

GENESIS OF IMAGES AND TECHNIQUE OF ANCIENT CHINESE WALL PAINTING

Yang DING^{1,*}, Ioan Gabriel SANDU^{2,3,*}

¹ Kyiv National University of Construction and Architecture, 31, Povitroflotskyi Avenue, Kyiv, 03037, Ukraine;

² Gheorghe Asachi Technical University of Iași, Faculty of Materials Science and Engineering,
Blvd. Mangeron, No. 41, 700050, Iasi, Romania;

³ Romanian Inventors Forum, Str. Sf. P. Movila 3, 700089, Iasi, Romania

Corresponding author: gisandu@yahoo.com

Abstract

The article analyzes the centuries-old process of ancient Chinese wall paintings genesis from the Han period to the Tang, Song and Yuan periods. The iconographic concept and execution technologies of the Han period funeral wall paintings, the Tang and Song period religious Mogao paintings and the Tang and Yuan period funeral paintings are analyzed. The genesis of ancient Chinese wall paintings was to change the philosophical and religious direction, the gradual inclusion and dissemination of iconography along with mythological and religious plots of realistic stories from the life of the emperor, the nobility, soldiers in battle, ordinary people in scenes of work, the appearance of portrait images of historical figures. The canonical foundations and thematic genres of Chinese painting, common to paintings on wall, paper and silk, gradually formed. There was a departure from the Han prefabricated funerary "stone fresco", where the painting was modeled in relief, towards the planar frescoes of the Tang and Song eras, the colour palette, plot, compositional construction gradually became more complicated, the level of detail increased. Ancient Chinese wall paintings are an integral part of traditional Chinese art, as evidenced by the inclusion of the most famous sites in the UNESCO World Heritage List.

Keywords: Ancient Chinese wall paintings; Prefabricated and stationary wall paintings; Hollow bricks; Performing technology; UNESCO World Heritage List; Cultural heritage.

Introduction

The revival of national traditions in modern Chinese architecture and the government's line of educating the population about respect for national traditions and cultural heritage and the development of tourism have aroused interest in the study of Chinese architectural monuments, both world-famous and lesser-known (mainly to experts). Such is the ancient Chinesewall painting, which had a direct impact on the development of Chinese art in general.

The ancient wall painting of China dates back to the following main periods:

- a) the Qin period (221 – 206 BC)
- b) the Han period (Western Han dynasty 206 BC – 25 AD, Eastern Han dynasty (25 – 220 AD) (or 581 years total);
- c) the Wei period (the period of the Three Kingdoms) (220-265AD);
- d) the Jin period (Western Jin dynasty 265–317 AD, Eastern Jin dynasty 317– 420 AD);
- e) the Sui period (Sui dynasty) (581– 618 AD);
- f) the Tang period (Tang dynasty) (618 – 907 AD);

* Corresponding author: ddy123wanan@gmail.com and gisandu@yahoo.com

g) the Liao period (Great Liao, 916 – 1125 AD);

h) the Song period (Northern Song dynasty 960 – 1127 AD, Southern Song dynasty 1127–1279 AD);

i) Yuan Dynasty (1271–1368 AD).

If we describe the figurative system of traditional Chinese wall paintings, it should be noted that it was formed under the influence of Taoism, which was based on the general existence and changes of the universe and the formation of laws of morality and harmony based on the laws of the universe, ethical and political teachings of Confucianism, which eventually led to the formation of a variant of Chinese religious syncretism, "sanjiao" ("three religions"), a phenomenon that also occurred in Japan, where Japanese syncretism combined the traditional animistic religion of Shinto and Buddhism.

The task was to analyze the plot and artistic features of ancient Chinese wall paintings, including by comparing the painted surfaces and techniques of execution in different periods. It is worth noting that the early wall paintings in China were performed in religious buildings and tombs, and influenced not only the further development of Chinese art, but also civil construction design and even landscape design, as there was a common mystical and religious basis of the wall painting and certain elements of the landscape.

If we consider the ancient Chinese wall paintings along with other ancient ones, it is much more similar to the ancient Egyptian wall paintings than the Christian, including in terms of plot and figurative techniques. In the earliest Chinese wall paintings, as, incidentally, in ancient Egypt, the influence of animistic religions, who worshiped the forces of nature and natural beings, while in later temple Buddhist wall paintings the theme of Buddha and the pantheon of saints is pronounced. In Buddhist wall paintings, the bearers of supernatural properties are Buddha and bothisatva, but not the forces of nature, animals or fantastic creatures with a combination of human and animal traits, which we observe in both ancient Egyptian and ancient Chinese early wall paintings.

The earliest period of ancient Chinese wall paintings are examples of the Qin and Han periods, which were characterized by centralization of the Emperor's power with the support of aristocratic circles and regulation of political life by Taoism doctrine and Confucianism, including through scholar Dong Zhongshu. The combination of Confucian doctrine with the Taoist theory of the five elements and the cosmogonic cycles of yin and yang determined the entire socio-political, cultural and artistic development of China in later centuries, regardless of the change of dynasties. Just as the foundations of the socio-political and religious life of Chinese society were formed in the Han era (gradually Buddhism joined them in the 3rd – 6th centuries AD), so the foundations of the traditional Chinese wall paintings were laid, which influenced including of Japan, Korea and Mongolia wall paintings.

If we analyze the techniques of ancient Chinese wall paintings of the Han period, it should be noted that the wall paintings in the tombs of the Han period were actually prefabricated, performed on hollow bricks or stone slabs, where images were applied on a white primer with outlines; the main one is a line and a linear image.

Analysis of the existing source base and surveys of Han wall paintings allows us to determine the artistic and figurative specificity of the images, colour scheme and technique and compare them with later wall paintings.

If we talk about the study of early Buddhist wall paintings in Dunhuang, it is worth noting the contribution of French scientists Paul Pelliot and Henri Paul Gaston Maspero, the state research centre – "Dunhuang Document Research Group" [1, 2], who not only analyzed the features of the wall painting, but analyzed it in connection with the economy, politics and religious beliefs of China at the time; Japanese scholars who exported and preserved ancient manuscripts, conducted field surveys in Mogao, based on developments in famous European libraries collected thorough information about Dunhu and systematized it, which made it possible to draw important conclusions and prepare scientific publications [3, 4] ("Study of paintings in Dunhuang" in 2 volumes, "Encyclopedia of Dunhuang" in 9 volumes, 1980).

English scientists also studied Dunhuang wall paintings, and part of the research was based on the study of exhibits taken by Mark Aurel Stein [5] from China to the British Museum. In the postwar period, British scholars began collaborating with Chinese and French colleagues, published books on the art and culture of Dunhuang.

An important contribution to the study of early Buddhist wall paintings was made by Russian scholars, who studied, among other things, exhibits in museum collections brought by Russian Consul Kosarev from Dunhuang, an expedition by Academician S. Oldenburg, and others [6, 7]. Based on research, the Catalog of Books from Cave Temples was published, but a systematic study of Dunhuang's art in museum collections began only in 1957, resulting in the publication of the Catalog of Dunhuang Books in 2 volumes (1963 – 1967). The research was continued by N. Dyakonova and S.S. Sorokin [8], N. Dyakonova and M. Rudova [9] and K. Samosyuk [10]. An important contribution of these scholars in particular, in addition to the analysis of the directly figurative system of wall paintings and the work of artists, is to expand the idea of the genesis of Chinese Buddhist wall paintings during the change of dynasties.

