

REVIEW ARTICLE

A SUMMARY OF THE RESEARCH ON HUASHAN ROCK ART IN CHINA

Haihan Wang^{1#}, Yaqi Huang^{2##}^{1#}Lomonosov Moscow State University, Moscow, Leninsky Gory 1, Russia^{2##}Three Gorges University, Yichang 443002, China[#]Co-first author.^{*}Corresponding Author Email: 361610225@qq.com

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ABSTRACT

The Huashan rock art of China is one of the largest distributions of rock art in the world, which is located in Guangxi Zhuang Autonomous Region. It is the first world cultural heritage of rock art in China with great historical and cultural value. Based on the main websites and some periodicals databases in China, we found some major research literatures on Huashan rock art since 1949. Through analyzing, we clarified the development context of the research on Huashan rock art research, summarized the academic point of view of the research of the Huashan rock art, and pointed out its existing problems and the direction of further development, in order to clarify the significance of Huashan rock art, and attract more attention of scholars' attention both at home and abroad for further research.

KEYWORDS

China, Guangxi, Huashan Rock Art, Research Achievements

Chongzuo city, which is located in the southwestern Guangxi Zhuang Autonomous Region of China, where Zuojiang River and its branch Mingjiang River meander through. On the over 200-kilometer cliffs along the river preserve a large number of rock art. Among them, the Huashan rock art in Ningming County have the largest painting scope and the most images. That's why people also commonly call it Huashan rock art. The Huashan rock art is rich in content. Besides "squatting human" as its typical figures, there are also some circular, utensil, patterns, animals and other images which form a sacred rock art cultural landscape together with the surrounding environment of Zuojiang River. In July,

2016, the Zuojiang Huashan rock art cultural landscape was declared to be China's first rock art world cultural heritage and was recognized by more people. As one of the largest distribution groups of rock art in the world, the Huashan rock art have great historical and cultural value. After more than 70-year research, there still remain many problems unsolved. It needs more research from domestic and foreign scholars. In view of this, we review the research process of the Huashan rock art, sort out its research results, and the main academic viewpoints, analyze the existing problems, and put forward the research prospect.



Figure 1: The environment of the Huashan rock art

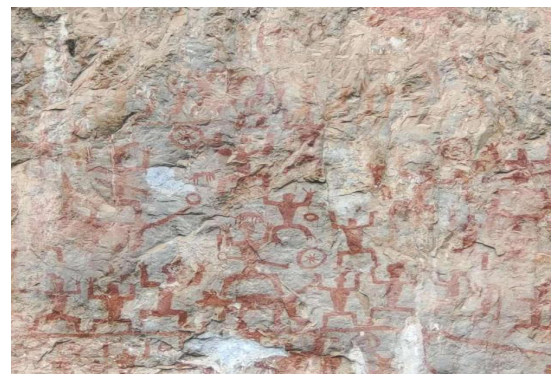


Figure 2: Huashan rock art of crouching figures

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1. OVERVIEW OF THE RESEARCH ACHIEVEMENTS OF HUASHAN ROCK ART

Since the founding of the People's Republic of China in 1949, a series of research achievements have been made in the research of the Huashan rock art. By the end of 2023, the keywords "Zuojiang", "Huashan" and "rock art" all can be searched in the main websites and full-text databases of periodicals in China. It was found that there were about

19 books about the study of Huashan rock art with about 455 papers published, which includes newspapers, periodical papers, conference papers and dissertations.

1.1 The Statistics of Publications on The Huashan Rock Art

Publications on the Huashan rock art are generally divided into monographs, research reports, essays and picture albums (Table 1).

Table 1: Statistics of research and publications on the Huashan rock art (Chronological Order)

