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REVIEW ARTICLE

A QUANTITATIVE ANALYSIS ON THE FUNDED ARTICLES OF CHINESE ROCK ART RESEARCH

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ABSTRACT

To sort out the development process of Chinese rock art research, the funded papers containing the “岩画 (Rock Art)” by title are collected and summarized in the CNKI’s “China Knowledge Resources Database” and the 4 core journals in the “China Academic Journals Online Publishing Database” (CAJD). As of September 2024, 413 funded papers of Chinese rock art research are selected that supported by 258 various fund projects, including 75 national projects. The first funded paper was published in 1990, later than the unfunded one in 1930 in China. The quantitative analysis results of funded papers show that Chinese rock art research can be roughly divided into the initial stage from 2001 to 2008, the development stage from 2009 to 2013, and the steady development stage from 2014 to the present. Mostly projects had 1 paper published, and the national and ministerial projects had increased number of papers in the four Chinese core databases.

KEYWORDS

Chinese Rock Art Research, The Funded Articles, The Chinese Core Journal, Quantitative Analysis

1. INTRODUCTION

Rock art are widely distributed in China, and a considerable number of the Chinese research results on rock art have been accumulated since the 20th century. According to the Chinese Third Cultural Relics Census (2007-2009), there are at least more than 1300 rock art sites founded, which are distributed in more than 120 counties and districts across 28 provincial regions in China (Wang, 2023). As of September 2018, there have been more than 2800 papers, books and translations on Chinese ancient rock art published in China (Tian, 2019).

Chinese rock art research can be divided into two categories: archaeological discoveries reports such as local historical documents, and research results such as monographs and papers presented by comprehensive and regional forms (Tian, 2019; Wang, 2023). In recent years, these review articles of rock art can be roughly divided into three types as sorting out the research contents according to the discovery processes of rock art (Xiao, 2015; Yang, 2023), sorting out the results according to traditional or theoretical researches, researches applied the rock art studies, and scientific and technological researches (Tong, 2023), and sorting out the relevant research results according to regional distribution, subject distribution, scientific dating, and

technical protection (Xiao Bo, 2024). These studies have shown multi-angle and multi-disciplinary characteristics which provide reference for the overall understanding on the research process of Chinese rock art.

Great importance is attached and more funds are provided to the rock art research by various research institutions and governments at all levels in China. Based on the published journal papers, academic journal papers, characteristic journal papers, and conference papers directly related to rock art in China, this study plans to statistically analyze the funding of Chinese rock art research and the output of Chinese papers, so as to sort out the development history of Chinese rock art research.

2. DATA RESOURCES

2.1 CNKI's Databases Including “Fund”

China National Knowledge Infrastructure (CNKI) is a Chinese leading knowledge dissemination media and authoritative digital publishing platform, providing products and services related to Chinese natural sciences, social sciences, art and humanities literature. Its “China Knowledge Resources Database” consists of the China Academic Journals Online Publishing Database (CAJD), China Important Conference Papers

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Full-text Database (CPCD), China Academic Journals Full-text Database (CCJD), and Chinese Characteristics Periodicals Full-text Database (CJFD), providing search functions such as fund projects.

This study searches for papers containing “岩画(Rock Art)” by title in the CNKI’s “China Knowledge Resources Database”, and exports two types of documents from these four databases as CAJD, CPCD, CCJD and CJFD. One is the search report, the other is the Excel customized and contained the field of “Fund-基金”. Then these four custom-exported sheets are combined into one data table, namely “Excel 1 Used to Analyze the Funded Papers on Chinese Rock Art Research”.

2.2 The Four Chinese Core Journal Databases

The “China Academic Journals Online Publishing Database” (CAJD) containing “岩画(Rock Art)” by title includes 5 categories of Chinese journals which had domestic and international serial numbers registered and publicly issued by the Chinese National Press and Publication Administration. They are as followed as the “Overview of Key Items of Chinese Core Journals” (北核), Chinese Social Science Citation Index(CSSCI), Chinese Science Citation Database(CSCD), and the “Comprehensive Evaluation Index System of Chinese Humanities and Social Sciences Journals”(AMI), and general periodicals that they not included in the above four core journals list.