Undoubtedly, the Chinese school of early Buddhist Tang wall paintings researchers is powerful. Its achievement in the first half of the twentieth century is the introduction of the concept of "Dunhuang School", based not only on the wall painting iconographic system, but also on specific related factors such as historical, ethnographic, religious and cultural features (Chen Yinlo, Chen Gen, Liu Fu, Xiang Da, Wang Chunmin, Wang Guowei, Zhang Daqian, Fu Zhenlun, Zhang Lei Zhang Lei, Jing Baihua). The Chinese school is based on the multiculturalism of Dunhuang and considers frescoes, sculpture, architecture, and textual sources as a whole. A feature of the Chinese school is a combination of research of artifacts exported from China to European museums and field surveys (for example, the contribution of the artist Zhang Daqian, who with his wife and five Tibetan artists copied Dunhuang paintings, which led to a number of scientific publications such as Fu Zhenlong's "Essays on the Art of Dunhuang", Zhen Lei's "The Buddhist Art of Dunhuang", and Jing Baihua's "The Significance and Value of Dunhuang's Art"). At the same time, if we talk about the achievements of the Chinese scientific school of this period, we must objectively say that the methodology of research and analysis of the specifics of the synthesis of arts in Tang temples were still under development.

In the postwar period, the Dunhuang Institute for Art Studies began to study the problems of Dunhuang art. The Institute's activities focused on conducting field research – measurements and copies of wall paintings that were published. The post-war period is considered a stage of systematic research of Dunhuang wall paintings by the Chinese scientific school, division into two separate directions of research of documentation on caves and actually art artifacts and allocation of "Dunhuang school" in a separate scientific direction of researches. Among researchers, authors of publications should be called Fu Yunji («Dunhuang 30 years), Chang Shuhun), Duan Benjie, Shi Weixiang – artists, authors copies of Dunhuang murals. With the establishment of the People's Republic of China in 1949, the Dunhuang Institute of Art was renamed the Dunhuang Research Institute for the Study of Cultural Values in 1951. Thus began the third stage of the formation of the Chinese scientific school. The expansion included exhibitions of ancient artifacts and an increase in publications on the iconographic system and techniques of Chinese Buddhist wall paintings (an exhibition of copies of Dunhuang frescoes at the Gugong Museum in Beijing in 1954; special lecture courses at Chinese universities in major cities). Among the in-depth publications is the Dunhuang Encyclopedia, published in Beijing in 1999, which has been the quintessential research of the Chinese school throughout its existence and has led the Chinese school to a leading position in these studies.

However, despite the high importance of these scientific studies and the findings, it is worth noting the lack of analysis of certain aspects, in particular, related to the consideration of the Mogao wall paintings of the Thai period along with the wall paintings of the earlier period.

The publications devoted to the specifics of the figurative concept of Han period wall painting, general issues related to the art of China of different periods were analyzed. These

issues are covered in the publications of A. Zhang [11]. As the figurative conception of the Han period was formed under the direct influence of Taoism, and later – Buddhism, the relevant publication of Y. Chen [12] was analyzed.

The issues of the influence of ancient religious and mystical beliefs of China on the development of Chinese architecture and art were covered in their articles by Yu. Ivashko *et al.* [13], Yu. Ivashko *et al.* [14] and M. Orlenko *et al.* [15]. Their publications emphasize the dominant role of the doctrines of Taoism, Buddhism and Confucianism in the figurative system of traditional Chinese architecture, art and landscape design. The authors analyzed the semantic meaning of each color and transferred this analysis to the colours of specific buildings and structures, proved the role of paintings and polychromy in exterior and interior decoration. The analysis of traditional building materials and construction schemes allowed to form a list of the main problems faced by modern restorers, and to give a list of restoration measures that can be effectively applied.

For the analysis of Chinese wall paintings in comparison with other civilizations, including the publication of V. Vertogradova [16] dedicated to the Old paintings, in which the author has analyzed the iconographic concept of 4th – 7th centuries wall paintings, chemical composition and preparation technology foundation under wall painting on different surfaces, the composition of paints. Chinese sources on chemical studies of ancient mortars were also analyzed. In the publication of Y. Fuwei *et al.* [17] based on the analysis of the chemical composition of masonry solutions of the Ming period it was argued how the strength of the solutions was ensured.

The analyzed sources can be grouped as follows:

a) sources on the museification of artifacts, the problems of national identity preserving and the "spirit of the place" [13, 18-23] – directly related to the topic of the article and argue the importance of the process of preservation and restoration of works of art, based on them it is determined that these problems are common to many countries;

b) sources related to the study of traditional Chinese beliefs that have had a direct impact on architecture, art, the figurative concept of wall paintings [12, 14];

c) sources related to various aspects of restoration activities [24-27];

d) sources directly related to the analysis of the figurative concept and technology of ancient Chinese frescoes, including in comparison with frescoes of other civilizations [11, 16, 17, 28-30], allowed to analyze how the process of genesis of the figurative concept and fresco technologies during the reign of different dynasties, the influence of religious doctrine on the figurative concept.

The scientific contribution of Chinese researchers L. Benli *et al.* [26], who dealt with the problems of the influence of negative external factors on the murals of the Mogao grottoes, is important. In particular, they found that the main problem is moisture due to the multiple natural water sources – river, underground water migration, precipitation, as well as artificial water sources – from irrigation to the sand control vegetation belts on the sand dunes, plus the green field in the tourist and administrative area. Using numerical simulations, the authors tested the degree of negative impact of artificial sources on the increase in humidity outside and inside the grottoes. They took into account liquid and vapor phases of water, both steady and transient scenarios, local climate, and inputs by different water / vapor values and wind speeds. This allowed to scientists to prove that drip irrigation on sand dunes has little effect on the humidity level in the grottoes due to the long distance to them, limited amount of irrigation water and strong evaporation of moisture from the surface, but such a danger may occur if the amount of irrigation water increases. It was found that the green field close to the east of the grottoes with flood irrigation can increase the soil water content of the grottoes rock by about 1.5% and the water vapor concentration by about 45% under a gentle easterly wind). Precipitation also increases the level of humidity on the surface of the rock where the grottoes are located. The main conclusion obtained by them as a result of field research is the need to

control the size of the green field, the transformation of flood irrigation into drip, replacing trees with shrubs in dry areas, applying a protective system to the surface of the rock to protect from rainfall. This will protect the wall paintings of the grottoes from getting wet.

Consonant with this publication is the article by *D. Giaccone et al.* [27] also devoted to the application of modern scientific methods to predict the state of the monument over time. They raised the issue of geometric models to make the numerical solution easier and faster. Architectural heritage objects are characterized by complex shapes and a significant degree of damage that changes the original geometry, and modern methods of modeling the surfaces of the object do not allow to take into account internal damage and design features. The authors emphasize the need for careful study and history of the object of restoration on the basis of visual inspections and instrumental research. This gives them the opportunity to argue that the creation of a model for structural analysis consists of a synthetic operation, and the results of structural analysis vary according to the level of accuracy and detail of the model. In order to obtain the characteristics of cracks, the authors simulated a particular artifact in five different ways according to the level of detail and compared the results from a static and dynamic point of view using static, longitudinal, modal and dynamic with the response spectrum.

Related to the topic of the article is the publication of *Y. Cao* [30], who quoted Wang Ie (2007) about the frescoes of Taoism as a kind of folk Chinese art and the temple mural of the Shulu style as a kind of fresco of Taoism. An important thesis of the work is the thesis about the specifics of Chinese mural: for Taoist mural were important both religious canons and traditional guidelines for frescoes – ink sketches fengbeng, symbolic meaning was laid in each colour. The author emphasized the importance of the canon in shaping the compositional construction of Taoist murals and identified two options for solving the background for the plot – neutral or in the form of a landscape background included in the content of the plot, and one plot could combine several different events. The study allowed *Y. Cao* [30] to emphasize that the fresco of Taoism was a reflection in the art of the then political, economic and cultural system of China, it is aimed at expressing in the mural of high moral ideals and a harmonious world. At the same time, in his opinion, the wall painting of Taoism did not have a significant impact on Chinese painting in general.