Serial number	Author	Title	Publication time	Publisher	Category
1	Guangxi Minority Social and Historical Investigation Group	Collection of Huashan Rock Arts	1963	Guangxi National Publishing House	Symposium
2	Zhou Shaoli, Zhou Shaoning	Zhou Brothers Paintings about Huashan Rock Art	1985	Lijiang Publishing House	Album
3	Qin Shengmin, Qin Cailuan, Lu Minfei, Yu Ruyu	The Investigation and Research of Rock Art in Zuojiang River Valley, Guangxi	1987	Guangxi Ethnic Publishing House	Monographs
4	Chen Yuanzhang, Wang Kerong, Qiu Zhonglun	Zuojiang Rock Art in Guangxi	1988	Heritage Press	Monographs
5	Qin Shengmin, Yu Ruyu, Qin Cailuan	Tracing the Rock Art of Zuojiang River	1992	Guangxi People's Publishing House	Monographs
6	Tang Hua	Research on Huashan Culture	2006	Guangxi People's Publishing House	Symposium
7	Yang Bingzhong, Lan Fengjie, Liu Yong	How Huashan Rock Art Applied for World Cultural Heritage	2010	Guangxi People's Publishing House	Symposium
8	Li Yuanning	A Study on the Origin of Rune and Text In Zuojiang Rock Art and Youjiang Rune	2014	Modern Education Press	Monographs
9	Wang Jinhua, Yan Shaojun, Li Li	Protection of Huashan Rock Art in Nignming County, Guangxi	2015	China University of Geosciences Press Limited	Monographs
10	Lu Minzhu	Fate with Frog: Guangxi's Zuojiang Valley Huashan and Ningming Rock art interpretation	2015	Guangming Daily Press	Monographs
11	Guangxi Zhuang Autonomous Region Cultural Bureau Guangxi Zhuang Autonomous Region Cultural Heritage Bureau	Collection of Zuojiang Huashan Rock Art Research Report (Two Volumes)	2015	Guangxi Science and Technology Press	Research reports
12	Office of the Leading Group for the Declaration of World Cultural Heritage in the Cultural Landscape of Zuojiang Huashan Rock Painting in Chongzuo City	The Cultural Landscape of Zuojiang Huashan Rock Art (Chongzuo, County Longzhou, County Jiangzhou District)	2015	Guangxi People's Publishing House	Album
13	Office of the Leading Group for the Application of the Cultural Landscape of the Rock Painting of Zuojiang Huashan in Fusui County	The Cultural Landscape of Zuojiang Huashan Rock Art (Fusui County)	2016	Guangxi People's Publishing House	Album
14	Guangxi Zhuang Autonomous Region Cultural Department	The Cultural Landscape of Zuojiang Huashan Rock	2017	Guangxi Science and Technology Press	Album
15	Huang Yaqi	Study on Rock Art of Squatting Human Figure in Zuojiang, River Guangxi Zhuang Autonomous Region	2018	Science Press	Monographs
16	Guangxi Zhuang Autonomous Region Committee	Zuojiang Huashan Rock Art Cultural Landscape Map	2019	Guangxi People's Publishing House	Research reports
17	Yang Qingping	Study on the Correlation Between the Rock Art Huashan in Zuojiang and the Related Archaeological Remains	2021	Guangxi Science and Technology Press	Monographs

Table 2: Statistical table of research papers on Huashan rock art

Category of papers	Newspaper	Journal Papers	Dissertation	Conference papers	Total
Numbers	24	370	49	12	455

1.2 The Research Papers Statistics of The Huashan Rock Art

A total of 455 research papers about Huashan rock art were retrieved. (Table 2)

2. THE DEVELOPMENT OF HUASHAN ROCK ART RESEARCH

In the historical records of China, there are records of Huashan rock already. In the Southern Song Dynasty, Li Shi compiled a book named Continuation of Natural History records: in Zuojiang Huashan rock art, it depicts the images of ancestors. That is why people are very awe and often hold a memorial ceremony rather than dare to neglect it. (Li, 1991) This is the earliest record of the Huashan rock art. The concrete figures of Huashan rock art are simply described by Zhang Mu in the Ming Dynasty. (Zhang, 1992) In the Qing Dynasty, the Ningming Prefecture compiled a detailed description of Huashan rock art, and linked the bright changes of rock art to national security, making them more mysterious. (Li and Wang, 1914)

The description of Huashan rock art in the above ancient books is not merely a study, but rather a simple image record and legend. In fact, the real investigation and research of Huashan rock art began after the founding of the People's Republic of China in 1949. By the end of 2019, according to the importance and influence of the research results, the development process of Huashan rock paintings in Zuojiang can be divided into 3 stages. That is to start laying the foundation (1954-1963), progressive development (1978-1999), and deep development (2000-Present).

2.1 Laying the Foundation

Due to the inconvenient transportation in the Zuojiang River basin, the Huashan rock art has never been known to the outside world. After the founding of the People's Republic of China, the Chinese Communist Party put forward the basic policy of socialist culture serving the workers, peasants and soldiers, and making the past serve the present, which arose the climax of cultural construction.

In 1952, China's national economy has been fully restored. On January 1st, 1954, the Guangxi Zhuang Autonomous Region Museum carried out a survey of Huashan rock art in Ningming County and made simple records for the first time. From 1956 to 1962, two successive inspections were conducted. A total of 43 paintings were collected. *The Collection of Huashan Rock Data*, published in 1963, recorded 43 newly discovered rocks, and made a distribution map of Huashan rock, which copied 28 main images, sorted out 17 stories about the origin of Huashan rock circulated among local people, published and collected some articles published in the 1950s and 1960s. (Gmshin, 1963) At the beginning of the Chinese Cultural Revolution in 1966, rock art investigation was suspended, and the study of rock paintings fell into a low ebb.

