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***REVIEW ARTICLE***

# ON THE DEVELOPMENT OF CHINESE ROCK ART DISCIPLINE —ALSO ON THE CURRENT TASKS OF THE *JOURNAL OF ROCK ART*

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**ABSTRACT**

With a scholarly lineage spanning over a century, Chinese rock art research has witnessed significant progress yet lacks comprehensive retrospectives. This paper systematically examines the developmental trajectory of Chinese rock art studies, delineating distinct phases, achievements, and persistent challenges. Additionally, it elucidates the objectives of the *Journal of Rock Art*, underscoring its pivotal role in shaping the Chinese rock art discipline. By illuminating the evolution of this discipline, the paper aims to foster both domestic scholarly coherence and international engagement, facilitating deeper exploration of interconnected rock art traditions across China and neighboring regions.

**KEYWORDS**

Chinese rock art; Academic historiography; Critical appraisal; Prospective analysis; Journal of Rock Art

## 1. INTRODUCTION

The "Rock art studies" concept emerged relatively recently with Mr. Gai Shanlin pioneering its proposal in China. His paper, "A Rustic Opinion on Rock Art Studies," published in the sixth issue of the journal *Latent Science* in 1983, introduced and delved into the key aspects of this concept, including its definition, research objects, and methodologies (Gai, 1983). Subsequently, Gai expanded on these ideas in his 1995 publication *Chinese Rock Art Studies*, further exploring its conceptual framework, research methodologies, historical context, and interdisciplinary connections. The official recognition of "rock art studies" as a distinct discipline occurred during the International Federation of Rock Art Organizations and the International Symposium on Rock Arts in August 1988, held in Darwin, Australia. Scholars formally delineated rock art studies from other disciplines at this event, marking its independence within the academic community. Robert G. Bednarik, in his paper "Milestones in the History of Rock Art Research -- A Record of the Australian International Symposium on Rock Art" highlighted the significance of this development, affirming that rock art research had evolved into a standalone discipline separate from archaeology, despite its historical ties (Gai, 1995). However, despite these advancements on the international stage, the recognition of rock art studies remains limited among Chinese scholars as a distinct discipline. Thus, a concise overview of its historical evolution is imperative in addressing issues faced by Chinese rock art studies.

## 2. OVERVIEW OF THE HISTORY OF CHINESE ROCK ART RESEARCH

China holds the distinction of being the earliest documented recorder of rock art worldwide. During the Northern and Southern Dynasties (420-589BP), the esteemed geographer Li Daoyuan (circa 470-527AD) chronicled over 20 rock art sites across 13 provinces in his book *Shui Jing Zhu*, covering a vast expanse of the Chinese territory. Subsequent mentions of rock art can be found dispersed throughout various historical texts. Notably, foreign missions also took note of Chinese rock art. For instance, among the existing 32 Vietnamese documents, accounts of Huashan rock art by Vietnamese envoys traversing the Zuojiang River basin in Guangxi from the 25th year of the Wanli reign (1597AD) to the 8th year of the Guangxu reign (1882AD) endure.

The scientific exploration of Chinese rock art commenced in 1915 with Mr. Huang Zhongqin's investigation of the Xianzitan rock art in Hua'an County, Fujian Province. Since then, progress in rock art research experienced prolonged interruptions for an extended period. Following the establishment of the People's Republic of China in 1949, Chinese scholars gradually embarked on investigations and disseminated

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research findings. Nonetheless, these efforts predominantly yielded brief introductory papers, with systematic research remaining exceedingly rare. Notably, the pivotal publication *Collection of Huashan Cliff Paintings* in 1963 stands as a significant contribution, albeit a pictorial album (Guangxi, 1963). Additionally, *Rock Carvings in Hong Kong -- An Illustrated and Interpretive Study* by W. Meacham, published in Hong Kong in 1976, emerged as a noteworthy early work in Chinese art research (Qin, 1976).

During the 1980s, the exploration and scholarly inquiry into Chinese rock art gained momentum on a national scale, accompanied by the emergence of comprehensive monographs. Notable contributions during this period include *Discoveries of Chinese Rock Arts: Selected Materials of Ancient Minority Rock Arts (Volumes 1 and 2),* authored by Chen Zhaofu and Jiang Zhenming (Chen and Jiang, 1985). This seminal work, comprising 28 papers, cataloged rock art sites across diverse regions of China, serving as a compendium of scholarly endeavors. Additionally, significant publications such as *Discoveries and Research on the Cliff Paintings in Cangyuan, Yunnan* by Wang Ningsheng (Wang, 1985) and *Petroglyphs in the Yinshan Mountains* by Gai Shanlin (Gai, 1986) contributed to the burgeoning field. The extensive investigation of the Zuojiang Huashan rock art in Guangxi marked the pinnacle of this era. In 1985, the People's Government of Guangxi Zhuang Autonomous Region assembled an interdisciplinary team comprising over 80 experts and scholars spanning fourteen disciplines. This formidable coalition, encompassing history, ethnography, archaeology, art, dance, religion, folk literature, hydrology, geology, geomorphology, and various scientific fields, conducted the most comprehensive investigation of Chinese rock art to date. The culmination of their efforts yielded two seminal works: Investigation and Research on Rock Art of Guangxi Zoujiang River Basin published by Guangxi Nationalities Publishing House in 1987, and *Guangxi Zuojiang Huashan Rock Art*, published by Cultural Relics Press in 1988. These seminal publications exemplify focused regional studies, whereas Chen Zhaofu's *Chinese Rock Arts,* published in 1989, represented the first comprehensive nationwide analysis, delineating distinct zones of rock art across China (Chen, 1989).