Such a comprehensive analysis of the foundations of Chinese architecture and art allowed us to form a thorough idea of the foundations of Chinese culture in general and a broader consideration of the concept of ancient Chinese murals and analyze the imagery and techniques of murals in later periods. The main objectives of the study were identified, in particular – to present the genesis of ancient Chinese murals from period to period, with an analysis of changes in the image system, techniques, colours.

Materials and Methods

Traditionally, works devoted to the study of wall paintings are based on a simultaneous combination of comparative-historical and culturological methods, the method of art analysis, artistic and stylistic classification and typology. Since the Chinese wall painting was formed under the direct influence of traditional philosophical and religious teachings, the method of religious analysis was used. In order to solve the tasks, general scientific methods of historical analysis, comparative analysis and graphical-and-analytical method were used. The method of historical analysis allowed to analyze the role of external factors in the formation of the artistic and figurative system of Chinese wall paintings, the technique of wall paintings. The method of comparative analysis allowed us to trace the transformation of the figurative concept of wall paintings of different periods and to compare the artistic and figurative concepts and techniques of ancient Chinese wall paintings. The graphical-and-analytical method allowed to confirm the conclusions with examples of specific analyzed paintings.

Results and discussion

Religious and mystical beliefs as a basis for the formation of a figurative concept

The image system of the oldest known art in China, dating from 500 BC to 300 BC, was based on mystical ideas about the structure of the universe and was characterized by conciseness. Han wall paintings borrowed this early mysticism as a basis, but complemented it with realism – both real-life scenes and fantasy plots with the simultaneous presence of real people and mystical beings. Here it is worth making a certain comparison with the ancient Egyptian wall paintings, where there are also realistic scenes in the tombs depicting scenes of everyday life of pharaohs, priests, aristocrats, and mystical scenes, such as scenes from the court of Osiris. Thus, it can be argued that the earlier the wall painting of a certain civilization is dated, the greater the connection with the original animistic beliefs it retains, and if in Christianity animistic beliefs were gradually replaced by monotheism, in countries such as China or Japan, ancient religions have survived. Taoism and Shinto (less strongly in China), just aimed at the deification of nature and natural elements. Ancient civilizations worshiped the forces of nature and endowed the world with a host of supernatural beings and deities who had to be worshiped to avoid disaster. This explains the spread of wall paintings in burial structures in both Egypt and China (known 30 tombs with 1500 – 2000 wall paintings).

The reign of the Western Han dynasty is 206 BC – 25 AD, and the Eastern Han dynasty 25 – 220 AD (or 581 years to). The direct influence of the practice of sacrificing to deities, supernatural beings, the dead and the deification of the environment on the life of the society of that time can be determined on the examples of plot images of the Han era. Thus, the figurative concept of Ancient China in this sense is much closer to the figurative concept of Ancient Egypt, where in fact the same rituals existed, only associated with other deities. The same analogies can be seen in the ideas of the afterlife in ancient Egypt and ancient China, and in the worship of the ruler, who was endowed with supernatural qualities and the myth of divine origin. In fact, both in ancient Egypt and in ancient China, due to the spread of the dead cult, a special genre of funeral wall paintings developed. Fear of the world of the dead and the theme of death in the Han era, understanding of man as a meager being in the boundless universe, based on a combination of heavenly and earthly kingdoms, opposites of yin and yang, moon and sun, elements – wood (mu 木), fire (huo 火), earth (tu 土), metal (jin 金) and water (shui 水) indicate an inseparable connection with older beliefs. The figurative concept of Han funerary wall paintings was first influenced by Taoism and mystical beliefs, and from 65 AD – Buddhism, which also spread in the Han era. Local religious ideas about the cult of the immortals did not contradict the doctrine of Buddhism, they were only supplemented by it.

In Han times, the painted tomb served the same function as the tomb in ancient Egypt, namely, it facilitated the deceased's path to the afterlife. Therefore, decorated with frescoes and carved reliefs, the walls and ceilings of Chinese tombs performed not an aesthetic, but a sacred role, due in part to the ideas of the dual nature of the soul (spirit-soul (hun 魂) and body-soul (ro 魄), in fact – analogous to the ancient Egyptian notion of "ba" ("pure spirit, soul"), "ah" (closely related to the body) and "ka" ("guardian spirit", "sacred double").

The figurative system of images of the Han period (206 BC – 220 AD and the technology of wall paintings)

The oldest Chinese wall painting is represented by tomb paintings:

a) tombs: Luoyang Bu Qianqiu and Luoyang Balitai, Han Yingchengzi, Liaoyang Beiyuan Han, Wandu Han, Shandong Liangshan Han, Liaoyang Bantaji Tong Han, Hellinger Han, Han in Jiayuguan, Daoyang District, Liaoyang Saoyang, Henan Province;

b) wall paintings in the villages: in Shanxi Pinglu Zhaoyuan Zhuan Zhuan, in Han Zhuan Zhuan.

There were two main painting techniques – one (gunbi) provided for the detailing of image elements and their clear outlines, while the second (sei) used a certain conventionality of pictorial elements and the lack of clear outlines. The technique of gunbi was otherwise called

"the technique of a fine or diligent brush", was an accessory of paintings for the upper echelons and the emperor and provided a realistic image of each detail, a clear outline, sophistication of images, contrast enhancement by colour. In contrast, the technique of "sei", which spread in the later periods of Chinese painting, was called "rough brush" and involved primarily the transfer of their own perception of a particular object by the artist, the transfer of the inner essence of the image, lack of detail and clear outlines.

Already from 5th – 3rd centuries BC wall paintings with portrait images appear and a certain canonicity of such images is gradually developed in accordance with the social hierarchy. At the heart of the figurative system of images of the Han era are the then cosmogonic ideas. According to Han beliefs, the celestial world is inhabited by the lords of Fusi and Nuiyu, the goddess Sivanmu, who is accompanied by four animals as the embodiment of the four spirits of heaven, as well as celestial bodies, the sun and the moon.

If we name the characteristic images of ancient Chinese frescoes, they will be clouds, the Sun, animals and birds – winged snakes, crows in the sky, white tiger, peacock, bear, green dragon with a symbolic meaning of the guardians of the soul on the way to the afterlife, and also deities, for example, the winged man-snake – the deity of Heaven, the man-bird – the symbolic angel-companion of the soul to paradise. As in ancient Egypt, wall paintings became an aristocratic privilege, so such paintings, often with a symbolic image of the future afterlife, adorn only the tombs of celebrities or aristocracy.

There is a genesis of funerary wall paintings – the departure from images of mystical creatures and animals and birds as guardians of the soul to change the symbolic meaning of images of animals and birds in accordance with Taoism and the embodiment in frescoes of the Taoist philosophical concept of the universe of five elements.

Gradually, the themes of Han paintings became celestial bodies among the clouds, legends from the lives of real historical figures, but still animistic images of animals, supplemented by images from the doctrine of Taoism (for example, in the tomb of Han near Luoyang 48 – 7 BC with the image of a bear, turtle, snake, peacock, deer, dragons and tigers and fantastic half-humans-half-animals, a figure of the immortal with jade in his hands appears, i.e. a direct Taoist symbol, which will later spread in later centuries in the cult of immortals). There is a complication of plots and compositions, they become multi-figure, the images begin to be clearly delineated by a line, the role of coloured spots increases in comparison with linear images, the dynamism of figures. At the same time, the archaism of the murals is evidenced by the fact that the images are on an empty background. The tradition of arranging figures in one long row will later be spread in Chinese art both in painting and, for example, in the arrangement of symbolic figures of animals and birds – the exponents of virtues – on the corners of roofs.

