans decorated the walls of tombs with paintings. The tombs themselves were either carved out of the rock or built of stone and a mound was placed over them. Their interiors often imitate the rooms of the houses of the Etruscan nobility. Tomb paintings give a vivid picture of the life, customs and religion of the Etruscans. On the walls are depicted mythological scenes, athletic competitions in honor of the deceased, pictures of funeral feasts.

The frescoes allow you to investigate the houses of the Etruscan nobility, where servants and slaves are busy with their daily work.

Scenes from Greek myths became favorites in the work of the Etruscans. They decorate bronze mirrors and funerary vessels (cysts), which were placed in the tombs of rich slave owners.

The flourishing of the culture and art of Etruria spans the period from the VII to the beginning of the V century BC. From this time, the time of increasing decline of Etruscan cities comes. Struggle with numerous tribes, constant wars and social strife undermined their political power. 474 BC the combined fleet of the Italian southern cities inflicted damage on the Etruscans and its old ally Carthage. From the V century BC, the role of the strongest maritime state in the western Mediterranean passed to Syracuse, who pushed the Etruscans on trade routes as well. From the end of the 5th century BC a new dangerous rival – slave-owning Rome – begins to crowd the Etruscans, and during the first half of the IV century BC southern Etruria falls under his rule.

Later, the same fate befell other Etruscan cities. With the loss of political independence, the originality of Etruscan art largely disappears. While maintaining a high level of technical skill, Etruscan artists increasingly borrowed the system of

proportions and aesthetic ideals of Greek art. However, the art of Etruria did not dissolve completely under the influence of Hellenistic culture. His traditions played their role in the artistic creativity of slave-owning Rome.

5.2 Architecture of Ancient Rome. History of origin

The history of Ancient Rome and its architecture is divided into three stages:

– the first – VIII-IV centuries BC – the history of central and northern Italy, inhabited by the Etruscans;

– the second – **IV century BC – 27 AD** – the stage of Republican Rome;

– the third (the longest) – stretched over five centuries (**27–475 AD**) – imperial Rome.

Etruscans is a tribe that settled in the VIII century BC middle and northern Italy. They are probably natives of Asia Minor. Etruscans were culturally at a lower stage compared to archaic Greece. They assimilated several achievements of the Greeks, adapted them to the conditions of their lives and created several new architectural and constructive solutions, which, in turn, were assimilated by Republican Rome. The Etruscans were active in **urban planning**. The planning skeleton of the cities founded by them consists of two mutually perpendicular main streets. It was a technique widely used by the Romans in the II-III historical stages. The Etruscans surrounded their cities with walls and moats, forming fortresses.

At the turn of the VIII–VII centuries BC **Rome** was built by them on the **Palatine Hill** (the so-called small “square” Rome). But by the end of the VII century BC the fortress was moved to Capitol Hill, which became the acropolis. It is surrounded by stone walls with a length of VII km. Until the VI century BC the Etruscan state significantly expands its territory because of successful wars, and Rome becomes the royal residence. But in 509 BC the Romans overthrew the Etruscan king and established a democratic republican government, similar in general to the Greek polis management system. During the entire V century BC, the Romans push the Etruscans out of southern Italy. At the turn of the V-IV centuries BC Rome experiences the invasion of the Gauls, but having overcome its consequences,

continues the development of the southern territories. Until the III century BC Etruria is completely assimilated by the Roman Republic.

The second historical stage is the formation, development and crisis of republican Rome. The three Punic wars with Carthage (III–II centuries BC) provided the opportunity for territorial expansion of the republic to the southern coast of the Mediterranean Sea. Until the I century BC Rome dominates all the territories of the Mediterranean. The huge expansion of the country's territory to ensure its centralized management required a change in the forms of social organization from republican to centralized.

In this regard, during the I century BC civil wars are constantly breaking out in the struggle for a centralized, concentrated, unified administration (Sulla, Pompey, Antony, etc.). After the murder in 44 BC the most authoritative claimant to the sole leadership consul Julius Caesar in 30 BC Octavian Augustus becomes the first emperor. The era of the principate begins: the emperor bears the title of princeps (first among equal members of the Senate) – a formal tribute to republican traditions.

The imperial period of the history of ancient Rome was associated not only with victories, but also with the assimilation of the cultures of the conquered countries. In addition to assimilating the heritage of the Etruscans, Rome was enriched by the artistic and scientific achievements of classical Greece, the splendor, colossal buildings and city-building successes of the Hellenistic era, adapting their achievements to the solution of its political tasks. The imperial period gives an additional expansion of the territory of the state to the borders with Scotland and Armenia. Management of such a colossal territory inhabited by different peoples, with their own language, religion and social structure, posed very difficult tasks to the state.

They were solved by ensuring the unity of management due to the concentration of power in the hands of the emperor, the introduction of general legislation (note the Roman law), the unity of the language (Latin is the national language), the unified structure of the bureaucratic system, the granting of the rights of Roman citizenship

to the entire free population of the empire, the encouragement and involvement in the highest echelons of the management of the local nobility. The Iberian Tiberius in the II century AD became the Roman emperor. Already in the west of the empire in the IV century. Constantine the Great, for the purpose of ideological unity of the country, made Christianity the only state religion. However, this will not save the empire from the final collapse under the pressure of the barbarian invasion, the aggravation of class stratification within the country and the separation of the provinces.

Naturally, the 500 years of the empire were not uniform. The greatest prosperity and the greatest achievements in architecture, which spread throughout the empire, fall on the I-III centuries AD. Architecture is consciously used as a means of propagating Roman statehood. The first emperor Augustus proudly declares that he accepted Rome in clay and leaves it in marble. Indeed, during his reign, 82 temples were restored in Rome, the Altar of Peace was erected on the Field of Mars, the Forum of Augustus, and a grandiose mausoleum.

In the III century AD the legislation becomes stricter: the remnants of republican freedoms are excluded, and a military monarchy is formed. The country is shaken by slave uprisings. The situation in the country is so unstable that the construction of defensive structures is developing everywhere, and northern Trier and even Rome, which has not been fortified since the IV century BC, are surrounded by monumental walls. Emperor Aurelian surrounded the capital with stone walls with a total length of 19 km in 271–276.

Relative stabilization occurs only at the turn of the III–I centuries AD. In the middle of the IV century the separation of provinces is increasing. Some of them (in Forward Asia) are thriving. At the same time, Roman cities in northwestern Europe are being destroyed by barbarians. For most of the third stage, imperial Rome remained the largest, strongest and most powerful state in the ancient world. The trophies of numerous wars bring him wealth, and one of the most valuable are numerous slaves. They become the main labor force in agriculture, construction of cities, roads and bridges.