In the 1990s, the scope of rock art studies continued to broaden, encompassing domestic and international arenas. Discoveries and interdisciplinary inquiries proliferated alongside specialized investigations. Notable contributions include *Discovery History of Chinese Rock Arts* by Chen Zhaofu (Chen, 1991), *The Rock Art in Mt. Helan and Mt. North* by Li Xiangshi and Zhu Congshi (Li and Zhu, 1993), *Petroglyphs in the Helan Mountains* by Xu Cheng and Wei Zhong (Xu and Wei, 1993), *Petroglyphs in Xinjiang* by Su Beihai (Su, 1994), *Art of Tibetan Rock Paintings* compiled by the Administration Commission of Cultural Relics of the Tibetan Autonomous Region (Administration, 1994), and *Badain Jaran Desert Petroglyphs* by Gai Shanlin (Gai, 1997). In addition to Chinese rock arts, scholars also turned their attention to foreign counterparts. Representative works in this domain include *Discovery History of Foreign Rock Arts* by Chen Zhaofu and Xing Lian (Chen and Xing, 1993) and *Pacific Rock Arts -- The Oldest Folk Cultural Relics of Humanity by* Li Hongfu (Li, 1997). Furthermore, two noteworthy publications merit special emphasis. *The Deified Human Face Petroglyphs of Prehistoric China* by Song Yaoliang offers a thematic examination of Chinese human face rock arts, revealing the discovery of three major distribution zones characterized by a shared cultural dissemination of facial representations (Song, 1992). Additionally, the mentioned *Chinese Rock Art Studies* by Gai Shanlin marks the first systematic discussion of Chinese rock art as a distinct discipline, profoundly influencing the long-term trajectory of rock art research in China.

As the 21st century dawned, the trajectory of rock art research in China underwent notable expansion and deepening. Firstly, propelled by the continual discovery of new rock art sites, the geographic scope of research expanded significantly, accompanied by a surge in related publications. Incomplete statistics indicate that approximately 250 books were published during this period, encompassing all major distribution areas in China, a substantial increase from the previously published works, numbering over 60. Moreover, the number of rock art papers exceeded five thousand. This era also witnessed the establishment of specialized rock art research institutions, notably the China Rock Art Research Center of Minzu University of China and the Ningxia Rock Art Research Center. Secondly, bolstered by the advancements in materials, theories, and methods, scholars endeavored to transcend previous frameworks and propel rock art research to new heights. Breakthroughs in interpretive theory departed from the erstwhile dominance of the "Theory of Witchcraft" and "Theory of Religion". Instead, novel interpretive paradigms emerged, exemplified by Tang Huisheng's "Binary Opposition Theory" (Tang, 2001) and the "Intermediate Theory" (Tang, 2014; Zhang, 2020). Thirdly, the attention of scholars turned towards Sino-foreign cooperation in rock art research. A landmark initiative in this regard is the Chinese rock art dating project, a collaborative endeavor between Chinese, Australian, and Indian scholars spearheaded by Professor Tang Huisheng. Anchored at the International Rock Art Dating Center of Hebei Normal University, this project involved microerosion dating in numerous Chinese provinces, yielding significant results. Another noteworthy collaboration is the joint rock art scientific research conducted by the Hetao Cultural Museum in Inner Mongolia, the Northern Institute of Ethnic Archaeology at Renmin University of China, and scientific research institutions from Russia and Mongolia. In 2020, the publication of *A Collection of papers on the Sino-Mongolian-Russian Joint Rock Art Scientific Research and Forum (2015-2017)* edited by Professor Wei Jian underscored the fruits of this collaborative effort (Wei, 2020).

## 3. SIGNIFICANT ACHIEVEMENTS IN CHINESE ROCK ART RESEARCH

### 3.1 Prolific Scholarly Output in Chinese Rock Art Research

Over more than half a century of research, Chinese rock art research has yielded numerous notable accomplishments, evidenced by a substantial body of published scholarly works. These publications span a wide array of disciplines within the humanities and social sciences and, to a lesser extent, intersect with pertinent fields in the natural sciences.