As already mentioned, the genesis of the wall painting imagery was expressed in the gradual departure from conditionally laconic images towards detailed and drawn images, from mystical images through the gradual inclusion of images of real people to realistic images of domestic scenes from the life of aristocrats (murals in Laoyang and the theme of the ceremonial departure will become one of the most common in later centuries).

Along with the religious and mythical plots of the murals of the tombs of the Han era, there are some examples, including portraits of real people (the plot of "Confucius visits Lao Tzu" (Fig. 1).

The last period of the Han era was marked by a final departure from the mystical symbolic images in the direction of large-scale realistic plots (Fig. 2). Mystical symbols are subject to Taoist doctrine (the plot of "Four Spirits").

There is a gradual growth in the canonical plots of genre scenes and portraits of real people. In China, such images are scenes from the life of the emperor and courtiers, especially elegant ladies, scenes of folk entertainment.

Polychromy was widely used in Chinese wall paintings, but it should be noted that in China, colours had a certain symbolic sacred meaning.



Fig. 1. Confucius and Lao-Tzu, fresco from a Western Han tomb of Dongping County, Shandong province Source: [https://commons.wikimedia.org/wiki/File:Confucius and Laozi_fresco_from_a_Western_Han_tomb_of_Dongping_County,_Shandong_province,_China.jpg](https://commons.wikimedia.org/wiki/File:Confucius_and_Laozi_fresco_from_a_Western_Han_tomb_of_Dongping_County,_Shandong_province,_China.jpg)



Fig. 2. Fresco of a Group of Women from a Han Dynasty Tomb in Sian, Shensi Source: https://commons.wikimedia.org/wiki/File:Fresco_of_a_Group_of_Women_from_a_Han_Dynasty_Tomb_in_Sian,_Shensi.jpg

Features of the techniques of performing wall paintings of the Han period were studied on the examples of tombs in the provinces of Henan, Shanxi, Shandong, Hebei. In the wall paintings of the Han period there was a combination of the actual plane paintings and relief. A study of Bu Qianqi's tomb, discovered in 1976 in Luoyang City, Henan Province, dating to about 86 – 49 BC, showed that the wall painting was composed of individual prefabricated elements. Given the impossibility of painting the surface directly in the dark tomb, the technology of its implementation provided for such a stage. Twenty hollow brick slabs were prepared for the wall paintings on the ceiling, on which white primer was applied. Then on a white lime basis the drawing from brushes from fur of animals was put. Each element was

marked in the east-west direction, and already inside the tomb at the top of it the whole picture was gathered into a single image (Fig. 3). In order to avoid inconsistencies of images on separate prefabricated elements, each brick had its own plot. A study of the composition of paints showed that they are made on the basis of ground minerals with a mixture of animal and vegetable fats and a special glue. Light brown, light green, black, bright red, blue colours of planes and lines were used.

Along with the change of plots, even within one region, certain changes in the technologies of mural painting gradually took place. In a later tomb of the Han period near Luoyang, dated 48 – 7 BC (for comparison – the tomb of Bu Qianqi dating from about 86 – 49 BC) combined painted and unpainted hollow bricks, the number of painted bricks compared to the tomb of Bu Qianqi decreases, such prefabricated elements are no longer 20 but 12, and bricks of various shapes, even triangular, were used for the paintings. The colour palette of images expands, on the basis of white lime drawings are made of light brown, light green, bright red, red-ocher, purple, orange, blue, light yellow colours.

The final stage of the Han period mural painting, namely the Eastern Han period, was marked by the preservation of the traditional technology of making murals on stone slabs and hollow bricks.



Fig. 3. Wall painting of a fragment with the image of a winged man-snake – a celestial deity and a crow against the background of the Sun in the tomb of Bu Qianqi

Source: <https://artsandculture.google.com/asset/ascent-to-immortality-ceiling-mural-of-bu-qianqi-tomb>

The Han funerary wall paintings of different periods used the technique of painting with preliminary carving of the base surface according to the drawing, i.e. before using the brush to carve the stone surface, a knife was used. Realistic portrait images (Fig. 4) of Fan Xiangxi, Suzaku, Inlung, Yuhua Xianzhen were made in this technique.

One of the typical examples of the "stone fresco" is the column of the door of the tomb of the Han Shaanxi period Shenmu Dabaodan: a drawing was applied to the smooth polished stone surface, the contours of which were outlined in ink lines, then painted the contours of the main image were highlighted.

Thus, it should be noted that the main difference between Han wall paintings was that the main line in Han wall paintings was a stone-cut line that expressed the silhouette, dynamism of the composition and provided a play of light and shadow frescoes (a wall painting in Nanyang City, Henan Province depicting a man and bull). The "stone fresco" could be made in several different techniques, namely: linear carving, concave carving, bas-relief, high relief with paintings. If we consider the genesis of carving techniques, we first used the technique of deep

relief (Western Han period) (image of Qingyun Mountain in Linyi, Shandong Province), then bas-relief (Western Han period) (portrait of Zhaozhai in Nanyang, Hengunye Province, Henangun, Henan) Western Han – beginning of the Eastern Han period) ("Hundred Dance and Musical Opera Paintings" in Qufu, Shandong Province, "A Pair of Birds" and "Evergreen Tree" in the tomb of Wujia Temple in Xiai, Shanxi Province), carved along the lines and the late periods of the Eastern Han).

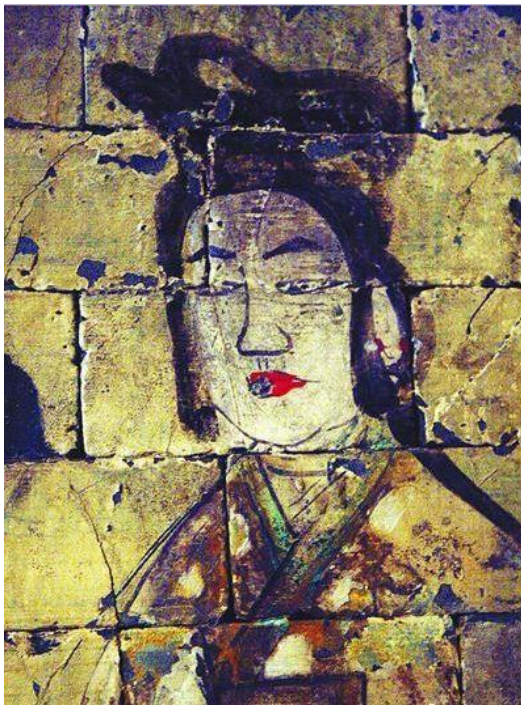


Fig. 4. Western Han Dynasty Woman, Han Tomb in Sian, Shaanxi.
Source: https://uk.wikipedia.org/wiki/%D0%A4%D0%B0%D0%B9%D0%BB:Western_Han_Dynasty_Woman,_Han_Tomb_in_Sian,_Shensi.jpg

Figurative system of images of the Mogao of the Sui (581 – 618), Tang (618 – 907), Great Liao, 916 – 1125), Song (960 –1279) periods and wall painting technology

Although later wall paintings are often analyzed on Buddhist models, including Dunhuang paintings, it should be noted that even in the Tang period, the traditions of the late Han period were preserved, i.e. realistic images of people's lives. In the Shaanxi province in northwestern China, namely in the village of Buli near the city of Xian (Xian) in 2020, two tombs of the early Tang period were opened depicting scenes of life of nomads of Huzh: a circle of people depicting horses and camels. According to the epitaph, one of the tombs belonged to an official who was engaged in horsemanship, the other – a paired royal tomb with a scene of dancing and making music, which is typical of the paintings of the Tang era highest echelons.