From 1954 to the end of 1963, although only one data set was opened and 12 papers were published (10 were published in the local newspapers in Guangxi), they laid the foundation for the study of Huashan rock art.

In the early days of the founding of new China, it is urgent to restore the economy. The investigation of Huashan rock art was limited to the preliminary discovery of rock art, the copying and description of some images, and the simple collation of related texts. The articles on Huashan rock paintings were only published in local newspapers, mainly for propaganda, with certain literary flavor. The focus of cultural work is to emphasize class struggle. Therefore, the Huashan rock art is often considered to be related to peasant wars and class oppression. In addition, China's rich historical records, numerous myths and legends, and clear images of Huashan rock art provide a basis for the researchers' rock art dating, but this study lacks direct evidence and seems to

be subjective guesses. Some scholars began to study Huashan rock paintings from the perspective of archaeology and linguistics. These are all beneficial attempts.

2.2 Progressive Development

In 1978, China began to implement the policy of internal reform and opening to the outside world, and the economy developed rapidly. The survey of Huashan rock art was restored. The literary and artistic policy of "serving the people and the socialism" promoted the study of Huashan rock art, and made the number of related publications far beyond the "Cultural Revolution". The study of rock art entered a prosperous and progressive development period. At the end of 1978-1999, there were 3 monographs, 1 album and 87 articles that were published, and its research features are as follows.

2.2.1 The scope of investigation and research was expanded and the research framework was basically established.

In the 1980-1985, the Guangxi government organized a special investigation and a comprehensive survey of the Zuojiang Huashan rock paintings. Compared with the first stage, the survey involved more extensive and larger scope.

The book of *The Investigation and Research of Rock Art in Zuojiagn River Valley, Guangxi* is the result of the survey in 1985. It describes in detail the landform and cultural relics of the Zuojiang Valley. When recording 79 panels of rock art in Zuojiang valley, there are 357 pairs of color images and 32 copies of images. The age, painter, image meaning of the Huashan rock art are discussed, as well as the relationship between rock art and other cultural relations in Guangxi. Artistic style and protection of rock paintings (Qin et al., 1987). The book of *The Rock Art of Zuojiang River in Guangxi*, published in 1988, collected the results of the previous surveys. In the order of the river, the location and image of the 70 panels of rock art in Zuojiang valley, were mainly described, and 354 images were copied (Wang et al., 1988). The book discusses the age, painter, images and characteristics of rock art. The book *Tracing the Rock Art of Zuojiang River* published in 1992 is a supplement to the book of *The Investigation and Research of Rock Art in Zuojiagn River Valley, Guangxi*. It analyzes the artistic characteristics, artistic style and aesthetic consciousness of the Huashan rock art from an aesthetic point of view (Qin et al., 1992). The book of *Zhou Brothers Paintings about Huashan Rock Art* shows the charm of the Huashan rock art with modern art forms and techniques, and promotes the artistic language of this rock art to the world (Zhou and Zhou., 1985).

In particular, the two comprehensive research works of *The Investigation and Research of Rock Art in Zuojiagn River Valley, Guangxi* and *The Rock Art of Zuojiang River in Guangxi*, have almost established the framework for the study of the Huashan rock art. Most of the rock art research in this period is based on this framework, and the main topics involve many aspects of the rock art. However, due to the exhaustion of various aspects, some research is highly insufficient. The most obvious is that there are few papers about rock art protection.

2.2.2 Diversified research theory and scientific research methods.

After the reform and opening-up, the study of Huashan rock art no longer emphasizes political service, and the law of art itself is respected. With the expansion and deepening of cultural exchanges between China and foreign countries, some western theories and methods of cultural studies have been gradually accepted by Chinese scholars.

On the basis of the comparison of archaeological images, the C₁₄ dating method provides more reliable reference materials for the study of rock paintings. In cultural studies, it divorced from the politicization

characteristics of early studies, and began to explain from multiple angles, especially the “witchcraft theory”, laying the foundation for the study to make a reasonable explanation; meanwhile, the introduction of anthropological methods also made researchers pay more attention to the relationship between local culture and rock art. And the relationship between similar rock art in different regions. In a word, the research area of Huashan rock art at this stage is gradually developing from basic research to in-depth study.