At the same time, free farmers are pushed out of their small plots of land and the latifundios who do not hire them and do not take them as tenants, preferring the cheaper labor of slaves, are getting stronger. In 395, the country was finally divided into the Western and Eastern Roman Empires – Byzantium. The Western Empire will fall in 475, and the Eastern Empire will remain independent for almost another 1,000 years. But its social formation will change to an early feudal one.

The formation of ancient Roman architecture was based on the assimilation of the artistic heritage of the Etruscans in the first stage, classical Greece in the second and Hellenism in the third. Etruscan architecture marked the beginning of the composition of Roman residential buildings, temples, tombs and the construction of vaults. The peculiarity of the Etruscan house was the presence of a central room that was illuminated through a hole in the roof (atrium), in the center of which was a pool (impluvium) with rainwater. The Romans repeated this composition in their houses. And after getting acquainted with the Greek practice, they enriched the atrium scheme with a peristyle, subordinating the enfilade arrangement of planning elements to strict symmetry.

The temple architecture. Etruscans introduced individual features into the composition of the Greek peripheral temple. Instead of a three-step stylobate, they used a high podium, the ascent to which was provided by a tall grand staircase from one end only. On the same end side, there was a deep portico (sometimes with two or three rows of columns). From the longitudinal sides, the temple was surrounded by one row of columns, and from the blind end of the cella, the columns partially entered the body of the wall in the form of semi-columns. Cella was most often divided into three spaces, which were dedicated to three gods. Such a scheme was also used by them in the grandiose temple of Zeus of the Capitol in the VI century BC in Rome. The porticos of the Etruscan temples were built using their version of the Doric order, which was later called the Tuscan Renaissance by the architects of the Renaissance. Its difference from the Doric consists in the introduction of the base of the column,

the absence of flutes on the trunk of the column, and the presence of a “neck” under the echinus.

The Romans assimilated the elements of the Etruscan temple, using a podium instead of a stylobate, and semi-columns not only along the blind end wall, but also along the longitudinal walls, thus turning the Greek periptery into a pseudo-periptery. The best examples of pseudo-peripheral temples were created at the turn of the I century BC and the I century AD. This is the temple of Fortuna Virilis in the Bull Market in Rome and the temple of Maison Carre in the French city of Nimes.

The monumental, often cylindrical tombs of the Etruscans became the prototype of the cylindrical Roman tombs up to the heavily rebuilt Hadrian's mausoleum (the modern castle of Saint Angel) on the banks of the Tiber in Rome. A significant difference between the Etruscan practice and the Greek was the active use of vault-dome structures made of well-hewn wedge-shaped stones, which was later used and developed by the Romans in the form of brick-concrete vault systems.

The architecture of the Hellenistic era was assimilated by the Romans primarily in terms of its complex and diverse organization of large public spaces – the temple complexes and agoras of Pergamum, Priene, Miletus and other Hellenistic cities, as well as its colossal style. It is enough to compare the solution of the Athenian acropolis with the Roman temple complex in Baalbek (on the territory of modern Lebanon). If in the first there is an artistic asymmetry in the location of the temples and their human scale, then in the second there is a strict military symmetry of the composition and inhumanly grandiose dimensions – the height of the columns of the great temple is 19.6 meters, and their diameter is 2 meters, the length of the colonnade is 280 meters.

The stone blocks that make up the podium of the Great Temple measure 20 m × 5 m × 4 m and weigh up to 1,000 tons. The composition of the ensemble traces the features of eastern architecture: the portico of the Propylae is located between two towers, which reminds us of Babylonian architecture from Bit-Khilani to the palaces. In the square peristyle courtyard, basins for ritual ablutions are placed

in the east, and the altar is raised above the altar by a tower on its cover, which resembles a ziggurat.

Assimilating the sources discussed above, the Romans created independent innovative works in all branches of architecture – from urban planning to residential buildings. The architecture of Ancient Rome enriched the world architecture with urban planning, typological, compositional and engineering achievements. The most important of them include:

– extensive urban planning activities based on the regular planning system developed by the Romans;

– architectural organization of large open spaces in cities – forums;

– architectural composition of large, closed spaces of temples, palaces covered with dome-vaulted stone and concrete structures;

– development of typological solutions of single-family atrium-peristyle houses and villas and creation of multi-story apartment buildings – insula;

– the creation of new types of buildings – basilicas, commercial buildings, curias, thermal baths, libraries, spectacular and triumphal memorial buildings;

– canonization of order “systems” and innovation of their compositional application;

– creation of durable constructive solutions of engineering structures – aqueducts, bridges, ports, roads.

5.3 Urban planning, typology of buildings and structures of Rome

The city-building of the Romans is considered the most outstanding in the architecture of the ancient world. The Roman legions were the first to master the newly colonized territories. The planning basis of new cities was often a castrum, a typical layout of a military camp. The planning and placement scheme of military legion units in Kastrum is described in detail in II millennium AD by the Roman historian Polybius. Castrums were built on relatively level sites. The sides of their rectangular plan were placed strictly on the opposite sides of the world, surrounded

by walls with an entrance gate in the middle of each side. The gate connected two main streets that crossed each other. Longer and wider in the west-east direction is dekamanus, short (north-south) is cardo. The command tent was located at the intersection (later the city forum was in its place). The rest of the territory had a regular membership according to the Hippodamian planning system. The typical planning scheme of a military camp ensured the rapid development of the territory, but practically never provided for a free outline of the city plan considering the natural surroundings. The Castrum scheme is the basis for planning the center of many Italian cities – Turin, Mantua, Ostia, Lucca, Florence, and colonial cities – Paris, Cologne, Bath and others in Europe, Palmyra in Syria, Jarash in Jordan, Timgada in Algeria. The exception was the capital of the empire. It was located on seven hills and in the lowlands between them. The city of Rome received a complex, mainly radial planning structure.

In the Middle Ages, cities with a Roman regularly planned central part received further development and construction in a radial or radial-ring pattern around the ancient center. In large Hellenistic and Roman cities (Antioch, Ephesus, Palmyra, Timgadi), the main streets were decorated on both sides with columns (so-called column streets). There were several colonnaded streets in Rome as well. A colonnaded street in Palmyra (Syria) has been partially preserved to this day, where there are 375 columns of the Corinthian order 17 m high along 1,135 meters. In the middle of the height of the columns, the consoles on which the statues that decorated the street stood were preserved. Columned streets were often closed with triumphal arches (Timgad, Palmyra).

The active public life of Rome and its provinces required the organization of appropriate public spaces in the center of the city – forums. They represented the further development of the agoras formed in Greece. The forums received (compared to the Agora) clearer and larger geometric dimensions, a strict axially symmetrical composition, and a greater degree of closure by building the forum with a colonnade, columns, and sometimes walls. Along the axis of the building, the space of the forum

closed the temple, and on the sides, there were halls of public meetings, courts (curia), exchanges (basilica) and libraries.