If the wall painting of the Han period primarily expresses unity with the ancient animistic beliefs and doctrines of Taoism, then with the spread in China in the 3rd – 6th centuries AD. Borrowed from India Buddhism – a religious and philosophical doctrine of spiritual awakening based on the ideas of Buddha Shakyamuni – the figurative concept of wall paintings has changed. The theme of the frescoes is related to the basics of Buddhist teaching about the Four Truths, i.e. the nature, causes and methods of eliminating human suffering, the three virtues – morality, concentration and wisdom, obtained either through heard information,

or through teaching, or through reflection, or through inner contemplation. These virtues are achieved by spiritual practices, the ultimate goal of which is the attainment of nirvana. A common image of Buddhist wall paintings is the image of "Lalitasana", i.e. the Buddha sitting in the position of royal rest, the heavens Tushita (Sukhavati) as the abode of the gods and Bodhisattvas in Buddhist cosmology before their birth on earth among people as Buddhas. The genre of ritual Buddhist wall paintings spread, for example, monks preached sermons in front of the wall paintings of Dunhuang monasteries, and the name of these paintings – "Bianxiang" – later spread to the book graphics of Buddhist sutras.

The genre of thematic Buddhist cave painting began in the periods of the Three Kingdoms – Wei, Shu, Wu (220 – 265 AD), Western Jin (265 – 317 AD), and Eastern Jin (317 – 420 AD), the era of the Southern and Northern dynasties (420 –589). One of the most unique is one of the early Buddhist temples – Mogao (Chinese: 莫高窟, pinyin – Mò gāo kū, "Cave not for the tall", the largest cave of the early Buddhist temple complex Qianfodong – Caves of a Thousand Buddhas (366-353 BC) – until 1368) in the province of Gansu, 25km from the city of Dunhuang, the decoration of which began in 366 BC and lasted for millennia (from IV to XIV centuries). The growing interest in the study of these wall paintings today is associated with the government's line to preserve and promote the national cultural heritage. The uniqueness of the paintings lies in the fact that he embodied changes in the thematic Buddhist wall paintings over the millennium (Fig. 5).

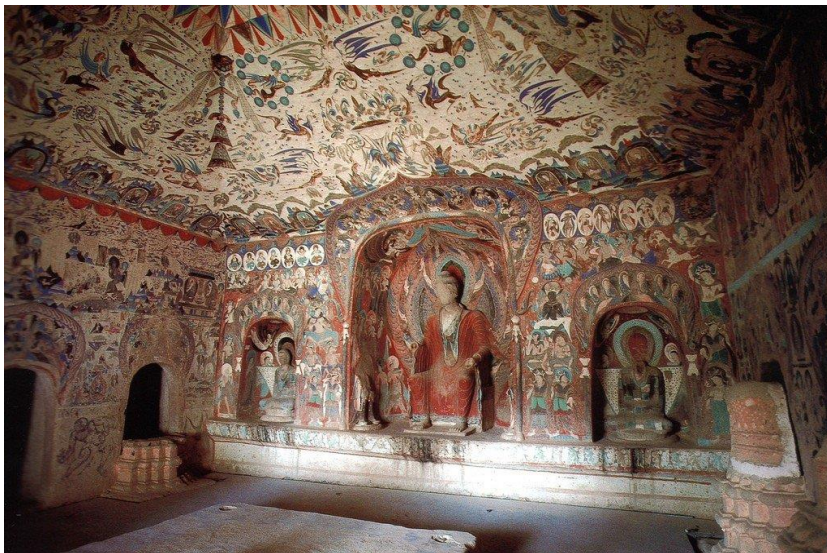


Fig. 5. Interior of Mogao grottoes

Source: <https://wikiway.com/china/dunhuang/peshchery-mogao/photo/#gallery-10>

The total area of the wall paintings in 492 grottoes-sanctuaries of Qianfodong with a combination of thematic wall paintings and sculptures is 45 thousand m² (according to other data 42 thousand m²). The uniqueness of Mogao for the presented study is that in this cave temple is dominated by wall paintings, not sculpture, as in later cave Buddhist temples (Lunmen, Yungan). This allows us to put forward the thesis of the dominance of wall paintings over sculpture in the early Buddhist period.

The iconographic concepts of Mogao wall paintings have certain features in relation to the periods of the frescoes, in particular, there are four iconographic concepts of the following periods:

- a) Northern Dynasties (420 – 589 AD) and the Sui dynasty (581 – 618 AD);
- b) the Tang dynasty (618 – 907 AD) (the heyday of the wall paintings);
- c) the epoch of the Five Dynasties Ten Kingdoms (907 – 960 AD), Northern Song

Dynasty (960 – 1127 AD);

d) the Yuan dynasty (1271 – 1368 AD).

Each period was distinguished by its style of murals. At the same time, they are all united by the distribution of frescoes dedicated to Buddha, bodhisattvas, asars, monks. There is a version that so clearly presented the postulates of Buddhist teachings to illiterate believers. The plots combine symbolic images and real events in the history of Buddhism.

A common plot is the image of celestial apsaras (feityan 飛天) – companions of the Buddha, with long colorful ribbons instead of wings that fly, sing, dance, play musical instruments. As in the late Han period, realistic plots are common, such as the emperor's ceremonial departure, scenes of the reception of ambassadors, military tournaments, music making, hunting and fishing. As in the late Han period, the tradition of depicting not only the emperor and aristocrats, but also ordinary people is preserved.

To create cave temples, chamber were dug along the banks of dried-up rivers, and walls and ceilings were covered with paintings. The style of paintings was different – Indo-Iranian and Chinese, many wall paintings show the Indian basis of both figurative doctrine and image style, especially since the cave Buddhist monasteries tradition itself was borrowed in China from India, respectively, it led to the borrowing of the figurative system, however, with local transformations. Despite borrowing from India as the basis of Buddhist art, in the Tang era, a national standard of Chinese art was created, based on a foreign borrowed religion, but transformed on a local basis with strong centuries-old cultural and artistic traditions. It was from the Tang period that the highest flowering of painting techniques began, and the Tang and Song periods proved to be the most favourable for the flourishing of Dunhuang wall painting.

Mogao multi-figure frieze paintings were made in the technique of applying adhesive paints on dry soil. It was a bright polychrome wall painting with a dynamic composition. In the Tang period, the basis of Mogao paintings is a bronze background for images, the images were outlined with a black line, some parts of the mural were accentuated by the inclusion of gold leaf to create a luxury effect. According to the figurative system, the wall painting of the Tang period in the caves of Dunhuang is marked by originality, in fact, it is a mural-consecutive story from a series of images. Thus, there is a difference from the techniques of ancient wall paintings of the Han period in the techniques of "stone frescoes", when the technique of deep relief and bas-relief (Western Han period), concave relief (end of the Western Han period – beginning of the Eastern Han period), carving middle and late periods of the Eastern Han). In the days of the Tang and Song, the role of the coloured fragment, rather than the line, is especially growing, as in the days of Han.