2.3 Deep Development

Entering the twenty-first Century, China’s economy has gradually integrated into the world economic system. In 2003, on the third Plenary Session of the 16th CPC Central Committee, the party set up the “comprehensive, coordinated and sustainable development” Scientific Outlook on Development as the guiding ideology for the development of all sectors of society. To make the world better understand Chinese culture, it also aims to better protect and inherit excellent traditional culture. China has set off a climax of declaring world heritage. The study of Huashan rock art around the inscription and protection of rock paintings began to develop in depth from comprehensive research. The characteristics of this stage are studied as follows.

2.3.1 Sharp increase of research achievements

At the end of 2000-2023, there were about 15 works and more than 300 papers published on the study of Huashan rock art. The research results greatly exceeded the sum of the previous 2 stages.

2.3.2 Focus of research: Protection of rock art

The protection of rock art in Zuojiang Huashan is the core content of this stage, including the maintenance management, development and utilization of rock art, and application for world cultural heritage. Related papers accounted for almost half of the research results and nearly 10 of the works have been published during this period. These two symposiums, *Research on Huashan Culture* (Tang, 2006) and *How Huashan Rock Art Applied for World Cultural Heritage* (Yang et al., 2010), are about how to apply for world culture Heritage. *Protection of Huashan rock art in Ningming County, Guangxi* (Wang et al., 2015) and *Collection of Zuojiang Huashan Rock Art Research Report (two volumes)* (Gzarch, 2015). The three books sum up the phased achievements of the protection and research of the Huashan rock art. The *Cultural Landscape of Zuojiang Huashan Rock Art* is a series in Chinese and English. A total of 5 books (one of them is internal information) are taken in the form of combination of pictures and texts (Olgd, 2016). It introduces the situation of rock art in Ningming County, Longzhou County, Jiangzhou District and Fusui County in Zuojiang basin.¹² They are the important textual materials for the application of Huashan rock art for world cultural heritage. In 2017, the *Cultural Landscape of Zuojiang Huashan Rock art* is a popular book about the cultural heritage of the Huashan rock art (Gzarch, 2017). In 2019, the *Huashan Rock Art Culture Landscape Map* was published (Gzarc, 2019). A large number of data about the application of Huashan rock art for world cultural heritage were sorted out.¹⁴ They played a good role in the propaganda of Huashan rock art.

2.3.3 Improving research system

In addition to the previous research contents, this stage involves the time-dating studies of Huashan rock art by Uranium-Series Dating, the discussion of the cultural significance of the distribution of rock art, the excavation of the relationship between the rock art of Huashan and the local culture, the relationship between Huashan rock art and other neighboring regions, and even more similar cultures in the world, and exploring new research directions of its cultural connotation and unique value in a wide range of time and space. Some Chinese scholars began to introduce Zuojiang Huashan rock art research abroad, and some foreign scholars began to join in the study of Huashan rock art, all of which are multi-angle research, so that the research area of Huashan rock art is constantly enriched and the system is gradually improving.

3. THEME ANALYSIS OF HUASHAN ROCK ART

The research on the Huashan rock art mainly focuses on the following themes: age, painters, cultural connotations, artistic aesthetics, cultural comparison, protection and utilization.

3.1 Age and Painters

Age and creators are the focus of the study of Huashan rock art. From the early application and comparison of historical documents and archaeological comprehensive materials to the adoption of the direct dating method, researchers did not stop exploring the methods of dating.

3.1.1 Historical document and image comparison method

Some researchers judged the age of rock art in the Tang and Song Dynasties based on local documents, folk customs and the regular script “Kui” in Huashan rock art (Huang ,1963: Huang, 1957: Liu, 1957: Chen, 1961a). According to local legends, some researchers believe that rock art originated in the Taiping Heavenly Kingdom (Chen, 1956). Or judging from the figures in Huashan rock art and the form of animal images, it is decided that the age of rock paintings belongs to the medieval and ancient times (Liang, 1957).

3.1.2 Comprehensive archaeological comparison method

The archaeological comprehensive comparison method is that the researchers selected the typical images corresponding to the unearthed relics in Huashan rock art, and then used people’s knowledge of these things to decide the method of rock art age and clan.

According to the age of unearthed cultural relics corresponding to the different images in the Huashan rock art, shown in Figure 3, some scholars believe that the maximum age of rock painting art should be in the early days of the Warring States period and the minimum age in the Western Han Dynasty (Shi, 1978: Yang, 1986: Qiu, 1982). Some scholars believe that the minimum age is in the Eastern Han Dynasty (Wang et al., 1984: Qin et al.,1987: Song, 1986: Wang et al.,1988).