Triumphal structures (arches or columns) were erected in the forums in honor of outstanding events and military victories. The open space of the forum square, elegantly surrounded by a colonnade, paved with colored marble and decorated with statues, often served as a public meeting hall. Naturally, the largest social complex was formed in Rome, where six forums were in the lowlands near the Palatine Hill. There is a forum of the era of Republican Rome (forum Romanum) and five imperial forums (forum of Caesar, Augustus, Nerva, Flavius (Forum of Peace) and Trajan). Because each of the emperors considered it necessary to perpetuate their greatness and victories by decorating the city with a new forum.

The most grandiose of them was the **Forum of Trajan** (107-113). It was built according to the project of the architect Apollodorus from Damascus and occupies an area equal to the area of the Athenian acropolis. The strictly symmetrical deep composition of Trajan's forum was opened by the triumphal arch of the emperor. It consisted of an elongated Peristyle square with market exedra in the middle of the sides, perpendicular to the axis of the composition of Ulpius' basilica, behind which the equestrian statue of Trajan and his temple were placed. The forum complex included two library premises.

The square of the forum was decorated with a 43-meter triumphal column. The forum is located on the site of the cut-off 38-meter spur of the Quirinal Hill.

The typology of buildings and structures of Ancient Rome is the largest in comparison with the typology of other ancient civilizations. In addition to traditional types of buildings (housing, temple, palace) the Romans created new types of public buildings and structures (amphitheatres, baths, basilicas, triumphal arches and columns). They brought new solutions to traditional types of houses as well.

The residential houses (villas) of the Romans were combined from the Etruscan atrium house and the attached peristyle of the Greek house. The Romans also created multi-story multi-apartment residential buildings (insula). Apartments in these

buildings were rented out to the city's free poor. Benches and taverns were located on the first floors of the insula. In the I century AD there were 46 thousand islands in Rome. These houses were built with load-bearing brick walls and inter-floor concrete vaulted ceilings. The height of the insula (5–7 floors) should not exceed 21 m during the time of Emperor Augustus, and 18 m under Trajan.

In Rome, villas were built on hills, and insulas were built on less healthy areas of the lowlands. The villas of Ancient Rome were studied in the most detail during the excavations of Pompeii. Most of the villas were built according to the atrium-peristyle scheme. Especially rich villas had two peristyles, two atriums and many rooms. Insulas have practically not been preserved. An idea of their structure is given only by ancient descriptions and foundations discovered by archaeologists.

The temples of ancient Rome were based on the pseudo-periptery system in their composition. Along with the rectangular ones, the Romans also built round temples, from the small temple of Vesta (I century BC) in the Bull Market to the grand one dedicated to the seven planetary gods of the Pantheon. In the composition of the Pantheon, the Romans were the first in the history of architecture to create a colossal interior space. All previous architecture from ancient Babylon to Greece created outstanding external three-dimensional forms of buildings with very modest or strongly enclosed by columns (the temples of the New Kingdom in Egypt or the apadana in Persepolis) interior spaces.

In the Pantheon, thanks to the engineering achievements of the Romans in dome construction, for the first time a space free from internal supports was created with a span of 43 m, flooded with sunlight through a round (9 m diameter) slot in the top of the dome.

Theaters and amphitheatres. The Romans also innovated in the creation of theaters. The Romans erected special supporting structures of walls and arches that held the audience seats. In comparison with Greek theaters, the scene in Roman theaters has changed significantly. A narrow stage area is enclosed by a high wall (or a narrow building). The surface of the wall facing the audience is closed at the ends

by towers (or risalites), and its surface is divided by order decor, shallow risalites and niches. At the same time, a statue of the emperor is placed in the central niche.

The scenic volume and substructure of the theater form the facades of the building of the Roman theater. Thus, it differs significantly from the Greek one, which practically had no facades. Along with the one described, the combined scheme of Roman theaters was also used (with a theater on the hillside and a monumental stage). Such, for example, was built in the I century AD theater in the city of Orange (France), which accommodates 7,000 spectators. The outer wall of its stage is 38 meters high and today forms the facade of the building of the adjacent city highway.

However, more often than theaters, amphitheaters are built, in the arenas of which gladiator fights, representations of famous battles, and demonstrations of wild animals take place. Among the thousands of Roman plebs, this version of mass culture is more popular than refined theatrical art. It is no accident that in the II century AD the construction of theaters in the empire is reduced. Amphitheaters are built with a perimeter arrangement of spectator seats around an elliptical arena.

Amphitheater buildings in Rome (Coliseum), Verona, Arles, Pompeii, Nimes, Capou and other cities have survived to this day. The grandest four-tiered amphitheater of the Flavians – the Colosseum, built in 75–80, could accommodate up to 50,000 spectators. Its dimensions in plan are 188 m × 155 m. In its arena, 3,000 pairs of gladiators could fight at one time.

The structures of the amphitheater are 80 radial walls supported by cylindrical and cross-shaped brick-concrete vaults, which support the spectator tribunes and galleries around the outer perimeter. From the outside, the entire structural system is surrounded by an elliptical four-tiered wall: in the three lower tiers – arched, in the fourth – deaf. Through 80 arches of the lower tier, the crowd of thousands of spectators quickly filled and evacuated. Statues were installed in the arched openings of 2–3 tiers.

The composition of the facade of the Coliseum (as well as the facades of the amphitheaters in Nimes, Arles and other cities) is built on a combination of a multi-span arched-vaulted structure with a decorative multi-tiered order architectural form. It superimposed on the structure for purely compositional purposes (to give the monumental structural form scale and attractiveness). But provincial two-story amphitheaters in Verona, Nimes, Arles, Cap and other cities have a capacity of up to 20,000 to 28,000 spectators and are used as open-air auditoriums to this day. In total, about 200 amphitheaters were built in the empire.

Baths are a new type of multi-functional buildings created by the Romans. It enjoyed immense popularity among the population. The thermal baths were intended for water hygiene procedures, swimming in indoor pools and sports in open areas, humanitarian activities and meetings. In Rome during the Empire era, there were 11 imperial and about 800 private baths, which supplied water to 14 aqueducts. Each district of the city housed 60–80 thermal baths.

The construction of grand thermal baths served for the emperors (Titus, Trajan, Caracalla, Diocletian) as a means of gaining popularity and perpetuating their name.

The imperial baths occupied particularly large territories (8–12 hectares) and were a peristyle courtyard surrounded by deaf walls with a monumental building of the baths in the center. The space of the yard was occupied by a park with sports grounds located in it. Along the deaf walls of the peristyle courtyard, there were semi-open rooms with small stages for concerts and performances, and closed ones for individual classes in music, poetry, readings, etc. The capacity of the Baths of Caracalla was 1,600 people, and the Baths of Diocletian – 3,000 people.

The main building of the thermal baths contained small rooms of private baths (for one person or a family), office rooms, rooms for preparatory procedures and huge halls with pools of cold (frigidarium), warm (tepidarium) and hot (caldarium) water. The sequential enfilade arrangement of these halls formed the main functional and compositional axis of the building. Boiler rooms and water pipes were in the basements.