From a geographical standpoint, this research endeavor has comprehensively canvassed rock art distributions across China. According to data compiled by the China National Knowledge Infrastructure (CNKI), as of January 17, 2024, a total of 5707 papers on rock art have been published, encompassing 24 provinces, directly-administered municipalities, and special administrative regions in China (refer to Figure 1), in which the comprehensive studies dominated, totaling 2054 papers, constituting approximately 35.99% of the corpus. These works typically engage with multiple regional contexts. Notably, the most prolific single-regional studies pertain to Inner Mongolia, accounting for 703 papers (approximately 12.32%), followed closely by Guangxi with 690 papers (approximately 12.09%). While Inner Mongolia boasts a marginally higher volume of research output, the significance of the scholarly engagement with Guangxi's rock art scene surpasses mere numerical comparison. This discrepancy can be attributed to the inherent characteristics of the respective rock art landscapes. Inner Mongolia, as one of China's principal reservoirs of rock art, enjoys historical significance intertwined with archaeological narratives dating back to the Neolithic period in China, alongside enduring cultural connections with Eurasian steppe civilizations. Scholars from Inner Mongolia, led by figures like Gai Shanlin, have long recognized the cultural and scholarly importance of rock art, nurturing a robust tradition of systematic inquiry. Conversely, Guangxi's prominence in rock art research is underscored by the presence of the Ningming Huashan Rock Art, the world's largest single rock art site. Alongside 37 adjacent sites, it achieved UNESCO World Heritage status in 2016 as the Zuojiang Huashan Rock Art Cultural Landscape, thereby catalyzing extensive scholarly scrutiny. Furthermore, seven regions have garnered considerable academic attention, each boasting over 100 research papers. These regions encompass Xinjiang, Ningxia, Tibet, Yunnan, Gansu, Heilongjiang, and Qinghai. Among them, Xinjiang and Ningxia stand out with over 400 papers each, 457 and 433 papers, respectively, constituting approximately 8.01% and 7.59% of the total corpus. Both regions serve as prominent representatives of northern Chinese rock art traditions, garnering considerable scholarly interest. Additionally, the scholarly discourse extends beyond national borders, with 172 papers dedicated to the examination of foreign rock art,

accounting for approximately 3.01% of the total body of literature.

As of January 17, 2024, a total of 374 rock art books have been published in China, encompassing research from 19 distinct regions (see Figure 2). Among them, 155 are comprehensive works, constituting approximately 41.44% of the total. Notably, only a small fraction serves as antique catalogs, exemplified by the comprehensive *Complete Collection of Chinese Rock Arts* spanning five volumes, while the majority are academic monographs. The highest number of monographs pertains to Inner Mongolia, totaling 49 publications, accounting for approximately 13.10% of the total. Following closely, Ningxia boasts 44 monographs, comprising around 11.76% of the corpu007. Subsequent regions of scholarly interest include Guangxi and Xinjiang, with 26 and 16 monographs respectively, constituting approximately 6.95% and 4.28% of the total. It's noteworthy that certain monographs on rock arts in Guangxi are intricately linked with World Heritage Nomination endeavors and are pivotal in elucidating heritage value interpretations. Additionally, numerous works delve into the study of rock art across various other regions. Beyond the confines of China, 22 books are dedicated to foreign rock arts, representing approximately 5.88% of the total corpus.

Considering the disciplines related to rock art research, nearly all branches of humanities are involved. An analysis of 5707 papers from CNKI (Note 1) reveals the top 10 disciplines in rock art research to be archaeology, tourism, "fine art, calligraphy, sculpture and photography", culture, literary theory, religion, music and dance, physical education, Chinese ethnic groups and local chronicles, and geography (Figure 3). Additionally, there are other disciplines not included in the analysis due to their small proportion. Among the top 10 disciplines, archaeology leads with 2443, accounting for approximately 41.67% of the total. Tourism follows as the second most prevalent discipline, with 1116 papers, constituting approximately 19.03%. Subsequently, "fine art, calligraphy, sculpture, and photography" are represented by 1114 papers, accounting for approximately 19.00% of the corpus. Approximately 258 papers pertain to culture, comprising around 4.40% of the total. The disparity between literary theory and culture is marginal, with a total of 204 papers, accounting for approximately 3.48%. Contrary to widespread belief, there are only 188 papers on religion, representing approximately 3.21% of the corpus. Music and dance encompass 165 papers, constituting around 2.81%. Additionally, there are some papers on physical education, Chinese ethnic groups and local chronicles, and geography, although their quantities are minimal.

Overall, Chinese rock art study is intricately linked with archaeology. Previously, some scholars believed that rock art research in China was mainly based on art history. "Rock art research in China used to be dominated by the paradigm of art history before the 21st century. While, in the last twenty years, a new trend for the utilization of archaeological methods such as typology and stratigraphy has appeared and keeps developing, and archaeologists have also stepped into the field of rock art studies. " (Chao, 2022) It is inconsistent with the actual situation of Chinese rock art research. Throughout the whole academic history, the archaeological method has always been the most important one. It is reflected in both the published papers and books. Experts on early rock art research in China, such as Gai Shanlin, Wang Ningsheng, Qin Shengmin, Qin Cailuan, etc., all had archaeological backgrounds, and the rock art research paradigm they established was also a common one followed by the Chinese academic community. Even scholars from other disciplines involved in rock art research will heavily draw on the achievements of archaeologists. Therefore, there is no scientific basis for the view that rock art research in China before the 21st century has been dominated by the art history paradigm.