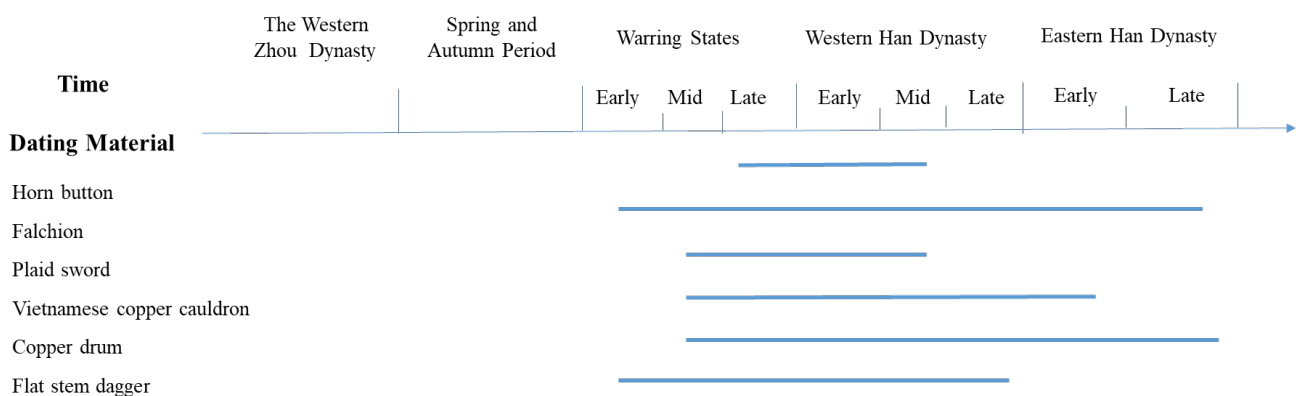


Figure 3: Main images in the Huashan rock art correspond to the unearthed cultural relics

3.1.3 Direct dating method

The direct dating of rock art is usually based on reliable scientific and technological means for direct determination. The Huashan rock paintings of Zuojiang River mainly use the method of ^{14}C and U/Th dating.

In 1983, researchers at Peking University conducted a ^{14}C measurement of the wood piles suspected of cutting for drawing rock paintings, resulted in around 2680 ± 80 years, roughly equivalent to the late Spring and Autumn Period or the early Warring States period (Qin et al., 1987). In 1985, the reach team collected 12 samples at Mt. Huashan, dating from 2370 to 2135 years ago. They deduced that the date range for paintings was between the Warring States period and the Western Han Dynasty. Taking account of errors and other factors, the possibility of the late Spring and Autumn period to the Eastern Han Dynasty cannot be ruled out. (Yuan et al., 1986).

In 2014, Shao (2016) collected samples of stalactites from 7 rock painting sites in the Zuojiang River valley, and measured them by U/Th dating. The date was 1793 ± 41 years to 1921 ± 16 years ago, but it was not ruled out that the expansion of early creations was 2668 ± 22 years. In 2017, Shao (2017) published articles in the United States. Based on the $^{230}\text{Th}/\text{U}$ ages, the age of the Mt. Huashan rock paintings can be bracketed between 1856 ± 16 and 1728 ± 41 yr BP, corresponding to the end of the Eastern Han dynasty.

Although the results of the archaeological comprehensive comparison method and the direct dating method did not reach a complete agreement, with the deepening of the understanding of historical documents and the utensils, and the consistent application of rock paintings and records, as well as the application of the dating of scientific methods, scholars in the rock painting era gained similar views, that is, the maximum age of rock paintings should be in the Warring States period. The minimum age is mainly in the Eastern Han Dynasty. During this period, the Zuojiang River area was communities of ancient Luoyue people, so rock paintings were usually regarded as painted by clans of Luoyue (Wang et al., 1988: Huang, 2018).

3.2 Cultural Connotations

The contents and cultural connotations of Huashan rock art are much discussed by experts, and the main academic points are summarized as follows.

3.2.1 The product of Ancient Wars

In 1956, *The Discovery of Precious Ancient Rock Paintings in Guangxi County*, published in the *Ningming Daily*, first introduced the distribution and images of rock paintings along the Mingjiang River, and analyzed the relationship between rock art and collective assembly or celebration in wartime (Gemshig, 1963). Liu Jie (1957), Huang Zengqing (1963) believed that the paintings of Mt. Huashan are the portraits of the Zhuang people in the war when they rebel against the rule and oppression. When Liang Renbao (1957) drew from the characters and animal images of Huashan rock art, he speculated that the rock paintings were made by the Zhuang people to commemorate the victory of a large-scale war.