The “Overview of Key Items of Chinese Core Journals” issued by Peking University Library, is the research result of the Chinese core journal evaluation research project involving many journal workers and experts from relevant units at Peking University Library and more than a dozen university libraries in Beijing. They select core journals from the officially published Chinese journals using a sub-disciplinary evaluation method that combines quantitative and qualitative methods. It has been published in 1992, 1996, 2000, 2004, 2008, 2011, 2014, 2017, 2020, and 2023 editions, which edition was continuously adjusted according to actual conditions. It mainly provides a reference for the library and information department to purchase, collect, guide the Chinese core journals.

Chinese Social Sciences Citation Index (CSSCI) is a humanities and social sciences citation database invested and constructed by Institute for Chinese Social Sciences Research and Assessment of Nanjing University. It is used to retrieve the inclusion and citations of papers in the field of humanities and social sciences in Chinese.

Chinese Science Citation Database (CSCD) is issued by National Science Library of Chinese Academy of Science since 1989. It collects more than a thousand Chinese and English scientific and technological core journals and outstanding journals published in the fields of mathematics, physics, chemistry, astronomy, earth science, biology, agricultural and forestry science, medicine and health, engineering technology and environmental science in China. In addition to the general search function, the system also provides relationship-citation index for users to find out the details of the citations of a certain scientific and technological document from millions of citations, which is important for cross-disciplinary and new disciplines.

AMI is the “Comprehensive Evaluation Index System of Chinese Humanities and Social Sciences Journals” issued by the Chinese Academy of Social Sciences Evaluation, which was officially approved to establish in July 2017 by the State Commission Office of Public Sectors Reform (SCOPSR). AMI refers to the three first-level evaluation indicators of the system: Attraction Power, Management Power, and Impact Power. AMI officially released the “AMI Comprehensive Evaluation Report of Chinese Humanities and Social Sciences Journals (2022)” and “AMI Comprehensive Evaluation Report of Chinese Humanities and Social Sciences Academic Collection (2022)” on March 17, 2023.

This study respectively searched for papers containing “岩画(rock art)” by title in above four core databases as “Overview of Key Items of Chinese Core Journals” by Peking University, CSSCI, CSCD and AMI, and summarized them into the “Excel 2 collected core journals items on Chinese Rock Art Research”.

3. DATA PROCESSING

3.1 Whether the Papers Supported by Fund Projects

“Excel 1 Used to Analyze the Funded Papers on Chinese Rock Art Research” are filtered one by one according to the “Fund-基金” field. “1” is given to the paper data funded by fund project; “0” is recorded to the paper data without fund project. Thus, whether the paper supported by fund project can be filtered out by this column of data.

3.2 Fund Project Information Extracting from the Papers

One funded paper on Chinese rock art research, may be supported by only one project or more. If the paper supported by only one project, “1” is given to the paper data funded by fund project. If the paper supported by multiple projects, the paper data will be added into multiple rows on the number of fund projects (i.e., using dichotomy as multiple choice questions, Xue, 2017). Thus, the paper funded by multiple fund projects will be divided into multiple paper data, and each fund project will correspond to one piece of paper information.

3.3 Fund Project Information Supplemented and Corrected with other information

The information of each fund project should include funding organization, project name, project approval number, project approval time, project host and funding amount. The fund project information extracted from the paper annotations may be incomplete due to the different completeness of the fund project information required to be marked by each journal.

First of all, the fund project information may be supplemented each other according to the individual information of the fund projects extracted from the funded papers. Examples to illustrate are as follows: the same project approval number is used to supplement the project name; the same project name of the same project category is used to supplement the project approval number.

Secondly, the fund project information may be supplemented and corrected one by one according to the annual project establishment notice of the funding organizations searched. Such notice can be used from National Office for Philosophy and Social Sciences, National Natural Science Foundation of China, Ministry of Culture and Tourism of the People’s Republic of China, Ministry of Education of the People’s Republic of China, National Ethnic Affairs Commission of the People’s Republic of China, and so on.

Thirdly, the fund project information may be supplemented by other ways, such as CNKI, Science.cn, the author’s introduction of the website, etc. For example: supplement and correct the information of the project host by author unit introduction to the official website of the author’s college.

3.4 Fund Project Information Classified and Coded

According to the funding organizations, the various fund projects are classified into various departments at all levels in China as national level, ministerial level, provincial level, and others. These can be coded and assigned as 1, 2, 3, and 4 respectively. Among them, national-level fund projects are mainly supported by the National Office for Philosophy and Social Sciences, National Natural Science Foundation of China, etc.; The ministerial projects are mainly supported by Ministry of Culture and Tourism of the People’s Republic of China, Ministry of Education of the People’s Republic of China, National Ethnic Affairs Commission of the People’s Republic of China, etc.; The provincial projects are mainly supported by provincial departments of philosophy and social sciences, natural science and others; Other projects mainly include municipal projects, school-level projects, etc.