Imperial baths (as well as amphitheaters, circuses and forums) were built on funds received by the emperor because of successful wars, without affecting the city budget. Roman architects in the buildings of the thermal baths demonstrated high skill in designing the interiors of huge internal spaces. In the composition of interiors, orders of different scales were used (mostly decoratively, not constructively) in the same room. The surfaces of the walls, vaults and domes were divided by caissons of different sizes and shapes, lined with colored marble. Decorative sculpture was very widely used.

In contrast to the interiors, the appearance of the thermal baths was modest and even strict.

Basilicas are a new type of public buildings, the emergence of which relates to the active business and economic life of the ancient Romans. Basilicas are 3–5 span rectangular buildings, sometimes at their ends the middle span ends with a semicircular niche. The middle span is higher than the side ones, which allows windows to be placed in the upper part of its outer walls and illuminate the interior of the basilica. In the lower part, the longitudinal walls of the middle nave are completed by an arcade on columns, which ensures the unity of the space of the basilica. The entrance to the basilicas was located, as a rule, in the center of the longitudinal outer wall. For many decades, the Ulpian Basilica in Trajan's Forum served as a role model. Basilicas had different functional purposes – from courtrooms to commodity exchanges. In the early Christian era, most of them were adapted for the initiation of the new cult. At the same time, the main compositional axis of the building became the longitudinal, often supported by a device near the entrance end of the temple, the peristyle courtyard. Most basilicas were built with their spans covered by wooden hanging trusses.

Only in the IV century during the construction of the huge basilica of Maxentius, a new for them (but previously mastered in thermal baths) covering of the central nave with a height of 35 m with three cross vaults with a span of 25 meters was used, with the transfer of the vertical load to individual foundations, and the strut

to the transverse buttresses. This structural system made it possible to relieve the outer walls and arrange large and numerous light holes in them. Unfortunately, in connection with the fall of the Western Roman Empire, such a constructive system was further developed not in the metropolis, but in Byzantium.

Triumphal and memorial buildings. Triumphal structures (arches and columns) began to be erected in the republican era, but the main massif was built in the imperial era with the aim of glorifying the military successes of the rulers.

The construction of arches is known from the I century BC. These are, as a rule, single-span arches with order decor superimposed on them. Such are the arches of Augustus in Rimini and the arch of Gaviev in Verona. The construction of single-span arches in the imperial era ends with the triumphal arch of Titus (81 meters) in the Romanum Forum, dedicated to his victory in the Jewish War of 70.

Along with the triumphal arches, memorial, temple, entrance (to the city), entrance (to the forum, sanctuary) and others were erected. In total, on the territory of the empire from the I century BC according to the IV century AD more than 350 arches were erected.

The triumphal arch was usually crowned with a gilded statue of the triumphant. An arch is a powerful high wall (from 15 meters to 29 meters) cut with one or three holes. Mainly entrance arches were built with two openings. For triumphalist, the form with two holes was used extremely rarely. In the architectural composition of the arches, a combination of arch construction with order decor is used. To correspond to the height of the arch, the composition of the order must have a pedestal, and above the entablature – a high attic, on which the narrative relief and inscriptions were placed. The decor of the arches was very magnificent.

Among the powerful entrance, triumphal and memorial arches, the arch of Hadrian (120 AD) in Athens at the entrance to the Olympia stands out sharply with its light aerial forms. Here, the artistry of the Greek masters was affected, but in the lower tier of the arch, the incompatibility of Greek and Roman architectural methods can be clearly traced (adjacent orders with and without a pedestal, overlaying the

archivolt of the arch on the architrave). The three-span arches of the III-IV centuries, starting with the triumphal arch in Orange, are distinguished by their increased size, massiveness and overload of sculptural decor. The arch of Constantine in Rome (315) is maximally loaded with decor. With the unfortunate proportions of the composition of this arch, the overall disharmony is enhanced by its decor, as part of the reliefs and sculptures were transferred and incorporated into it from other earlier buildings (Trajan's arches and others).

Triumphal columns were erected in honor of the victories of the emperors and on the battlefields. Only a few survived in Rome. The most famous column of Trajan in Rome is the only surviving element of Trajan's forum. The column is a hollow trunk 43 m high with an Ionic base and a Doric capital. The trunk of the column is encircled by a narrative marble relief 200 m long with scenes of the emperor's battles in Dacia. The column is topped by a statue of Trajan.

Memorial buildings are the mausoleums of emperors, famous persons or rich people were built over the centuries under the obvious influence of Etruscan cylindrical stone tombs of tumulus with hollow walls and a powerful cornice. Such is the mausoleum of Cecilia Metella (middle of the I century BC) on the Appian Way in the outskirts of Rome and the mausoleum of Emperor Hadrian (135–140) in the center of Rome on the banks of the Tiber. Its modern appearance differs from the ancient one by a tall tower erected in the Middle Ages on a roof with a sculpture of an angel on top, which is why the modern name of the mausoleum relates to the Castle of the Holy Angel. The Elia Bridge, decorated with sculptures, leads to the mausoleum from the Field of Mars across the Tiber.

The engineering structures of Ancient Rome (bridges, aqueducts, roads, harbors, castrums, defensive structures) are one of the top achievements of Roman architecture both in terms of technical perfection and their expressive tectonics and harmonious inclusion in the natural and urban landscape.

The architectural merit of the most complex engineering structures (bridges and aqueducts) is their scale, laconicism, compositional clarity of forms.

All bridges and aqueducts were built according to the arch structural system. Pylons and arches are made of well-hewn natural stone with dry masonry, and the filling of the spaces between the arches is a three-layer concrete structure with brick or stone cladding. It is customary to separate bridges and aqueducts crossing plain and mountain rivers.

The first include the Fabricius and Elia bridges in Rome, the Augusta bridge in Rimini, or the bridge in the French city of Giens, built in the 1st century. not. Their composition has a pronounced horizontal single-tier character, the spans of the arches are 8–10 meters, and the number of arch spans is taken depending on the width of the river. An exception is the Fabritius bridge, which connects the left bank of the Tiber with the island of Aesculapius, where the span of the arches reaches 24 m. The width of the bridges usually does not exceed 8 m. Only the Aelia bridge (134 AD), which connects the Field of Mars with the opposite bank of the Tiber and oriented to the axis of Hadrian's mausoleum, has increased to 11 meters in width.