3.2.2 Ancient language symbols

Chen (1961b) believed that the Huashan Rock art was a sign of language used by Zhuang people in history, a transitional period from painting to image writing. Li (2014) believed that the Huashan Rock art was related to oracle bone inscriptions, and they were the predecessors of oracle bone inscriptions. Huashan rock art is a Chinese prehistoric text, which is of great significance to the study of Chinese prehistory.

3.2.3 Remains of witchcraft culture

From the Spring to Autumn Period and Warring States Period to the Qin and Han Dynasties, people in south of the Five Ridges believed in witches and ghosts (Tan, 1988). Huashan rock art are mostly painted on the cliffs

which are not easily seen by the naked eye. They lack the ornamental conditions, and the paintings are not purely for appreciation, but rather driven by a strong sense of consciousness. It is an important part of the sacred witchcraft (Wang et al., 1984: Chen et al., 1988). Huashan rock art shows that the ancestors worshipped the God of water (Huang, 1985: Guang, 1987: Song, 1987), Lord of Thunder (Huang, 1988), Sun-God (Wang et al., 1984: Li and Huang, 2009), Ancestors (Qin et al., 1987: Pan, 1955), Frog Totem (Liang, 1996), Dog God (Qin, 1989), Reproductive worship (Hai, 1995), or prayed for war victories and people's sacrifices (Wang et al., 1988).

3.2.4 Social and cultural display

In 1990s, with the development of Ethnology in China, more and more researchers began to pay attention to the relationship between Huashan rock art and the life of ancestors. It is believed that the Huashan rock art is the manifestation of the early social culture of Zhuang people.

The Huashan rock art spots are generally located on the cliffs near the river. There are cracks or caves nearby. These characteristics are not coincidences but related to the beliefs of the ancestors (Huang, 2015). From the perspective of the universe of the ancestors shown in the myth of Zhuang people, Huashan rock art and their distribution environment show the universe view of "heaven, earth and water" (Liu, 2015). From this point of view, Gao Qian (Gao, 2015) also discussed the relationship between the distribution characteristics of Huashan rock art and the cosmology of Luoyue ethnic group from the historical, cultural and religious beliefs of the local people. According to the legend of Huashan rock art, which is still in circulation in the Zuojiang River Basin, Lv (2009) believes that the rock paintings of Huashan in Zuojiang River should reflect the belief of the ancients in the cave and bamboo, as well as the concepts of Feng Shui and taboo.⁴⁵

In addition, an ancient custom of cave burial with local characteristics appeared in ancient Guangxi. It appeared early and lasted for a long time. Huang and Huang (2001) thought that the production of Huashan rock art is related to the cultural custom of cave burial. After inspecting the custom of dragon boat race in Zuojiang Valley, Tong and Hui (2010) thought that the "boat" shape in Huashan rock paintings reflected the evolution of dragon boat racing from folk sacrifice to folk entertainment. As one of the earliest origins of cultivated rice in Asia, Guangxi has a long history of rice culture. Some researchers (Huang, 2018: Liu, 2015: Chen, 2016) discussed the relationship between the Huashan rock art and the Zhuang nationality's rice culture. Other researchers also believe that the production of rock paintings in the Zuojiang river might have internal relations with the qigong of the Zhuang nationality (Qin, 1985), National Sports (Hu, 1992), Dance (Chen, 1987: Wang, 1986), Bronze drum culture (Luo, 1991), and so on.

3.3 Aesthetic Appreciation of Art

Although we know that the production of rock paintings of Zuojiang Huashan is not purely for appreciation, there are not many related aesthetic research papers, but we still cannot ignore some researchers' exposition on the unique artistic aesthetic characteristics of rock paintings.

Qin et al (1987) believed that the Huashan rock art is painted by the flat coating silhouette method. The images are mainly human, with magnificent and imposing characteristics, strong stylization and strong sense of rhythm. The rock art images have undergone a gradual evolution from representational realism to abstract symbols. Huang (2018) analyzed the style of rock art from two aspects of expressionism and naturalism. Through cross-cultural and cross-regional comparison, the evolution of the image of rock paintings in Zuojiang was analyzed from the abstract to the concrete. In Yu (2009) doctoral dissertation, *The Image of Huashan Rock Art in Ningming County, Guangxi*, a detailed analysis of Huashan rock art was carried out from the perspective of the plastic arts of Huashan rock art with the method of image study. In addition, some researchers believe that the Huashan rock art reflect a magnificent aesthetic feature (Yang, 1990). It is the epitome of ancient Zhuang people's art and aesthetic principles, which fully reflects the

aesthetic spirit of Zhuang's primitive culture and art (Liang, 1992).