3.5 Vertical Matching between Excel 1 and Excel 2

This step is mainly used to merge the two Excls from different data

resource of the funded paper according to the “Title-题名” field.

First, sort in ascending order according to the “Title-题名” field and add the fields of “Cited-北核”, “Cited-CSSCI”, “Cited-CSCD” and “Cited-AMI” in the “Excel 1 Used to Analyze the Funded Papers on Chinese Rock Art Research”.

Secondly, rename the field of “题名(Title)” as the same “Title-题名” field, sort in ascending order according to the “Title-题名” field, and respectively mark the fields of “Cited-北核”, “Cited-CSSCI”, “Cited-CSCD” and “Cited-AMI” in the “Excel 2 collected core journals items on Chinese Rock Art Research”. Then, move the Excel 2 to Excel 1.

Finally, use the “VLOOKUP” function, namely “VLOOKUP (lookup_value,table_array,col_index_num,range_lookup)” to vertically match the cited frequency of the funded papers in Excel 1.

4. ANALYSIS RESULTS

Excel and IBM SPSS Statistics 25.0 are used to conduct a quantitative analysis on the funded papers, the fund projects of Chinese rock art research.

4.1 Distribution of the Funded Papers

4.1.1 Distribution of the Funded Papers by Year

The distribution of the funded papers by year is shown in Figure 1. The first funded paper was published in 1990. According to the number of funded papers published, three stages of Chinese rock art research can be roughly summarized from 2001 to 2013. In the initial period from 2001 to 2008, a total of 13 papers were funded and accounted for 3.27% of the number of papers published from 2001 to 2023 (397 papers); During the development period from 2009 to 2013, the number of the funded papers increased rapidly every year from 8 in 2009 to 21 in 2013. The average annual number of papers published in this 5 years was 13.40%, accounting for 16.88% of the number of papers published in 2001-2023 (397 papers); In the steady development stage since 2014, the number of funded papers fluctuated between 28 and 36 each year with a total of 317 papers, with an average of 31.7 papers per 10 years, accounting for 79.85% of the number of papers published from 2001 to 2023 (397 papers).

4.1.2 Distribution of the Funded Papers by CNKI's Databases

The distribution of the funded papers by CNKI's databases is shown as Table 1. 1803 papers were obtained according to the paper title containing “岩画(Rock Art)” searching from CAJD, CPCD, CCJD and CJFD

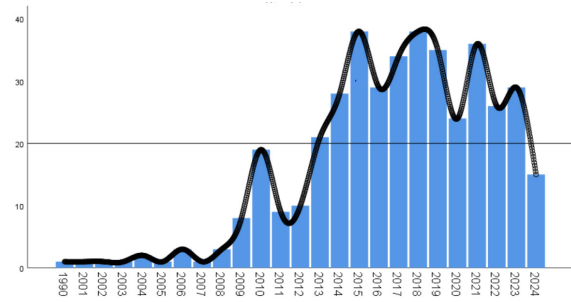


Figure 1: Distribution of the Funded Papers by Year until September 12, 2024. Among these databases, the CAJD has the largest number of papers of Chinese rock art research, accounting for 67.78%.

413 funded papers of Chinese rock art research and collected by CNKI are filtered one by one as the “Fund-基金” field, as shown in Table 1, accounting for 22.91% of the number of the four CNKI's databases. Among these databases, the CCJD has the highest proportion of funded papers of Chinese rock art research, reaching 31.15%. Then the CAJD is followed by 28.64%.

These 413 funded papers of Chinese rock art research are taken as the analysis objects of our study.

4.1.3 Distribution of the Funded Papers by 4 Core Journal Databases

Among the 413 funded papers of CNKI's Chinese rock art research, there are 286 papers published on the general periodicals accounting for 69.25%, while there are 127 papers publicly issued on the journals collected by the 4 core journal databases.

The distribution of the funded papers by the 4 core journal databases are shown in Table 2. It can be seen that 34 papers are only included in the “北核”, 18 papers are only included in the CSSCI, 72 papers are both included in the “北核” and CSSCI, 2 papers are included in the “北核”, CSSCI and AMI at the same time, and only 1 paper is included in the 4 core journal databases.