A thorough study of the artifacts of the "Cave of a Thousand Buddhas" in the funds of the State Hermitage in Russia was carried out by Ren Lan Xin. Among the exhibits of the mural – 14 samples. The author explored the decorative and applied arts of Mogao in the Hermitage collection in the general context of the genesis of Buddhist art in China, identified the assimilation of Buddhism with local culture and the creation of a unique figurative concept of Buddhism in China. To solve these problems, the researcher used methods: comparative history, culturology, art analysis, religious studies, artistic and stylistic classification and typology. The researcher identified the dominant role of syncretism (a combination of Taoism, Confucianism and Buddhism) in the formation of Chinese Buddhist murals. He stressed the need to evaluate Mogao's murals from the standpoint of art history, culturology, religion and philosophy [29]. An important conclusion is the thesis of wall paintings 4th – 13th centuries as a result of China's long syncretic interethnic cooperation with India, Iran, and the Central Asian states, especially since Dunhuang was at the crossroads of the northern and southern streams of Buddhist penetration into China through East Turkestan, gradually assimilating locally and becoming a model for Chinese Buddhist cave temples and the Buddhist frescoes tradition itself were also borrowed from India [29]). As a model of Dunhuang's wall paintings, he cites the cave temples and monasteries of Ajanta (2nd – 7th centuries AD) – a classic example of Buddhist synthesis of arts. It defines the period from 500 AD to the 11th century as a period of multiculturalism, mixing local and borrowed cultural and artistic traditions and as a result – creating your own image system. He considers the Tang mural to be the result of a synthesis of

local North Chinese and borrowed artistic traditions, while in the Song and later murals, these foreign influences become imperceptible. An important feature of the researcher is the coincidence of the plots of the mural and the plots on silk, and among the most famous plots is the plot of "Happy Celestials", the inhabitants of the paradise of Amitabha Buddha, who, according to the researcher, best express signs of multiculturalism in murals. Thus, the image of a flying apsara – fetyan, which in 492 caves there are more than 4500, with a height of 2.5m to 5cm, is becoming common. Zhen Lan Xin defined certain canons for the location of flying maidens, namely at a height of 2/3 of the floor of the cave-sanctuary, at four corners or in the center of the ceiling.

The researcher identified the influence of Tang religious wall paintings on Japanese wall paintings, citing the Horyuji Monastery near the city of Nara as an example. The fact that Horyuji wall paintings were made by Chinese artists of the Tang era is evidenced by the commonality of compositional techniques and painting techniques.

Funeral Tang wall paintings are often located in the passages of tombs, corridors and burial chambers, there are images of blue dragons, white tigers, honour guards of chariots and horses, images of aristocratic ladies, and the most characteristic realistic plot is the honour guard of chariots and horses. The peak of Tang's funeral wall paintings dates back to the middle of the Tang era, so this period is also called the "golden age" of Tang wall paintings. The late period of the Tang era was marked by the process of formation of landscape images and the transformation of images of flowers and birds into an element of the background, rather than independent plots. Tang artifacts have been on display at the Tang Dynasty Museum since 2011.

An authentic polychrome, well-preserved Liao-era wall painting of more than 300m² was unveiled in nine tombs of the Zhang family in the southern village of Xiabali in Xuanhua Province.

The wall paintings of the Song period was formed against the background of specific external religious factors, as the rulers of the Song dynasty contributed to the development of both Buddhism and Taoism. The art of the religious ritual wall painting was done by artists from different regions, who united in in currents (directions), thus contributing to the multiculturalism of the murals. Although the murals of the Song period did not flourish as much as in the Tang period, it retained the scale of images typical of the Tang period in temples and palaces.

Preservation and protection of ancient Chinese wall paintings

The special significance of Dunhuang art, which reflected the religious canons of the millennium, and natural landscapes and scenes of life, in fact, became a synthesis of arts – sculpture, mural and poetry in the form of lines that complement the wall paintings, as evidenced in 1987 Mogao in the Register UNESCO World Heritage Sites.

It was during the Tang and Song period that painting flourished, and artists skillfully executed both paintings on walls and ceilings, and painting on scrolls and fans. It was in the cave Buddhist temples of these periods that a specific compositional technique of the absence of beginning and end in the plot image arose and developed. The main characteristics of the cave wall paintings of the Tang and Song period are as follows:

- bright polychromy and sophistication;
- plot diversity: images of Buddha, bodhisattvas, saints, apsaras, heavenly landscapes in religious scenes, the top and ordinary people in realistic scenes of battles, hunting, agriculture and animal husbandry;
- unity of plots of mural and silk painting;
- formation of a specific school of Dunhuang wall paintings, which differs in the complexity of compositions and plots, brightness of colours, arrangement of compositions not in the form of a narrow frieze, but on large planes, which distinguishes Dunhuang Tang wall paintings from, for example.

A joint project of the Dunhuang Academy of Cultural Heritage and Zhengjiang University plans to create a digital catalog of Mogao murals and an electronic catalog of

scientific publications on Dunhuang murals in the near future. Specialists from the Dunhuang Academy of Cultural Heritage have implemented their own experience of preserving murals in the restoration of other wall paintings, including Xinjiang and Tibet. An agreement was signed on cooperation between the Dunhuang Academy of Cultural Heritage and the Gugong Museum in Beijing in the field of research and preservation of cultural heritage. It provides for the analysis and monitoring of risks, the creation of an electronic database of artifacts, exhibitions and scientific events, to promote the integration of culture and the financial and tourism industries.

New technologies are actively used not only for the study of Dunhuang, but also for new open tombs. One such example was reported in 2020, when new technologies were used to recreate the general appearance of the mural of Li Daojiang's brick tomb in Xi'an, dating from the Tang period. The study was conducted by experts from the Institute of Archeology of Shaanxi Province. Li Daojian was the great-grandson of the first emperor of the Tang Dynasty, Li Yuan. The wall paintings in the crypt were made on a brick surface, and the restoration work of 2017 – 2020 established the nature of damage from flooding, in particular, wall paintings depicting officials and maids. Damaged fragments were fixed with nanomaterial, and the image reproduction method was used in 2020 to simulate the lost fragments.

Along with the increase in Dunhuang's research, the number of research on other wall paintings is growing, including in new open burials. In 2012, Chinese archaeologists discovered the ancient tomb of an unknown person in the form of an octagonal volume with a pyramidal vault in Yangtze River in Shanxi Province, which dates back to the reign of the Mongol Yuan Dynasty (1271 – 1368 AD). The peculiarity of this tomb was the presence of wall paintings on all walls, except the eastern, with scenes of the thirteenth century – tea ceremony, music, caravans of horses and camels, including the image of the couple, which suggested the burial. The frescoes are marked by attention to detail, even items of clothing, which allowed to replenish the knowledge about the clothes of that time. It is worth noting the plot-illustration of the treatise of the probable authorship of the Confucian writer Guo Jujing "Twenty-four examples of respect from the son" of the Yuan period, a literary treatment of folk texts, which gained considerable popularity in China at the time. This image expresses one of the main principles of the ethics of Confucianism – xiao, when the couple was ready to sacrifice the baby to feed the old mother, and as a reward received a pot of gold from heaven. The second plot is indirectly related to the theme of the stories "Twenty-four examples of respect from the son" by how the son wanted to take his father to the desert to have enough food for other family members, but his son said he would do the same with him in the future. and he renounced his intention.

Conclusions

Among all the heritage of Han wall paintings, the wall painting of Bu Qianqi's tomb, discovered in 1976, differs in its location and size.