3.4 Cultural Comparison

As early as 1970s, Shi (1978) was concerned about the similarity between Huashan and rock art in Huaan County, Fujian province. Gai (1989) thinks that the style of rock art in the two places is similar, and the age of rock art in Huaan is earlier than that in Huashan. They all belong to the ancient Yue people. Through analyzing the remains of the hanging coffins in Southwest China, Chen (1985) argues that the rock paintings of Huashan and the rock paintings of Gong County in Sichuan are roughly the same in terms of their distribution and expression, but the content of the Gong rock paintings is much richer, indicating that the painters from different place are closely related to the ethnic origin. After comparing the contents of the rock art of the Mt. Huashan and the Mt. Jiangjun, Li (2006) pointed out the commonality of rock paintings in farming culture and totem worship. Huang (2018) takes the most distinctive "squatting human figure" in the Huashan rock art as the research theme. By comparing with similar rock paintings at home and abroad, she discusses the cultural connotation of rock paintings, the eastward spread of rice culture, and the origin of the Austronesian.

3.5 Protection and Utilization

Before 21st Century, people knew little about rock art. When people gradually realized the value of Huashan rock paintings, they found that they were rapidly disappearing. Therefore, the protection of Huashan rock paintings became the focus of the study.

3.5.1 Maintenance and publicity

Huashan rock art is painted in a red pigment, which is seriously affected by modern industry and environment. Air pollution and sunlight always irradiate, resulting in the fading and peeling of pigments in rock art. Research on pigment restoration materials with strong aging resistance under light and high humidity environment is an important problem faced by rock art protection (Guo et al., 2005). Besides, the rock surface bearing rock paintings also has the trend of accelerating cracking and peeling, which is related to the biodegradation of rocks (Guo et al., 2007a), Physical weathering (Guo et al., 2004), Water erosion (Guo et al., 2007b). In view of these problems, researchers have put forward corresponding countermeasures. In addition, some scholars have made a comprehensive analysis of the destruction of natural and human factors in Huashan rock art, and put forward measures to protect them from both sides of technology and humanities (Lan et al., 2002; Huang et al., 2009). To solve these problems, the local government has also formulated and implemented *Measures of Guangxi Zhuang Autonomous Region on the Protection of Zuojiang Rock Art* and *The Administrative Measures of Chongzuo for Protection of Zuojiang Rock Art*.

In addition to protecting the rock art themselves, scholars also suggested that the propaganda and education of rock art should be enhanced, and the unique charm of the Zuojiang Huashan rock art culture landscape can be displayed in a museum's space, from various angles and in all directions (Wei et al., 2016). We can also make use of the new media and virtual reality technology to develop a wealth of digital cultural products, so as to deepen the recognition of Huashan rock art and promote the "going out" of Huashan rock art (Yi and Zheng, 2018).

3.5.2 Development and utilization

The rational exploitation and utilization of rock art resources in protection is an important way to protect rock art. The Huashan culture, represented by the Huashan rock art, has high cultural value, historical value and tourism value (Guo, 2007). It contains enormous cultural potential.

The development of tourism is a way to effectively utilize the resources of the Huashan rock art. It not only helps to excavate the cultural value of rock art, enhance the sense of national culture, but also provide funds for the protection of rock art (Yang, 2017). However, tourism development must be carried out under the premise of following principles of

authenticity, integrity and development (Huang et al., 2007b). About how to better develop the tourism resources of Huashan rock art, some scholars pointed out that it is best to integrate local natural scenery and ethnic customs with natural, humanistic, static and dynamic integration (Wei, 2016). While protecting the rock paintings themselves, we should excavate the elements of rice culture in the Zuojiang Huashan rock art culture landscape and excavate the cultural landscape corridors of Zuojiang river rice (Huang, 2018). In addition, how to deal with the information management of tourism resources? (Huang et al., 2007a) There are many problems such as inconvenient transportation, inactive public participation, and lack of characteristics of tourism products (Huang, 2016). The researchers also gave their own suggestions.

Thesis discussion on the development and utilization of the Zuojiang Huashan rock art includes not only development of tourism, but also the application of image elements in landscape design (Wu, 2016), graphic design (Zeng, 2017), cultural and creative products (Lin, 2019), the combination of Huashan rock art and animation art (Nie, 2012). The expression of Huashan rock art in modern painting (Wang, 2010) and decorative painting (He, 2012), and the inspiration to modern fresco creation (Qi and He, 2013), is regarded as an important part of the development of school-based curriculum in secondary schools (Xiang, 2016), etc.