### 3.2 Preliminary Establishment of Rock Art Zones, Systems and Types

In 1989, Chen Zhaofu initially divided Chinese rock arts into two major systems, the north and the south. At the same time, he pointed out that besides the two major systems, several rock art sites in the southeastern coastal areas including Lianyungang in Jiangsu Province, Hua'an Xianzitan in Fujian Province, Wanshan in Taiwan Province, and Hong Kong had their systems, and which shared abstract, imaginative, and symbolic characteristics. In general, the rock arts in the south are painted in red, while those in the north are all made by grinding, and the rock arts in the southeastern coastal areas are made in the same way (Chen, 1989). Subsequently, he further divided the southern system into the southwest system and the southeast system and divided the entire Chinese rock arts into three systems. He thought that China's rock arts could be divided into three systems based on their distribution, content, and style. The rock arts of the northern system are mainly distributed in Inner Mongolia, Xinjiang, Ningxia, Gansu Province, Qinghai Province, and other places. The content is mainly about animals, the style is realistic, and most of them are petroglyphs. The rock arts of the southwestern system are mainly distributed in Yunnan Province, Guangxi Province, Guizhou Province, and Sichuan Province. Their content is mainly about human activities. The rock arts of the Southeast system are distributed in Jiangsu Province, Fujian Province, Guangdong Province, Taiwan Province, Hong Kong, and Macao, and their contents are mainly abstract patterns and all of them are produced by pecking and carving (Chen, 1991). Gai Shanlin divided Chinese rock arts into the following four systems. First, Heilongjiang Province, Inner Mongolia, Shanxi Province, and Ningxia; Second, Gansu Province, Qinghai Province, Xinjiang and Tibet; Third, Yunnan Province, Guizhou Province, Sichuan Province,

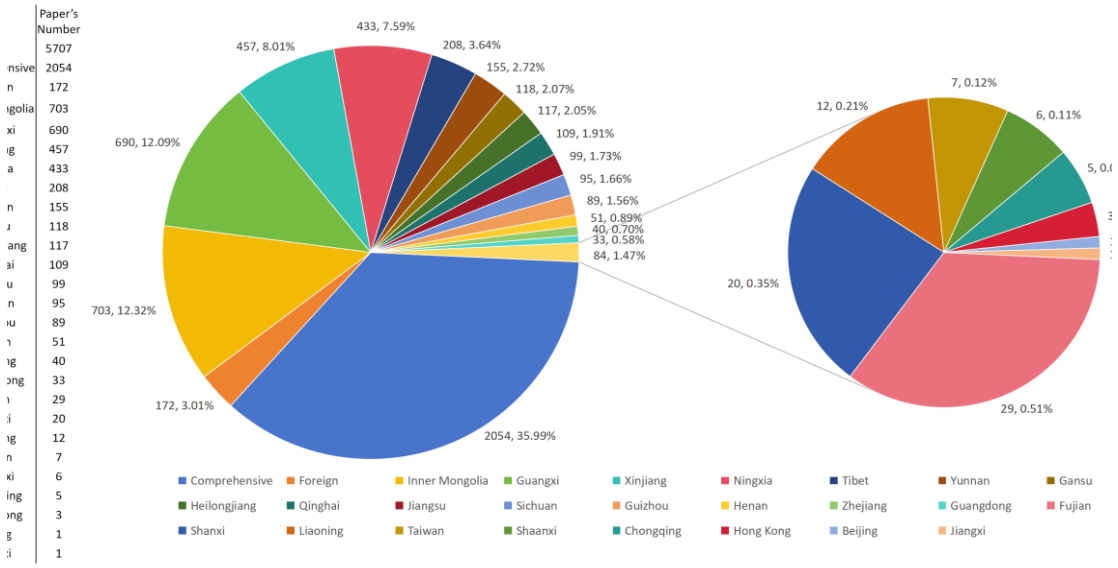


**Figure 1:** Statistical Table of Rock Art Papers Classified by Region

and Guangxi Province; Fourth, Jiangsu Province, Fujian Province, Taiwan Province, Guangdong Province and Hong Kong. They respectively correspond to different natural geographical environments such as the Northeast Agricultural and Forestry Region, the Northern Steppe Region, the Southwest Mountain Region, and the Southeast Seaside Region. (Gai, 1995)

In addition, some other scholars also try to solve this problem. Gong Tianfu and Zhang Yasha initially adopted Chen Zhaofu's viewpoint and divided Chinese rock arts into three systems. However, with the emergence of new materials and further research, Zhang Yasha later divided Chinese rock art into four systems (Zhang, 2021). After entering the 21st century, as more and more rock arts are discovered, their zoning and classification are becoming more and more precise and detailed. Tang Huisheng believes that Chinese rock arts can currently be divided into seven systems based on their geographical location, era, production technology, and stylistic characteristics: I. Late Pleistocene rock paintings in the Jinsha River Basin, Yunnan Province; II. Cupules centered around the Central Plains region; III. Animal petroglyphs of northern steppe; IV. Rock paintings from the Northern Bronze Age; V. Human faces centered around the Hetao area; VI. Squatting figures centered around Huashan in Zuojiang, Guangxi; VII. Rock paintings from the historical period of the Southwest region (Note 2).

The above-mentioned author's divisions are undoubtedly correct in general and have fully taken into account the distribution characteristics of Chinese rock arts. However, it should be pointed out that different scholars still have different grasp of details. In addition, there may be some rock art sites that require separate zoning. For example, the Great Khingan Mountains rock arts are located in the northeast region of China, spanning the two provinces of Inner Mongolia and Heilongjiang. According to typology, the rock arts here can be classified into the rock painting system, but in reality, the vast majority of rock arts in northern China are petroglyphs. From a quantitative perspective, the rock arts of the Greater Khingan Mountains cannot be classified separately into one system. However, if we expand our perspective to neighboring countries and regions, we will find that this type of rock art is also distributed in eastern Siberia and Mongolia and is geographically connected. Besides the same painting methods, there are also many similarities in the themes, so they can be separately classified into a system. However, in the author's above-mentioned divisions, the petroglyphs in the Greater Khingan Mountains region are not listed separately. Therefore, there is still room for further exploration of the typological classification of Chinese rock arts.