4.2 Distribution of the Fund Projects

4.2.1 The Number of the various Fund Projects Funded Papers

After supplements and corrections based on the retrievable fund project information, 566 rows data of the funded papers were obtained of Chinese rock art research until September 12, 2024. Among the 566

Table 1: Distribution of the Funded Papers by CNKI's Databases

CNKI's Data Resource of Chinese Rock Art Research	The Papers		The Funded Papers		
	Number1	Pct.1(%)	Number2	Pct.2(%)	Pct.3(%)
China Academic Journals Online Publishing Database(CAJD)	1222	67.78	350	28.64	84.75
China Important Conference Papers Full-text Database(CPCD)	43	2.38	9	20.93	2.18
China Academic Journals Full-text Database(CCJD)	61	3.38	19	31.15	4.60
Chinese Characteristics Periodicals Full-text Database(CJFD)	182	10.09	35	19.23	8.47
Total	1803	100.00	413	22.91	100.00

Notes: The update time is 24:00 on September 12, 2024.

Pct.1 refers to the paper number of each CNKI's data resource of Chinese rock art research, divided by the total number of the CNKI's “China Knowledge Resources Database” containing the key word “岩画(Rock Art)” in paper's title(1803 papers).

Pct.2 refers to the number of the funded papers divided by the paper number of each CNKI's data resource of Chinese rock art research.

Pct.3 refers to the number of the funded papers of each CNKI's data resource of Chinese rock art research, divided by the total number of the funded papers (413 papers).

rows data, 41 rows will not be further analyzed for the time being due to the incomplete information. Among the rest 525 rows data of fund project information, 247 rows are duplicate with other lines, and 8 international cooperation projects will not be analyzed due to the incomplete information. So, a total of 270 fund projects are obtained to be analyzed for the funded papers of Chinese rock art research.

Among the 270 fund projects, 75 are national-level projects, 32 are ministerial projects, 99 are provincial projects, and 64 are other projects. As shown in Figure 2.

4.2.2 The Number of the Fund Projects per Funded Paper

566 funded papers' information are extracted, supplemented and corrected from the 413 funded papers of Chinese rock art research, as shown in Table 3. Among them, 300 funded papers were supported by only one fund project, 83 papers both by 2 fund projects, 23 papers by 3 projects at the same time, and 5 papers by 4 projects, 1 paper by 5 projects, 1 paper by 6 projects in the meantime.

The paper "Agricultural Culture and Agriculture Ecological Environment in Chinese Southern Rock Paintings" by TONG Yongsheng, school of Design, Jiangnan University, Wuxi, China, published in the journal of "Agricultural History of China" in June 2016, was supported by multiple fund projects.

4.2.3 The Number of the Funded Paper Supported by the Fund Projects

Among the 270 fund projects of Chinese rock art research, 258 projects have complete project approval time information, which funded 495 papers to be published.

175 fund projects supported 1 paper to be published, 36 projects 2 papers, 19 projects 3 papers, 9 projects 4 papers, 5 projects 5 papers, 3

projects 6 papers, 1 project 7 papers, 6 projects 8 papers, and 4 projects above 10 papers as following.

The project "Research on the Protection, Development and Utilization of Rock Art Cultural Heritage in Western China" (10BM2030) funded 10 papers to be published, which was sponsored by Professor ZHANG Yasha, Minzu University of China, and approved by Ethnic Issues Research Discipline Project of the National Social Science Foundation in 2010.

The project "Research on Xinjiang Rock Art's Art Genealogy"(18EF215) funded 12 papers to be published, which was sponsored by Professor SUI Limin, Urumqi Vocational University, and approved by the Western Art Project of the National Social Science Foundation in 2018.

The project "Research on the Cultural Advantages of Rock Art Resources in Southwest China in the Construction of the Belt and Road"(16BMZ083) supported 16 papers to be published, which was sponsored by Professor HUANG Yaqi, China Three Gorges University, and approved by the National Social Science Foundation in 2016.

The project "Data Integration and Database Construction of Rock Art Cultural Heritage in Northern China"(18ZDA328) funded 19 papers to be published, which was sponsored by Professor SHU Xihong, North Minzu University, and approved by the Major Project of the National Social Science Foundation in 2018.

4.2.4 The Number of the Fund Projects by Year

The 258 fund projects of Chinese rock art research are shown in Figure 4 by the approval year.