3.5.3 The world cultural heritage declaration and development

Although Zuojiang Huashan rock art cultural landscape has been the world culture heritage only for 3 years, the declaration process has lasted for 13 years. For the reasons of declaration, the researchers believe that it is an effective way to protect the rock art (Xiao, 2015). At the same time, it can foster the development of Guangxi's culture (Yang, 2010), promote national unity, strengthen ties with ASEAN countries, and fill the vacuum of China's rock art upon the world cultural heritage list.

Regarding how to apply for the world cultural heritage, Xie (2010) believes that the first is to enhance social influence, the second is to excavate the historical and cultural values of universal significance, and the third is to develop and protect them well. Some scholars (Zhang, 2016) believe that we shall look at Huashan rock art from an international cultural perspective, excavate its unique cultural value, and establish real, and complete archive, and excavating the uniqueness of rock art, which is also the key to apply for the world cultural heritage.

After Huashan rock art has been the world cultural heritage in 2016, it became the study's main-stream to promote the Zuojiang Huashan rock art cultural landscape and the world heritage of ASEAN countries on the "The Belt and Road Initiative" to form a transnational and transregional cooperation pattern, so as to achieve the goal of innovation and development, and share win-win (Luo, 2018; Huang, X., 2018; Liu and Huang, 2019).

4. CURRENT PROBLEMS AND RESEARCH PROSPECTS

4.1 Current Problems

Through the above literature, we can see that researchers have achieved fruitful results in the study of Huashan rock art, but there are also some problems.

Firstly, the dating of rock art is not accurate enough. So far, more than 90 rock art spots have been found in the Zuojiang River basin, but for the dating of Huashan rock art, it seems that we only pay attention to the rock art spots of Mt. Huashan, Mt. Zhushan in Ningming County, and a few other rock art spots. We all know that Huashan rock art is created by people at different times, and it also presents different characteristics in painting style. So far, some researchers have different opinions on the development and evolution of Huashan rock art style. With only a few rock art spots dating, it is difficult for us to have a whole understanding of Huashan rock art.

Secondly, cross-cultural research is not sufficient. Huashan rock art



Figure 4: Huashan rock art cultural creation products

research has been conducted for 65 years, but from the literature we searched, foreign scholars published few related papers, no monograph. There are only a few papers published by domestic scholars abroad. In fact, some images in Huashan rock art are not only similar with those in China, Southeast Asia and even more larger regions, but at present, due to the lack of cross-cultural communication and cooperation, it directly affects the in-depth study of rock art.

Thirdly, rock painting damage is still a serious issue. The weathering and shedding of the bearing body of Huashan rock art poses a great threat to the protection of rock art. However, the existing methods of rock art restoration are high in cost and slow in speed and cannot be used to repair damaged rock paintings in large areas. Besides, Huashan rock art has been listed on the World Heritage List, which increases the popularity of rock art but also exposes it to more man-made destruction risk.

4.2 Research Prospects

At present, the existing research problems of Huashan rock art greatly limit deep research and sustainable development. To address these issues, it can follow the suggestions below.

First of all, we should expand the dating range of rock painting spots in Zuojiang River basin, focus on the age of rock painting with different artistic style characteristics, provide reliable evidence for the development and evolution of rock painting style in Zuojiang river, and lay a solid foundation for the in-depth study of Zuojiang Huashan rock art as a whole.

Secondly, we should strengthen the cultural exchange and comparison of rock art regions. On the one hand, we may introduce the advanced research methods of rock painting abroad through translation and study; on the other hand, we may compare the typical images in Zuojiang Huashan rock art across regions, and introduce domestic research results abroad, which can attract more international scholars to conduct research in China, and promote in-depth study on Huashan rock art.

Finally, we must emphasize interdisciplinary cooperation and research, let more researchers from different disciplines and fields join in the research of Huashan rock art, while expanding the research width of rock art, and improving the development of rock art dating, and protection technology. In addition, to reduce the artificial damage

caused by excessive exploitation and utilization of Huashan rock art, it requires government agencies to gradually improve the management system and institutional supervision mechanism.

It has been more than 70 years since the research on the Huashan rock art was carried out. The review and prospect of the research is not only helpful for the overall understanding of the past research methods and contents, but also meaningful for the macroscopic grasp of the future research direction and trend. With the success of Huashan rock art upon the world Heritage list, and the implementation of the national "One Belt and One Road" initiative, to carry out cross-cultural and interdisciplinary research on the Huashan rock art will eventually become the research hotspot and focus of the next period, which needs cooperation of more scholars in different areas with different disciplines background, as well as a good guarantee system of government institutions. Only in this way, can the continuous and in-depth development of Zuojiang Huashan rock art research get promoted.

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ANNOTATION

Note 1: Picture information refer to Qin et al (1987)

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