Bridges and aqueducts crossing mountain rivers or terrain have a different look. They have a variable height, corresponding to the changes in relief marks and variable tiering (from one to three tiers of arches). Among such structures, the most perfect two-story stone bridge 45 m high and 200 m long in Segovia (Spain) across the Tagus River, in which the height and width of the spans change along the entire length, and the aqueduct over the river valley The Gard in France supplies water to the city of Nimes, the so-called Gard Bridge. It has a height of about 49 m and three tiers of arches. The length of the bridge is 275 m, and the maximum span of the arches is 24.5 m. A distinctive feature of such structures is the high height of the lower tier for the unhindered passage of river flows when their level changes, while the five arches of bridges over flat rivers are lowered almost to the level water. Mountain bridges and aqueducts have different heights of tiers, and sometimes different widths of spans related to the multiplicity, as for example in the upper tier of the Gard Bridge.

The Romans began to build defensive structures in the form of city walls with towers in the III century, when the Western European cities founded by them were partially destroyed due to the attacks of Germanic tribes.

Rome was also surrounded by an 18 km long fortress wall (Emperor Aurelian's wall – 270–275). The Aurelian Wall is 10 m to 15 m high. It is a brick-lined concrete structure reinforced on the inside with buttresses. Square towers are arranged in the wall every 30 m. The entrance gate in the wall consists of two arched openings located between two flanking towers. According to the same scheme, defensive walls, towers and entrance gates were arranged in the fortifications of the Western European cities of the empire, such as the Porta Nigra gate in the German city of Trier.

The engineering achievements of the Romans affected road construction and urban development. From the IV century BC and with the growth of the empire, the Romans more and more intensively provided transport communication with the provinces. A part of these capital roads is functioning even now.

In the IV century BC initially using the drainage of the lowlands of Rome, the Romans built a capital stone arch collector, which discharged ground water into the Tiber. Later, this system provided sewerage for the city with a population of more than 1 million people (II century AD).

The water supply of the city with the help of aqueducts, which delivered water from mountain sources to the city, turned out to be just as complete. Engineering systems of air heating with floor heating have been operating since the II century AD.

5.4 Roman order. Building materials and structures

Greek architecture was assimilated by the Romans primarily through the widespread introduction of **orders**. The ratio of general and private sizes is subject to a single module – the radius of the column in its lower third. The "slenderness" characteristics of the columns are also recorded: Tuscan – 12, Doric – 14, Ionic – 16, Corinthian – 18 modules high. Striving for decorative magnificence, the Romans not

only used the Corinthian order most widely but invented an even more magnificent one – composite. Because the physical dimensions of Roman buildings were larger than Greek ones, the Romans increased the height of the orders by introducing column pedestals. Romans also simplified the outlines of the "bummers" – the profiling of the stones that make up the elements of the order from the entablature to the base of the columns. If the Greeks profiled the debris using complex geometric curves, the Romans used only straight and circular profiles.

Composition of ensembles, buildings and their elements. The Romans created the composition of large urban spaces, relying on the practice of the devices of the Greek and especially Hellenistic agoras, but they brought their organizing beginning to them. The main element of urban public spaces in Rome and the colonies is the forum.

The square of the forum is formed in the form of a strictly symmetrical rectangular closed peristyle composition with placement in its deep end of the temple. Forums, even if there were several of them, remained self-contained deep spaces. The passing forum in Rome had a purely communicative, not a compositional function. The principle of depth was applied even to the building of the Pantheon, which has a purely three-dimensional composition. For this purpose, a long peristyle courtyard with a triumphal entrance arch was built in front of the Pantheon. The same principle of symmetrical deep composition was used in temple complexes. Unlike the architects of the ancient eastern despots, the Romans built grand public buildings (except for palaces and temples). And here they faced the task of large-scale linking of huge volumes with the dimensions of a person. For this purpose, they found and applied, first in the triumphal arches, and then in the Coliseum, the technique of superimposing the rack-and-beam order system on a completely different arch-vaulted structural form.

The composition of the facade of the Colosseum reflects the Roman approach to order forms, which is sharply different from the Greek. For the Greeks, the order is the basis of the tectonic composition of buildings, poeticized into a constructive

system. For the Romans, the order is a purely compositional tool, they decorate a completely different structural form. In the Colosseum, the arched-vaulted four-tiered bearing structure is decorated with a four-tiered, externally more attractive order composition, which visually softens the severity of the stone-concrete structure. The principle of tectonics is observed here only by the layer-by-layer change of the order.

The most vivid illustration of the purely decorative attitude of the Romans to the order is the sculptural decoration of the palace and park of Emperor Hadrian in Tivoli (II century AD), where the mirror of a rectangular reservoir is surrounded by marble caryatids, as independent decorative elements outside the architrave-column system.

This worldview was also reflected in the Roman theory of architecture.

The creation of colossal internal spaces of palaces, temples (Pantheon) and baths was an independent not only technical, but also compositional achievement of the Romans. Roman orders and their details, contours and proportions were canonized due to their widespread use. Romans introduced regulation into the artistic system of the post-beam tectonic system. They created an independent tectonic system around arch-vault structures.

Building materials and constructions throughout the history of ancient Roman architecture experienced a process of intensive development. The Etruscan period was marked by the widespread use of raw bricks in walls, although fired bricks were already known to the Etruscans from the III century BC. From stone materials, light tuff and strong limestone (travertine) were used for dry polygonal or square masonry of walls, using lime mortar only for plastering. In the most ancient buildings, false constructions and domes were used to cover tombs and cisterns with a span of up to 10 meters. But until the IV century BC, the supporting structures of arches and vaults made of well-hewn stones with dry masonry were also well developed. The Etruscans widely used wood for the construction of rafter roofs and bridges.

The period of republican and especially imperial Rome is characterized by a sharp increase in the assortment of building materials and the creation of new spatial structures using **concrete**. The production of fired brick and its varieties has

expanded. In addition, the production of ceramic vessels as construction products was mastered, which were used in the masonry of vaults and domes both to reduce their mass and as resonators to improve the acoustics of halls. At the end of the imperial period, the production of colored bricks was mastered, which was widely used in the decoration of facades and interiors instead of colored natural stone.

The assortment of natural stone, which was supplied to the metropolis from the provinces, expanded – white marble from Greece and colored marble from the Middle East. The construction industry of the empire was sufficiently developed to the point that stone column trunks, bases, and capitals manufactured and hewn in overseas provinces were supplied to objects being built in Rome. The desire for luxury was so great that gold, ivory and mother-of-pearl were used to decorate several buildings (Nero's Golden House, Trajan's Forum).

Along with the creation of a wide range of artificial products from stone and brick, the outstanding achievement of the Romans was the invention of concrete.

Solutions of all structural elements developed dynamically. The structures of load-bearing walls have evolved from single-layered polygonal or square large stones to three-layered. At the same time, the outer brick (or stone) layers of three-layer walls are thinned, turning into cladding, while the main section of the wall is filled with concrete.

Bearing structures of large public buildings and their materials were used selectively by the Romans, based on the requirements of strength and load reduction.