### 3.3 Rock Art Science Gradually Adopted by Chinese Scholars

The content of rock art science is very extensive, it provides a new perspective for rock art research. Robert G. Bednarik provides a comprehensive introduction to its connotation and extension in his book "*Rock Art Science: The Scientific Study of Palaeoart*" (Bednarik, 2007). Tang Huisheng was one of the earliest scholars to introduce rock art science to China. The application of rock art science in China is mainly reflected in three aspects: scientific dating, digital recording, and technological protection. Among them, the main achievements are concentrated in scientific dating. The scientific dating of rock art includes two application scenarios: rock paintings and petroglyphs. Now, we will introduce them separately.

#### *3.3.1 Scientific Dating of Rock Arts*

The most widely used scientific dating methods are the $^{14}C$ and U-series. However, both of them are effective for rock paintings. As for the petroglyphs, currently, the most widely used method is the microerosion method introduced by Robert G. Bednarik.

U-series dating of the Zuojiang Huashan rock art in Guangxi Province has been mainly carried out three times. In 2013, Benjamin Smith and Maxime Aubert from the University of Western Australia and the University of Wollongong collected 12 calcium carbonate samples in direct association with rock arts at Ningming Huashan Mountain. These 12 samples were sectioned into 24 subsamples some overlying and others underlying the rock art. It appears that the Ningming Huashan rock art was made within a relatively restricted time of about 1000 years between 1920 years ago and 940 years ago (Smith and Aubert, 2013). In 2014, to determine the precise age of the rock art at Mt. Huashan, Shao Qingfeng from the Key Laboratory of Virtual Geographic Environment, Nanjing Normal University and others collected 56 secondary carbonate layers above and below the paintings, and studied their mineralogy, oxygen, and carbon isotopic compositions and dated by the $^{230}Th/U$ method. The $^{230}Th/U$ dating results demonstrate that the ages of the rock paintings can be bracketed between 1856 ±16 and 1728±41 yr BP corresponding to the middle to the end of the Eastern Han dynasty (Shao et al., 2017). In addition, in September 2016, Zhao Jianxin from the University of Queensland in Australia and others visited the rock art sites in Ningming, Longzhou, Jiangzhou, Fusui, and other places in Chongzuo City, and collected more than 20 secondary carbonate layers. However, due to various reasons, the dating results have not yet been announced.

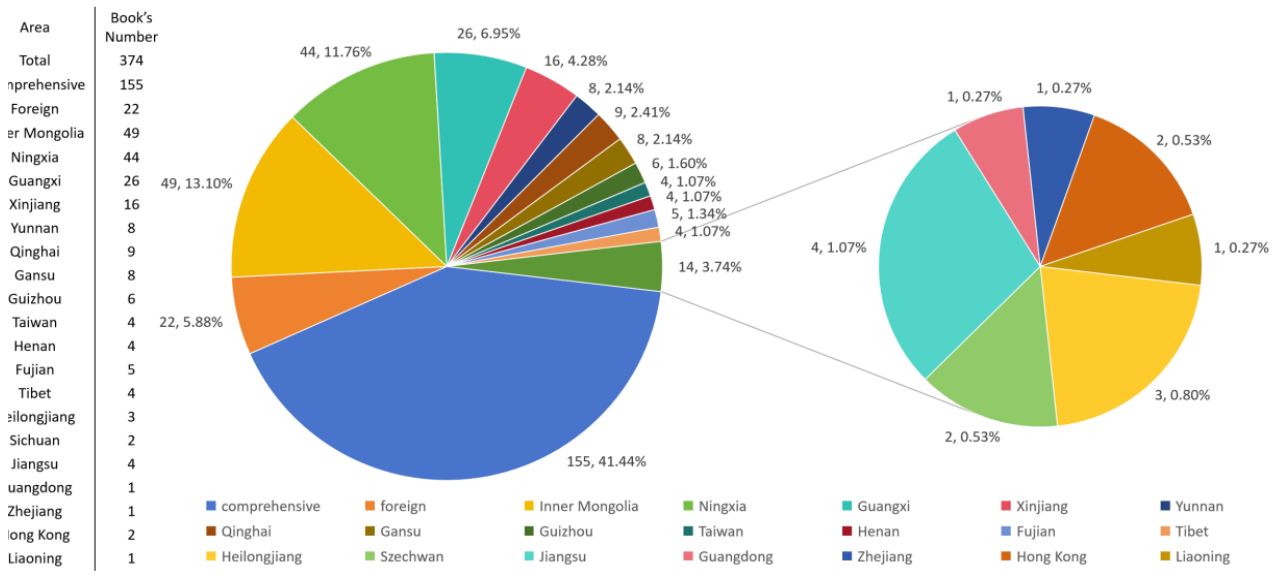


**Figure 2:** Statistical table of rock art books classified by region

The U-series dating of Yunnan rock arts mainly consists of four times. In 2012, Australian scholars Paul S. C. Taçon and others collaborated with the Yunnan Institute of Cultural Relics and Archaeology to conduct a U-series dating on the rock paintings in Baiyun Bay, Jinsha River. They found that a large painted deer head was dated to between 5738 and 2050 years. This painting and underlying flowstone are superimposed on older paintings that suggest the older paintings are at least 3400 years old (Taçon et al., 2012). In 2023, Yanuo Jiao and others used the U–series method to advance its age to 7090-8930 years ago (Jiao et al., 2023).