A comparative analysis of ancient Chinese murals of the Han, Tang and Song period allows us to identify common and different from them. We can say that they are part of a chain of genesis of traditional Chinese wall paintings, which has consistently gone from the spread of concise fantasy images, unity with animistic beliefs and worldview to the introduction of Taoist symbols and gradually Buddhism, from the dominance of only abstract symbolic images and religions to realism. A comparative analysis of the figurative concept of the Han period tombs and the paintings of the cave temples of Mogao shows the following:

a) in the tombs there are mythological and Taoist correlation systems, which illustrate the ancient animistic ideas and basic postulates of Taoism, in the caves of Mogao used correlation systems with Buddhist doctrine, which indicates that religion was an important component of the ancient Chinese wall;

b) in the tombs in the symbolic images of animals, birds, fantastic creatures embodied certain postulates and moral virtues, as well as in the images of Buddhist plots embodied Buddhist virtues;

c) in the tombs of the Han period there are realistic scenes of the household of the deceased owners, scenes of ceremonial outings, hunting, private life with banquets, music and dancing, in the wall paintings of Mogao also common scenes of battles, hunting, agriculture and animal husbandry, etc.;

d) in the tombs of the Han era there are images of real historical figures – rulers, sages and philosophers;

e) polychromy, the compositional construction of Han funerary wall paintings is simpler and more limited compared to Mogao ones with bright polychromy, complex multi-figure composition and detailing;

f) the wall paintings of the tombs were prefabricated, which was determined by technology, the wall paintings of Mogao were stationary;

g) both the religious wall paintings of the Han period and the Buddhist wall paintings of later periods demonstrate the existence of influence of foreign beliefs;

h) from the Han period to the Tang and Song periods is the formation of traditional Chinese canons of painting, based on the transfer of certain content through symbolic images, certain painting techniques, a combination of religious and realistic plots;

i) in the Han period, realistic wall paintings still strongly depend on the ancient mysticism and symbolism, from which it is deprived in the Tang and Song wall paintings;

j) comparison of wall paintings of these periods shows a growing awareness of the role and place of man in the universe, the transition from symbolic to realistic method of reflection in murals, the culture of the Han era became the basis of Chinese worldview in later centuries, the cradle for further cultural and artistic pursuits. China itself, but also in Central Asia, Korea, Manchuria.

A comparative analysis of wall painting techniques from the Han era to the Tang and Song eras shows a gradual increase in colour compared to the linear image, a gradual departure from the techniques of "stone fresco", i.e. enhancing the perception of polychrome mural technique of linear carving, concave carving, bas-relief and high relief. The "stone fresco" technology changed in different periods – from deep relief to bas-relief, later – concave relief, carving along the lines and replacing the details of the image with a pattern or line.

Analysis of iconography and techniques of ancient Chinese wall paintings of different periods, starting from the Han era, allows us to express certain judgments. During the Han period, the formation of wall painting techniques began, as can be seen in the examples of funeral wall paintings in tombs. These were mythical-religious plots, including those that were supposed to protect the soul of the deceased, and an innovation compared to previous centuries was the inclusion in the iconographic concept of realistic plots. The technique of "stone fresco", prefabricated wall painting on hollow bricks in the form of a small integral image, a continuous long composition and an image from a bird's eye view was used. Black, white, yellow, purple, blue and green colours dominated. There are 30 tombs with a total number of wall paintings 1500 – 2000.

The wall paintings of the Wei, Jin, Northern and Southern dynasties were influenced by negative external factors, when the population actively turned to Buddhism in search of harmony and peace, which led to the rapid development of thematic Buddhist wall paintings. As in the Han period, religious wall paintings are common, but in accordance with the doctrine of Buddhism, as well as realistic stories from people's lives. The wall painting on a primed brick surface, small compositions from one drawing and continuous long plot compositions is used. The chemical composition of the mortar was sand and a small amount of plant fibers (wheat straw, hemp) in a certain proportion. Initially, the outlines of the drawing were applied in red or black. During this period, accentuation of the colour spot (in the Han era – linear outline), drawing of volume, accentuation of light and shadow is used.

The commitment of the ruler of the Sui dynasty to Buddhism contributed to the collapse of the construction of Buddhist temples, including caves, but the style of funeral decoration of the Han and Wei periods is preserved. The technique of artistic painting of Buddha statues is spreading, Buddhist subjects, scenes from the life of people of that time become the theme of the wall paintings, long compositions of many elements predominate. There is a further

transition from hyperbole to realism, in addition to hard lines, smooth outline curves are introduced, there is a simultaneous combination of chiaroscuro modeling and visualization, moving away from the practice of using only saturated open colours to halftones, enriched colour palette. There are two main painting methods – dense arrangement of images and free arrangement with the presence of unpainted planes. This period includes a large number of Mogao wall paintings (more than 300 cave shrines of the Sui and Tang period make up 60% of the total number of Dunhuang caves).

Unique to the study of the Sui-era fresco is the discovery in 2014 of a mural of the largest known tomb since then in the village of Tungguan.

As already mentioned, the Tang period is the period of the maximum flowering of the Chinese wall paintings of Mogao. During this period, the art of frescoing temples, sanctuaries in caves, Taoist temples, palaces, the tradition of funeral wall paintings is preserved. It is worth noting that along with religious subjects, the tradition of realistic wall paintings with scenes of art and numerous human figures, a widespread image of buildings continues to develop. The wall painting of the Tang period in comparison with previous periods notes the scale, grandeur, the image mainly in the form of a large long composition of many figures. Compared with the wall paintings of Buddhism of the Northern and Southern dynasties, there is a departure from the plot of patience and sacrifice to optimism, the joy of enjoying earthly goods. The technique involved the use of a black contour line, followed by painting the fragments mainly red, yellow, blue, green, brown, purple. Sometimes the images were accented with gold. The outlines of the figures are marked by skill, and the proportions of the figures – the accuracy of the ratios. At the final stage, the wall paintings of the Tang era creates a refined original style with signs of realism. In addition to Mogao wall paintings, the Tang-era wall painting is represented by two dozen tombs in Shaanxi Province with more than 500 wall paintings with a total area of more than 1,000m². Five pieces of wall paintings of the Tang period in the Shaanxi Historical Museum are recognized as a national treasure, and 82 pieces of wall paintings as unique examples of high quality. The exact number of surviving wall paintings in the tombs of the Tang period is specified due to their large number.

During the Song period, the value of the wall painting decreases compared to the Tang period, the wall paintings of this period are represented by paintings of grottoes, temples and tombs (wall paintings of temples and tombs predominate). These are religious plots, plots borrowed from the Tang period, but with certain modifications, realistic plots in the burials of aristocrats and rich merchants. During this period, the religious doctrine of the traditional Chinese religion of Taoism was promoted, which is expressed in the spread of large-scale images. Red, black, blue, gray, white colours dominated. The funeral wall painting is represented by two types – the wall painting of the imperial tombs and members of the imperial family and the wall painting of the tombs of rich landowners and merchants. The tombs of emperors have survived much worse than the tombs of landlords and merchants, so the latter outnumber.

The wall paintings of the Liao period are marked by the spread of Buddhist themes in the paintings, which led to the spread of religious subjects, large-scale temple wall paintings and small wall paintings of tombs with brickwork. The style of writing inherited the techniques of the Tang era, but sometimes used the technique of "naive painting". In the middle period of Liao's reign, rigid silhouette lines were used. The most common are red, blue, black, white, yellow. The wall paintings of this period are numerous.

The wall paintings of the Jin period are represented mainly by several tombs with wall paintings, as the practice of funeral paintings is not widespread. Existing funerary wall paintings are located in the former areas of the Song and Liao dynasties, but they differ from the frescoes of these two periods. Scenes from the life of Buddha Shakyamuni, realistic plots from the life of the society of that time, and in the funeral wall paintings – the life of the owner of the tomb and his surroundings become the subject of the paintings of the Jin period. Along with large-scale Buddhist wall paintings, small wall paintings are used in brick tombs. If we describe the figurative system of wall paintings of this period, in contrast to the wall paintings of the Tang era, wall paintings in the form of frontal compositions consist of stylized images of

characters, colours are not so bright, the images themselves do not give the impression of liveliness and realism. Red, white, gray, blue, brown, green colors are used. In general, compared to the Liao period wall paintings becomes much less.

Acknowledgements

This work was supported by a grant of the Executive Agency for Higher Education, Research, Development and Innovation Funding, contract number 353PED/2020 within the Experimental Demonstration Project (PED) Research Programme.