A significant achievement of the Romans was the creation of various forms of vault structures with large spans based on a combination of brick (stone) and monolithic concrete. The brick base of the vaults, which was made on wooden circles, set the exact geometric shape of the structure and ensured good adhesion both to the concrete massif and to the plaster. In structures of complex shape (cross vaults, ribbed domes), a brick frame was used. Such a system of combining masonry with concrete in walls and vaults provided a reduction in the massiveness of structures and the effect of increasing strength.

In the same way as when designing walls, the Romans, performing vaults and domes, sought to increase the strength of structures and reduce their weight. Wooden structures were used mainly in complex circles when erecting spatial coverings for rafters and wooden bridges.

5.5 Art of Ancient Rome

In historical and poetic works, the opinion is expressed that Rome was called to rule over other peoples. This ideological program found its figurative embodiment in numerous statues of emperors, which were erected in city squares and in temples. The image of the ruler personified the strength and power of Rome. That is why sculptors resorted to conscious idealization in the images of emperors while preserving the portrait likeness. Greek statues of the V–IV centuries BC served as a model for them to follow, in which Romans were attracted by great pathos and noble restraint, clear simplicity of forms and beauty of proportions. The influence of the classical art of Greece in the development of the Roman portrait is especially evident at the end of the I century BC – I century AD. In Greek sculpture, Roman masters found that plastic language and those methods of heroization that most met the requirements of the era of the beginning of the Empire.

A marble statue of Octavian Augustus glorifies him as a general and ruler of the state. A proud, majestic pose and an expressive hand gesture give the statue a monumental character. The cloak is effectively thrown over the hand, the staff symbolizes the power of the commander. Augustus is dressed in armor, which is decorated with relief images. A powerful figure with an athletically developed body and bare muscular legs resembles the statues of Greek gods and heroes. At the feet of Augustus, the sculptor placed an image of Cupid, the son of the goddess Venus, from whom the Augustus family supposedly originated. The facial features of Augustus are faithfully conveyed, but his appearance is given an expression of manly directness and honesty.

The art of decorative decoration of houses reached high perfection already in the last century of the Roman Republic. In Pompeian houses, the floor was decorated with mosaics. There were open mosaics depicting traveling actors, the seabed, fighting roosters, a cat with a partridge in its teeth. The most interesting mosaic, made around 100 BC, found in the house of Faun. The mosaic occupies 15 square meters. It is made of 1.5 million cubes of natural rocks. The original for the mosaic master was a painting by the artist Philoxenus (end of the IV century BC), depicting the battle of Alexander the Great with the Persian king Darius.

The walls of rich houses were decorated with fresco paintings. The plaster, on which the paint was applied, consisted of several layers. And each subsequent layer was thinner and finer grained. In the II century BC the Romans borrowed wall painting from the Greeks, which imitates masonry made of colored marble. The colors of the fresco – red, yellow, black and white – differ in depth and purity of tone.

In the I century BC paintings become more complex. Artists depict architectural details on the walls – columns, cornices, pilasters and capitals. There are also large multi-figure compositions.

One of the best examples of painting of the I century BC – murals in a luxurious country villa near Pompeii. It received the name “Villa of the Mysteries”. The composition unfolded on the walls represents scenes of sacraments related to the cult of the wine god Dionysus.

In the I century AD, in the era of the Roman Empire, fantastic buildings and fancy arches created by the imagination of the artist appear on the walls of rich houses. Illusionary painted distant colonnades, galleries and porticos seem to move the space of the room, opening vast expanses to the viewer.

Frescoes often repeated the famous paintings, cities and harbors, temples and rivers. They express an interest in the landscape characteristic of urban culture. Artists can convey birds and animals, genre scenes with great skill. The image of fruits and dishes painted on the wall of a house in Herculaneum is distinguished by the well-thought-out beauty of the composition. Wonderful scenes using the mosaic

technique are found in Italian cities, in numerous public buildings and villas of slave owners in all Roman provinces – in Asia Minor, Syria, Egypt, North Africa, Spain, Gaul, Greece, the Northern Black Sea.

Column of Trajan. According to Roman historians, a golden urn with Trajan's ashes was placed in the pedestal of the column. The majestic monument also glorified the military victories of the emperor, won by him in campaigns against the Dacian tribes who lived along the Danube River. From the pedestal to the capital, the column is lined with slabs of Paros marble, on which bas-reliefs follow a spiral band. With historical sequence, all the main events of Trajan's campaigns are depicted on a two-hundred-meter tape. These scenes are a precious source of information about the era, the military affairs, the costumes.

The images emphasize the strength of the Roman army. One of the episodes depicts the siege of Roman fortresses by the Dacians. Behind a high wall made of stone blocks stand Roman legionnaires in helmets and with oblong shields. Both the attackers and the Roman soldiers are given on the same scale, there is no depth in the relief, and almost no space is depicted. In all the most important episodes of the war, the sculptors emphasized the outstanding role of Trajan. The image of the emperor is repeated ninety times. The relief of Trajan's column is a unique monument of Roman sculpture.

A significant achievement of the fine arts of the era of the Roman Empire is a **sculptural portrait.** The portrait images created by Roman masters during the I-IV centuries reflected the aesthetic tastes, ideals of the Romans, and features of their worldview. The role of the Roman portrait in the history of world art is determined by its deep life truth and the affirmation of the realistic method in depicting the unique individuality of a person. The entire further development of portraiture is largely based on the creative heritage of Roman masters. In portrait art, the idealizing trend that developed under the influence of Greek sculpture at the end of the Republic and at the beginning of the Empire was preserved. However, in the second half of the I century, new social preferences were formed due to social changes in the

environment of the ruling class. With the decline of the old aristocracy, wealthy layers of provincial slave owners emerged.

Portraits created during the reign of the Flavians (70–90 AD) are characterized by their expressiveness. In the uniquely original image of a person, sculptors reveal the main character qualities formed under the influence of life experience and the environment. With true realism, the master depicted the appearance of the emperor Vespasian.

In the search for truthfulness of life, the sculptors of the Flavian era do not stop at exposing the lowest qualities in human nature. In the bronze bust of the rich freedman from Pompeii, Lucius Caecilius Iucunda (70s AD), the master gave an asymmetrical face of an elderly man with a sloping forehead, plastered cheeks and puffiness under the eyes. Engraved hair seemed to stick to the head, greedy penetrating eyes were wide open, an evil smile froze on the lips. Rough flabby skin, a wart on the cheek and thin protruding ears are striking with their ugliness. The expressiveness of the portrait reaches the degree of the grotesque.

The confirmation of life features in the portrait is accompanied by new artistic techniques – the use of a plastic picturesque manner of processing marble. The Romans borrowed this style from Hellenistic sculptors.