In 2021, Shao Qingfeng and others carried out U–series and AMS $^{14}C$ dating of the carbonate accretions associated with the Cangyuan rock arts at eight sites. Among them, 25 samples were overlying pigment and 14 samples were underlying pigment. They believed that the combination of all of the reliable U–series dates enable us to constrain the time interval of the main rock art phase to ~3800–2700 yr BP, which is coeval with the regional late Neolithic culture (Shao et al., 2021). In 2022, Yunnan Institute of Cultural Relics and Archaeology collaborated with Nanjing Normal University, Wuhan University, and other institutions to use U-series to date the Wanrendong Cave in Tiger Leaping Gorge, Jinsha River can be precisely constrained: ~13,000–13,580 yr B.P., ~10,540–10,830 yr B.P., and ~8370–8700 yr B.P, and these rock arts were created by Paleolithic hunter-gatherers (Wu et al., 2022). This is the earliest rock art site that was discovered in China.

The microerosion method was initially applied in the petroglyphs of Lake Onega in Russia in the early 1990s, and subsequently promoted in multiple countries worldwide. In the late 1990s, Prof. Tang Huisheng was the first in China to use this method to date the petroglyphs in Qinghai Province, China. In 2005, he conducted microerosion dating work on the Jiangjunya petroglyphs in Lianyungang, Jiangsu Province. In recent years, Bednarik has collaborated with Chinese scholars to further carry out large-scale micro erosion dating work in Henan Province, Lianyungang, Ningxia, and other places (Tang et al., 2017). In addition, some other scholars also tried to use this method to date Chinese rock art.

### *3.3.2 The Technological Protection of Rock Arts is Valued*

The technological protection is also applied to Zuojiang Huashan rock art. Taking the famous Ningming Huashan rock art as an example, they have been affected by various diseases such as dangerous rock masses, cracks, corrosion, weathering, flaking, stalactite deposition, animals, plants, and micro-organism diseases due to the influence of geological structure and natural environment factors. Among them, weathering and flaking are the two most serious diseases that can occur at any time.

The primary task is to reinforce and repair the cracked rock bodies where the rock art is located. To this end, the Guangxi Cultural Department commissioned the Chinese Academy of Cultural Heritage and Tongji University, Shanghai, etc to use Natural Hydraulic Lime as a repair material to reinforce Ningming Huashan Rock Art. Natural Hydraulic Lime (NHL) is the chosen reinforcement material with its unique character. At first, it produces a water-solidified process with $H_2O_3$ and then it slowly produces carbonation solidified process with $CO_2$. It can adjust its state by itself in the solidified carbonation process. The solidified body has a similar coefficient of thermal expansion to limestone moderate mechanical strength and a low content of soluble salt, and it cannot produce derivative damage in the solidified process. The NHL is appropriate for the requirements of Huashan rock painting's reinforcing and protection. After a series of laboratory tests of material performance and in-situ experiments of consolidation effect and technological process, reinforced material fitting for crack reinforcement is established. The cracks have been separated into several types and consolidated in different ways. For different types of cracking blocks, different repair and reinforcement techniques and material ratios are adopted. At last, the result of the reinforcement is evaluated by Infrared Imaging Technology (Wang et al, 2013).

In addition, digitized records began to be used in rock art research. Yang Qingping and others once made an experiment that took the rock arts of Chenxiangjiao, Chaochuantou, Mianjiang Huashan, and Ningming Huashan in the Zuojiang River area as research objects, used the oblique photography technique, object photogrammetry technique, panoramic technique, and hyperspectral technique to conduct experimental research on data acquisition of the above rock art based on different environments and parameters, and obtained a large amount of experimental data (Yang, 2023).

## 4. MAIN ISSUES FACING THE DEVELOPMENT OF CHINESE ROCK ART DISCIPLINE

The development of the Chinese rock art discipline has achieved numerous accomplishments but also encountered several challenges, primarily manifested in the following three aspects.