References

- [1] P. Pelliot, **Les Grottes de Touen-houang**, vols. 1-6, Paris, 1920.
- [2] H. Maspero, **Taoism and Chinese Religion**, Quirin Press, Melbourne and Basel, 2014.
- [3] X. Sheng Ping, *Research on Clothing of Ancient Characters in Murals of Dunhuang Mogao Grottoes and Artworks of Sutra Cave Lost Overseas*, **Global Journal of Arts, Humanities and Social Sciences**, 8(1), 2020, pp. 41-53.
- [4] * * *, **Contents of Dunhuang Mogao Grottoes**, Cultural Relics Publishing House, Dunhuang Institute of Cultural Relics, 1982.
- [5] M.A. Stein, **Archaeological Explorer**, Vol. IX, (New ed. Paperback, original ed. 1977), University of Chicago Press, Chicago, 1998.
- [6] E.A. Kiy, *General Survey of the Collection of Buddhist Art from Karashahr (The First Russian Turkestan Expedition of Sergey F. Oldenburg)*, **Russian-German Workshop**, Turfanforschung. Berlin-Brandenburgische Akademie der Wissenschaften; Museum für Ostasiatische Kunst, Berlin, Germany. 14th – 15th March 2013.
- [7] N. Dyakonova, **Shikshin. Materials of the First Russian Turkestan Expedition of Academician S.F. Oldenburg, 1909-1910**, Chinese Classics Publishing House, Shanghai, 2011.
- [8] N.V. Dyakonova, S.S. Sorokin, **The Antiques of Khotan. The Catalogue of Khotan Antiques**, Stored in Department of the East of the State Hermitage, Leningrad, 1960.
- [9] N.V. Dyakonova, M.L. Rudova, *The Thousand-handed Avalokiteshvara*, **Collection of N. N. Krotkov** (To the Question of Religious Syncretism in Uigur Turfan Principality of IX – XI cc.), Art and Religion, Leningrad, 1981.
- [10] K.F. Samosyuk, **Buddhist Painting from Khara-Khoto of XII – XIV centuries**, Hermitage State Museum, Sankt Peterburg, 2006.
- [11] A. Zhang, **A History of Chinese Painting** (1st edition), China Books & Periodicals, Chicago, 1992.
- [12] Y. Chen, *Taoism in the People's Republic of China*, **The Encyclopedia of Taoism**, ed. F. Pregadio, London – New York, 2008, pp. 174-175.
- [13] Yu. Ivashko, T. Kuzmenko, S. Li, P. Chang, *The influence of the natural environment on the transformation of architectural style*, **Landscape Architecture. Scientific Journal of Latvia University of Agriculture**, 15/15, 2020, pp. 101-108.
- [14] Yu. Ivashko, D. Chernyshev, P. Chang, *Functional and figurative and compositional features of traditional Chinese pavilions*, **Wiadomości Konserwatorskie – Journal of Heritage Conservation**, 61, 2020, pp. 60-66.
- [15] M. Orlenko, M. Dyomin, Yu. Ivashko, A. Dmytrenko, P. Chang, *Rational and Aesthetic Principles of Form-Making in Traditional Chinese Architecture as the Basis of Restoration Activities*, **International Journal of Conservation Science**, 11(2), 2020, pp. 499-512.
- [16] V. Vertogradova, **Technological characteristics of ancient Indian painting according to "Chitrasutra"**, GosNIIR, Moscow, 2004. (Original language: В. Вертоградова, **Технологические характеристики древнеиндийской живописи по «Читрасутре»**, ГосНИИР, Москва, 2004).

- [17] Y. Fuwei, Z. Binjian, M. Qinglin, *Study of Sticky Rice-Lim Mortar Technology for Restoration of Historical Masonry Construction*, **Accounts of Chemical Research**, **43**(6), 2010, pp. 936-944.
- [18] P. Spiridon, I. Sandu, *Muselife of the life of public*, **International Journal of Conservation Science**, **7**(1), 2016, pp. 87-92.
- [19] P. Spiridon, I. Sandu, L. Stratulat, *The conscious deterioration and degradation of the cultural heritage*, **International Journal of Conservation Science**, **8**(1), 2017, pp. 81-88.
- [20] I.C.A. Sandu, P. Spiridon, I. Sandu, *current studies and approaches in the field of cultural heritage conservation science. harmonising the terminology in an interdisciplinary context*, **International Journal of Conservation Science**, **7**(3), 2016, pp. 591-606.
- [21] O. Florescu, I.C.A. Sandu, P. Spiridon-Ursu, I. Sandu, *Integrative Participatory Conservation of Museum Artefacts. Theoretical and Practical Aspects*, **International Journal of Conservation Science**, **11**(1), 2020, pp. 109-116.
- [22] L. Pujia, *Cultural heritage and territory. Architectural tools for a sustainable conservation of cultural landscape*, **International Journal of Conservation Science**, **7**(1), 2016, pp. 213-218.
- [23] V. Petrušonis, *Symbolic potential of place and its modelling for management needs*, **Landscape architecture. Scientific Journal of Latvia University of Agriculture**, **13**, 2018, pp. 39-49.
- [44] M. Orlenko, Yu. Ivashko, *The concept of art and works of art in the theory of art and in the restoration industry*, **Art Inquiry. References sur les arts**, **XXI**, 2019, pp. 171-190.
- [25] Yu. Ivashko, P. Gryglewski, D. Chernyshev, P. Chang, A. Dmytrenko, *Art as a message realized through various means of artistic expression*, **Art Inquiry. References sur les arts**, **XXII**, 2020, pp. 57-88.
- [26] L. Benli, P. Wanyue, L. Haidong, Q. Jianjun, *Increase of moisture content in Mogao Grottoes from artificial sources based on numerical simulations*, **Journal of Cultural Heritage**, **45**, 2020, pp. 135-141.
- [27] D. Giaccone, P. Fanelli, U. Santamaria, *Influence of the geometric model on the structural analysis of architectural heritage*, **Journal of Cultural Heritage**, **43**, 2020, pp. 144-152.
- [28] T.A. Luk'ianova, Iu.M. Kuks, *The history of development of frescoes. Part 4. The flourishing technology frescoes*, **Perspectives of Science and Education. International Scientific Electronic Journal**, **1**(13), 2015, pp. 121-130. (Original language: T.A. Лукьянова, Ю.М. Кукс. *История развития фрески. Часть 4. Развитие технологии фрески*, **Перспективы науки и образования. Международный электронный научный журнал**, **1**(13), 2015, сс.121-129).
- [29] L.X. Ren, **Monuments of the Dunhuan cave-temple ensemble in the context of Buddhist art (based on the collection of the State Hermitage)**, abstract of Ph.D. dissertation, St. Petersburg, 2007. (Original language: Л.С. Жэнь, **Памятники пещерно-храмового ансамбля Дуньхуань в контексте буддийского искусства (на материале коллекции Государственного Эрмитажа)**, автореферат диссертации на соискание ученой степени кандидата искусствоведения, Российский государственный педагогический университет им. А.И. Герцена, Санкт-Петербург, 2007).
- [30] Y. Cao, **Comparative analysis of fresco painting of Taoism and Orthodoxy of the XIV-XV centuries in China and in Russia**, abstract of Ph.D. dissertation, Herzen University, St. Petersburg, 2008. (Original language: Ю. Цао, **Сопоставительный анализ фресковой живописи даосизма и православия XIV – XV веков в Китае и на Руси**, автореферат диссертации на соискание ученой степени кандидата искусствоведения, Российский государственный педагогический университет им. А.И. Герцена, Санкт-Петербург, 2008).

Received: March 20, 2021

Accepted: November 11, 2021