Portrait painting reaches its peak. Although its samples have not been preserved in Rome, it can be judged by the famous portraits discovered in the burials of the Fayum oasis in Egypt. They were found on the faces of mummies. These portraits, created in the I-III centuries, are the only works of easel painting of the ancient world that have come down to us. They were written from nature during the life of the deceased. If in the portraits of the second half of the century the masters were fascinated by the problem of revealing the character, then in the next century the artistic pursuits of sculptors and the figurative style of the portraits changed. These changes are connected primarily with new trends in the consciousness of Roman society. The image of a person in the portrait art of Rome acquires new features in the age when the Empire reached the peak of its power. Emperor Trajan’s numerous

military campaigns made a strong impression on his contemporaries. Laudatory speeches were made, and monuments erected in honor of the victories won. Sculptors depicted Trajan as an energetic and intelligent figure, dressed as a Roman general.

Culture acquires a refined character, which relates to the revival of interest in Greek civilization. The appeal to Greek art is largely explained by the personal preferences of the emperors of this era. In the art of portraiture, the truth of character is replaced by the desire to convey the emotional state of a person. New techniques in sculptural technique also appear plastic marking of the pupil, which was previously marked with paint, polishing of the marble surface and abundant use of borax.

In a beautiful portrait of a young man, made in the middle of the II century, the sculptor depicted his correct features, close to the Greek ideal of beauty. Picturesquely scattered hair falls on a high clean forehead. The gaze directed into the distance seems pensive and contemplative. Virtuoso processing of marble creates the most subtle effects of light and shade, which enliven the face and give it a special spirituality. Glares of light and light airy shadows sliding across the face, as if enveloping it in a soft haze. Skillfully polished marble conveys the delicate skin of a youthful face, full of the charm of romantic sadness.

In the portraits created in the second half of the II century, the sculptors achieve extraordinary expressiveness in revealing the feelings of a person. The famous equestrian statue of the emperor Marcus Aurelius belongs to the best works of this era. It was cast from bronze about 170 years ago. In the XVI century, the great Italian master Michelangelo placed this statue in the center of the square he created on the Capitoline Hill in Rome. Equestrian monuments in many European countries were later made according to its model. The sculptor depicted Marcus Aurelius in a modest cloak, without imperial honors.

Keen interest in the subtlest nuances of a person’s mental state is a distinctive feature of the portrait art of the second half of the II century, when individualistic views and disappointment in life’s values are increasingly spreading in Roman society. Roman masters of the II century enriched the possibilities of the sculptural

portrait, taking a new step in the knowledge of the human personality. For the first time in the history of world art, they came close to understanding the complexity and contradictions of a person's mental life.

In the portrait art of the second half of the II century, as well as in the philosophy of this time, the conflict between the individual and society, generated by the deep economic and socio-political crisis that the Roman Empire entered during this period, finds a unique expression. We meet the reflection of the terrible events of the era in the reliefs that decorate the Roman sarcophagi of the III century. One of them depicts a scene of a battle between Romans and barbarians. Fighting figures fill the entire wall of the sarcophagus, creating the impression of a tangle of bodies woven together in a deadly struggle. The figures of soldiers and horses are rendered with powerful plastic volumes, the rough ugly faces of the dying barbarians and the evil triumph of the Roman victors are emphasized, in the center of which stands out the general on horseback. The rich effects of light and shade and the complex movements in which the struggle is shown enhance the feeling of a fierce and intense battle. The thirst for power and the consciousness of constant danger leaves an indelible mark on their appearance. Using the experience of the masters of the II century, who discovered in man the world of his feelings and experiences, sculptors once again turn to the merciless image and impartial transmission of nature, as if seen in life itself.

Sculptors of the III century were attracted by the problem of man's connection with the surrounding world, which allowed them to more deeply and multifacetedly reveal the character of man in its various manifestations. The images created by sculptors of the III century seem to have absorbed the views and thoughts of people, their attitude to the world. The images show the amazing freshness of the artistic vision, the accuracy of the historical document and at the same time heightened expression. Thus, in the portrait of the emperor Decius Trajan (about 250), the sculptor reveals the moods of the people of his time in his facial features. Decius's

face, distorted by a grimace of emotional pain, cherishes the imprint of the tragic contradictions of dying antiquity.

For the master of late antique sculpture, the human face is interesting because spiritual life shines through the body shell, and the contemplation of the external appearance leads to the knowledge of the divine idea. With the fall of the Roman Empire in the V century and the death of the slave system, these new features of artistic thinking, which developed in the last centuries of the history of ancient art, became the basis of the art of the Middle Ages.

Sources: [1, 2, 4–6].

CONTROL QUESTIONS FOR SELF-CHECK

1. Classification of the periods of existence of the original communal system.
2. Name the types of megalithic objects.
3. Name the difference between a menhir and an alinman.
4. What is the difference between a dolmen and a cromlech?
5. Periodization of the architecture of Ancient Egypt.
6. Peculiarities of Ancient Egyptian sculpture as a field of art.
7. Typology of ancient Egyptian tombs. Give a morphological description, name the differences.
8. Describe the forms and structures of the pyramids of the Giza ensemble.
9. Describe the temples of the Middle and New Kingdoms in Ancient Egypt. Give examples of the most studied temple complexes.
10. Describe the composition of the temples of the New Kingdom of Ancient Egypt.
11. Describe the most famous rock temples of the New Kingdom of Ancient Egypt.
12. Egyptian order. Main characteristics.
13. Portrait art of Ancient Egypt.
14. Painting of Ancient Egypt. The concept of canon.

15. Features of the image of the human body in Ancient Egypt.

16. Name the most famous architectural buildings of the Hellenistic period of Ancient Egypt.

17. Urban planning of ancient Mesopotamia on the example of Babylon.

18. Describe the structure of the Biennial residential building – "Bit-Khilani".

19. Palace architecture of Mesopotamia on the example of Nebuchadnezzar's palace in Babylon.

20. Ziggurat architecture. Etemenanki Tower.

21. Structures and building materials of Mesopotamia.

22. Architectural and artistic features of the architecture of Ancient Mesopotamia.

23. Features of the decor of Assyrian-Babylonian architecture.

24. Peculiarities of town planning of the Cretan (Minoan) culture.

25. The architecture of Cretan palaces on the example of the Knossos Palace.

26. Planning and construction systems of the Knossos Palace.

27. Design features of the Cretan column.

28. Fortification architecture of Mycenae.

29. Peculiarities of "cyclopean" masonry of the Mycenaean culture.

30. Differences in Mycenaean architecture of palaces.

31. Treasury of King Atreus.

32. "Lion Gate" of Mycenae.

33. The main features of the art of ancient Crete.

34. Periodization of Ancient Greece.

35. The art of the "geometric style" of Ancient Greece.

36. The art of vase painting of the Greek archaic period. Black-figure and red-figure vase paintings.

37. Ancient Greek temple – peripter. Main characteristics.

38. Temple of Apollo in Corinth.

39. Describe the Greek order system.

40. The main features and differences of the Doric order.

41. The main features and differences of the Ionic order.

42. Explain the essence of the picturesque approach in the architecture of ancient Greek temple complexes using the example of the agora in Athens.