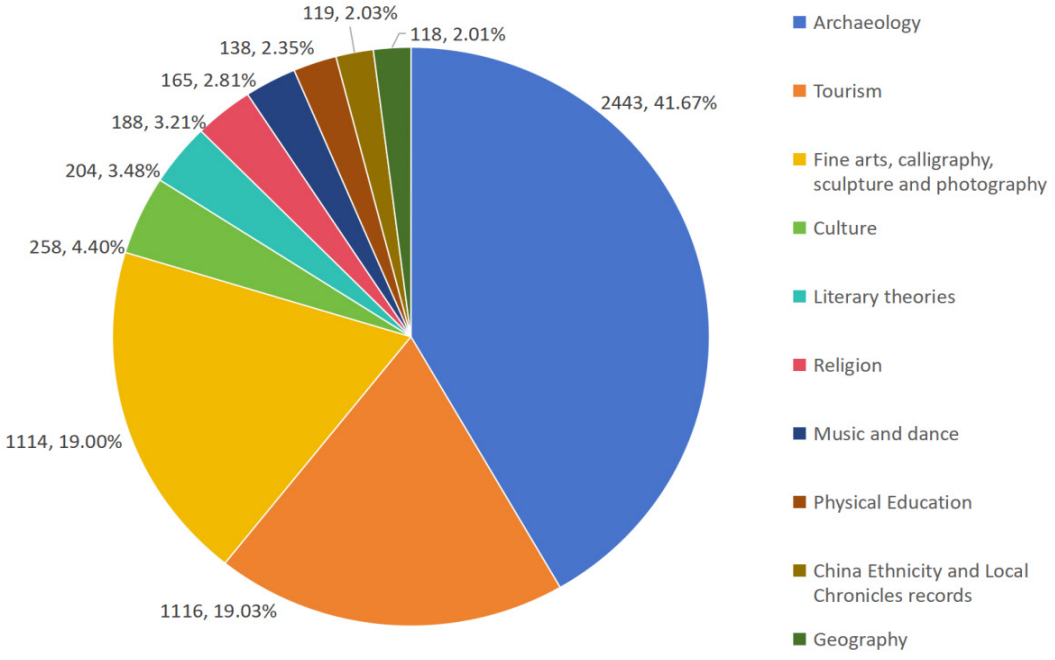


**Figure 3:** Statistical table of rock art papers classified by discipline

First, Research Methods were limited. Despite the abundance of literature on Chinese rock art, the methodologies employed appear relatively homogeneous, primarily drawing from the fields of art, archaeology, and ethnology. There's a scarcity of research outcomes utilizing new technologies and methods. For instance, international scholars often employ extensive mathematical and statistical analyses, which are less evident in the works of Chinese scholars. Additionally, there's a discrepancy in archaeological methodologies between domestic and foreign scholars. While Chinese scholars focus more on typological analysis, foreign scholars have begun integrating rock art into the dynamic evolution of archaeological cultures (Ponomareva, 2021). In addition, there is a lack of rock art scholars with an international perspective, and they are not familiar with new international technologies and methods. For example, international analysis of painted petroglyphs generally uses DStretch software to enhance the color of the image to distinguish different levels of petroglyphs. However, this software is only used by individual scholars in China. Another consequence of the lack of international vision is relatively low international participation. Taking the study of Altai petroglyphs as an example, there are a large number of petroglyphs in the Altai region, and they are widely distributed in China, Russia, Mongolia, and Kazakhstan. Among them, the research results on the Mongolian Altai petroglyphs are the most significant. This is mainly due to the Mongolian Altai rock art research project that has lasted for more than ten years and has been jointly participated by scholars from Russia, the United States, Mongolia, France, Japan, South Korea, and other countries. However, there are very few Chinese researchers near Mongolia. In recent years, this situation has changed. For example, Tergenbayar of the Inner Mongolia Museum studied for a doctorate at the National University of Mongolia and chose the petroglyphs in the Altai region for research, and achieved several results. But this attempt is still very preliminary. As for how to participate in rock art research in surrounding countries and regions, Mr. Song Yaoliang has partially proposed a solution. He summarized the research process of Chinese petroglyphs into three stages: I. A comprehensive field investigation of Chinese petroglyphs; II. In-depth research on a specific symbol system in Chinese petroglyphs; III. Integrating a specific symbol system in Chinese petroglyphs into the larger category of world rock art, subject to international and regional investigation and research."(Song, 1993) This still has important guiding significance for our rock art research today.

Second, the positioning of the Chinese rock art discipline is unclear and it is in a marginalized position in China's academic world. The Chinese archaeological community rejects petroglyphs mainly because they have no stratigraphy and do not conform to the paradigm of traditional archaeological research. The art world also rejects petroglyphs. Most art historians believe that petroglyphs do not belong to the category of art research, but belong to the category of ancient culture. Even some art doctoral students in universities use petroglyphs as a topic and find it difficult to pass. This is the cognitive confusion caused by unclear subject affiliation. Frankly speaking, in Chinese academic circles, many people are interested in petroglyphs, but fewer people know how to study them. The articles they wrote could not be published in high-level journals, which caused a large number of young scholars in the subject of rock art to turn to easier research fields. This resulted in a serious problem of talent shortage in rock art research, and at the same time, it also caused a serious problem in Chinese rock art. There is a lack of sustained, long-term research plans.

Third, the advantages of natural science have not been fully utilized. The participation of natural science has played an irreplaceable role in the dating, recording, and protection of Chinese petroglyphs, but its limitations are also obvious. Chinese scholars pay attention to the application of scientific and technological dating methods in the study of petroglyphs, mainly because they want to clarify the age of petroglyphs, but the development of the rock art discipline itself is not their focus. As a dating expert, the authors not interested in the issue of petroglyphs themselves. For example, for uranium series sampling, dozens of samples were collected, which tells us that the petroglyphs have such an age range, but we don't know exactly how this change occurred. Without the participation of petroglyphs, it is difficult for us to conduct a comprehensive analysis of the sampling points. On this basis, we can discuss the development and evolution of rock art production technology, style characteristics, cultural connotations, etc., and thus summarize the development of rock art in this region. Some rules came out. The current situation is that after the dating is completed, the research on rock art in this area is also interrupted, making it difficult to carry out further in-depth analysis, resulting in the stagnation of rock art research. Therefore, dating experts must form a team with rock art scholars to work together and formulate long-term research plans. Dating experts are responsible for sampling and dating, and rock art experts should follow up on this basis to analyze and maximize the benefits of dating results.