43. Differences in temple architecture and complex planning during the Hellenistic period of ancient Greece.

44. Doric temple, features on the example (by choice): the temple of Apollo in Fermi, the Temple of Hera (Heraion) at the sanctuary of Zeus in Olympia, the Parthenon in Athens, the temple of Zeus in Olympia, the temple in Paestum (the so-called Basilica), the temple of Apollo in Corinth and others.

45. The art of Ancient Greece of the classical period. Main features.

46. The work of outstanding sculptors of the classical period of Ancient Greece (by choice): Myron, Polycletus, Phidias, Scopas, Praxiteles, Lysippus.

47. The main features of the art of the Hellenistic period of Ancient Greece.

48. Hellenistic sculpture, list the most famous architectural objects and famous sculptures.

49. Architecture and art of the Etruscans.

50. Periodization and town planning of Ancient Rome.

51. Peculiarities of the architecture and volume-spatial solution of a Roman residential building.

52. Temple architecture of the Romans.

53. Talk about the planning system in urban planning of the Romans – castrum. The concept of dekamanus and cardo.

54. Describe the purpose and structure of Roman forum.

55. List the main types of buildings and structures of Ancient Rome.

56. Peculiarities of the Roman order.

57. Architecture of the Coliseum.

58. Architecture of the Pantheon.

59. Building materials and constructions of Ancient Rome.

60. Design features of the dome of the Pantheon.

61. Compositional features of the use of order by the Romans on the example of the Colosseum.

62. The main types of art of the Roman Empire.

63. Sculpture as an art form of the Roman Empire period.

64. Sculptural portrait in the art of the period of the Roman Empire.

65. Portrait painting in the art of the Roman Empire period.

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APPENDIX A

The form of execution and design of the content of independent work

Execution form:

a) performed on sheets of Whatman format A4 (21 cm × 29 cm);

b) technique of graphic execution – ink, linear graphics;

c) the following work elements are placed on the page:

1) object name – 12 mm font;

2) on the bottom right side – the student's last name, first name, group code.

The content of the work:

a) characteristic of an architectural object:

1) title (author);

2) country, location;

3) time (era) of creation;

4) type of building (structure);

5) volume-spatial construction;

6) functional structure;

7) constructures (tectonics);

8) decoration, symbolism.

b) list of architectural objects.

APPENDIX B

Tasks for independent work of applicants of the first (bachelor) level of higher education with elements of research

Content module 1 (Ancient world, Egypt, Mesopotamia)

1. Settlement (city) Çatalhöyük.
2. Stonehenge.
3. Avebury.
4. Sardinia's Nuragic complex of Barumini.
5. The Megalithic Passage Tomb at Newgrange.
6. The Mnajdra Prehistoric Temples (southern coast of Malta).
7. Neolithic settlement Skara Brae (island in the Orkney archipelago of Scotland).
8. Pyramid Complex of Djoser.
9. The Great Pyramid of Cheops.
10. Pyramid Complex of Khafre (Khefren).
11. Pyramid of Sahure at Abusir (memorial monument).
12. The Sun Temples of Niuserra.
13. The Temple of Mentuhotep II at Deir el-Bahri.
14. Mortuary temple of Hatshepsut.
15. The Karnak Temple Complex.
16. Temple of Amun-Re, Karnak.
17. The Great Temple (Amun, Mut and Khonsu) in Luxor.
18. The Great Temple at Abu Simbel.
19. Temple of Khonsu (Karnak).
20. Temple of Amenhotep, son of Hapu (Karnak).
21. Ziggurat of Ur-Nammu at Ur.
22. Babylon. Plan of the city and the sacred site.
23. Ziggurat Etemenanki in Babylon.
24. Palace of Nebuchadnezzar in Babylon.
25. Dur-Sharrukin. City and palace.
26. Persepolis (Iran).
27. Palace ensemble in Persepolis (Iran).

Content module 2 (Aegean world, Greece)

1. Knossos Palace. Crete Island, Greece.

2. The Palace of Malia. Crete Island.
3. The Tiryns Acropolis.
4. Mycenae. City and palace.
5. Tomb of Atreus, Mycenae.
6. Temple of Aphaia on Aegina.
7. Temple C, Selinus (Selinunte), Sicily.
8. Temple of Artemis at Ephesus.
9. Temple of Hera, Olympia.
10. Temple of Zeus, Olympia.
11. Propylaea of the Athenian Acropolis.
12. Temple of Nika Apteros (Athenian Acropolis).
13. The Parthenon, Athens.
14. The Erechtheion, Acropolis in Athens.
15. The Telesterion at Eleusis.
16. Temple of Apollo Epicurius at Bassae.
17. The Mausoleum at Halicarnassus.
18. Dionysus Theatre in Athens, Greece.
19. Monument of Lysicrates in Athens, Greece. Corinthian order.
20. The ancient theatre of Epidaurus.
21. Ancient Greek residential building, peristyle house.
22. Ancient Bouleuterion of Milet.
23. Theater in Prien.
24. Olympian Zeus temple in Athens, Greece.
25. The Altar of Zeus in Pergamon.
26. The temple of Apollo at Didyma (Didymaion).
27. Ancient Agora in Athens, Greece.
28. Agora of Assos.
29. Agora of Priene.
30. Temple of Hephaestus (Hephaestion) in Athens.
31. Acropolis, Athens.
32. Doric order.
33. Ionic order.

Content module 3 (Roman Empire)

1. The Roman Forum in Rome. The Republican Period.
2. The Roman Forum in Rome. Empire period.
3. The Temple of Fortuna Virilis in the Bull Market in Rome.

4. Temple of Vesta on the Bull Market in Rome.
5. Sanctuary of Fortune in Prenest.
6. Sanctuary of Hercules Victor in Tibur.
7. Italian home. Insulas.
8. Roman villas.
9. Residential buildings in Pompeii.
10. Palmyra. Planning and construction.
11. Forum of Caesar in Rome.
12. Forum of Augustus in Rome.
13. The Flavian Palace on Palatine Hill in Rome.
14. Trajan's Forum in Rome.
15. Pantheon in Rome.
16. Temple of Venus and Roma in Rome.
17. Ensemble of Temples in Baalbek.
18. Trajan's Market in Rome.
19. The Baths of Caracalla in Rome.
20. Baths of Diocletian in Rome.
21. Marcellus Theater in Rome.
22. Colosseum (Flavian amphitheater).
23. Basilica of Constantine in Rome.
24. Arch of Constantine in Rome.
25. Diocletian's Palace in Spalato.
26. Villa Adriana in Tibur.
27. Mausoleum of Hadrian in Rome.
28. Christian Basilica.
29. Kalat Seman, Syria.

Електронне навчальне видання

СМІРНОВА Ольга В’ячеславівна

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