## 5. PURPOSE OF ESTABLISHING THE JOURNAL OF ROCK ART AND ITS OBJECTIVES

*Journal of Rock Art*, as a sub-journal of *Rock Art Research*, will strictly follow the purpose of the parent journal and implement the scientific principles of rock art into the entire process of rock art research. In his book *Rock Art Science*, Robert proposed a set of rock art research principles, which standardized all aspects of rock art research and had an important impact on rock art research around the world (Bednarik, 2007). However, in China, this knowledge is still fragmented, and there are even fewer rock art scholars with relevant knowledge. If a unified rock art discipline system is to be established, specialized theories, techniques, and methods must govern the intersection of multiple disciplines. The founding of the *Journal of Rock Art* was largely intended to solve such a problem. Through specific guidance, it attracts scholars to focus on the scientific aspects of rock arts; at the same time, it also takes into account research in other humanities and social sciences, thereby improving the overall research level.

We believe that rock art research aims to cultivate rock art scientists with scientific thoughts, instead of pure rock art scientists. The ultimate goal is to find its development logic and the correlation between images from the ever-changing rock art images. As a rock art scientist, he may pay more attention to the age of rock art, pigment composition, technological protection, etc., but will largely ignore the cultural information behind the rock art. Rock arts are a cultural phenomenon and contain rich cultural information. After solving the issue of their age, we must pay attention to why people made them and what kind of concepts they reflected. This is something that pure natural scientists cannot do. Therefore, rock arts need to be studied scientifically, but rock arts are by no means simply equivalent to science. In our opinion, various disciplines occupy an equally important position in rock art research, but attention should be paid to the division of different discipline levels. Taking the Zuojiang Huashan rock art as an example, archeology is more about establishing the social environment in which the rock arts exist. The rock arts may be related to a certain archaeological culture, but further proof is needed. The research methods of art history are equally important, and the classification research of rock arts with the same style and the grouping research of a large picture are of great significance. There are four painting methods in Zuojiang Huashan rock art. The different painting methods not only indicate different painting traditions but may also imply differences in time. In addition, from an architectural point of view, the rock arts are all drawn on rock faces that slope toward the river. From an acoustic point of view, these places have a good sound concentration effect. Combined with the numerous bronze drum images in rock arts (including images of people playing drums), and going back to the relevant literature records from the Warring States Period to the Eastern Han Dynasty, we can sort out these scenes. Cultural significance; combined with archaeological, ethnological, and philological materials, we can even further sort out the inheritance of these images today. From a linguistic perspective, the rock arts in different regions of Guangxi, Yunnan, Thailand, and Laos have similar names and meanings, which seems to indicate that these rock arts are cultural heritage left by the same ethnic group. Work like this is also very important.

Generally speaking, the *Journal of Rock Art* focuses on the progress of Chinese rock art research and also accepts research on rock art from surrounding countries and regions to enhance understanding between different cultures in the region. A journal must first adhere to strict academic standards; in addition, it must have a certain degree of leadership. This means that the editor-in-chief of the publication must have a cutting-edge academic vision, clarify the purpose of the

publication, and attract authors to use scientific methods to conduct rock art research by setting up relevant columns. Previously, most Chinese scholars and research institutions worked alone and lacked understanding of the work of other countries and even their colleagues. As a result, various research methods and terminology systems were created, which was very detrimental to the construction of the rock art discipline system. An important goal of the establishment of this journal is first to standardize the terminology system and place Chinese rock art in the discourse system of world rock art research for research and discussion. At present, the subject of rock art is still in development and lacks unified standards. We must not only meet common standards but also develop our standard system based on the conditions of Chinese rock art.

## 6. CONCLUSION

Since Professor Huang Zhongqin inspected the Xianzitan rock arts in Hua'an, Fujian in 1915, the history of research on Chinese rock arts has exceeded a hundred years. After the efforts of several generations of rock art scholars, the survey and registration of basic information on major rock art sites in China were initially completed. On this basis, a series of studies have been carried out, and the regions, systems, and types of Chinese rock art have been initially established. At the same time, the concept of "Rock Art" has attracted increasing academic attention. As an important part of prehistoric research, rock art is at the center of the intersection of multiple disciplines. How to integrate various disciplines organically and logically to jointly serve the cause of rock art research is a very important issue that requires the joint efforts of experts from various disciplines. The one who plays the core role is undoubtedly the rock art scientist. Generally speaking, the concept of "Rock Art" not only emphasizes the close relationship between rock art and other related disciplines but also emphasizes its independence. The interdisciplinary nature of "Rock Art" determines that specialized theories, techniques, and methods must be constructed to guide the intersection of multiple disciplines. This is also the main purpose of establishing a journal like the *Journal of Rock Art.*

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## ANNOTATION

Note 1: The total number of papers classified by subject is 5863 from CNKI, which is because some rock arts involve multiple subjects. Therefore, there is some duplication in CNKI's statistics, but it does not affect the overall analysis of this paper.

Note 2: This classification method was provided by Professor Tang Huisheng, unpublished.

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