4.2.5 The Types of the Fund Projects by Year

Table 2: Distribution of the Funded Papers by 4 Core Journal Databases

Core Journal Database Published the Chinese Rock Art Research	Papers	Core Journal Database Published the Funded Paper Of the Chinese Rock Art Research				
		1 DB	2 DBs	3 DBs	4 DBs	Total
Overview of Key Items of Chinese Core Journals(北核)	323	34	36	0.667	0.25	71
Chinese Social Science Citation Index(CSSCI)	223	18	36	0.667	0.25	55
Chinese Science Citation Database(CSCD)	10	0	0	0	0.25	0
Comprehensive Evaluation Index System of Chinese Humanities and Social Sciences Journals(AMI)	24	0	0	0.667	0.25	1
Total	—	52	72	2	1	127

Table 3: The Number of the Fund Projects per Funded Paper of Chinese Rock Art Research

The Number of Fund Project	1	2	3	4	5	6	Total (Papers)
The Number of Funded Paper (Dichotomy Method)	300	166	69	20	5	6	566
The Number of Funded Paper (Decimal Method)	300	83	23	5	1	1	413

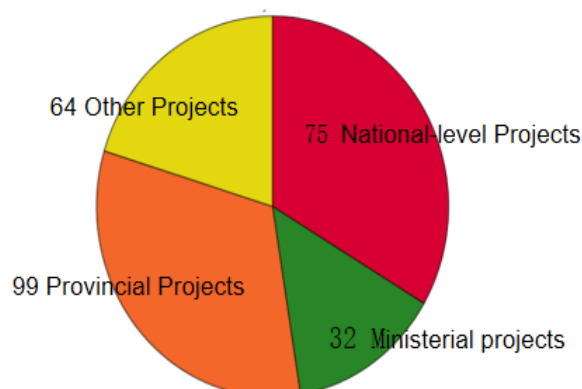


Figure 2: The Number of the various Fund Projects Funded Papers

Among the 258 fund projects that supported the Chinese rock art research, there were 75 national-level projects, 32 ministerial projects, 94 provincial projects, and 57 other projects. The categories of these fund projects are distributed according to the number of projects approved, as shown in Figure 5.

4.2.6 The Citation Frequency of Core Journal Papers of the Funded Papers

111 funded papers of Chinese rock art research were published on the core journal among the 413 papers.

The paper "Study on the characteristics and mechanisms of freeze-thaw damage of rock carrier of Helankou rock paintings under different conditions" published in the journal of "Chinese Journal of Rock Mechanics and Engineering" in June 2019, has been cited up to 30 times among the Peking University's "Overview of Key Items in Chinese Core Journals"(北核). Its first author is Professor CUI Kai from the Lanzhou University of Technology and Lanzhou University, funded by three fund projects. One project is "Research on the Degradation Process and Mechanism of Soil Sites under the Coupling of Dry, Wet and Salinization"(51208245), National Natural Science Foundation of China sponsored by Professor CUI Kai in 2012. The other project is "Research on Degradation Models and Mechanisms of Rammed Earth Sites Based on Precipitation Processes in Northwest Arid Areas"(41562015), National Natural Science Foundation of China sponsored by Professor CUI Kai in 2016. The third project is "Innovation Team Development Plan"(IRT_17R51) led by Professor Zhu Yanpeng of Lanzhou University of Technology, approved by Ministry of Education of the People's Republic of China in 2017.

The paper "A Brief Introduction to Human Face Picture on the Rock" published in the journal of "Journal of the Central University for Nationalities (Philosophy and Social Sciences Edition)" in May 2006, has been cited up to 28 times among CSSCI. Its authors are GONG Tianfu and ZHANG Yasha from Minzu University of China. This paper was the

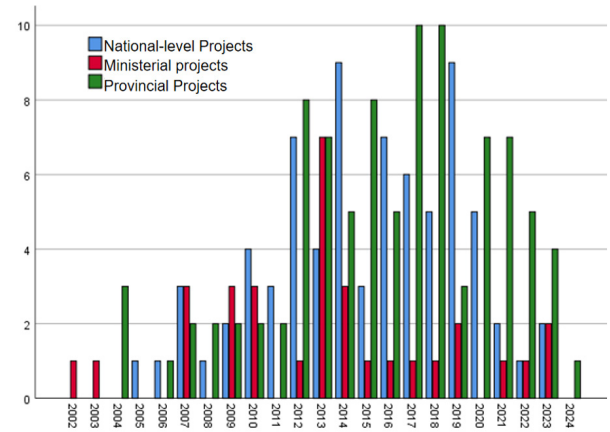


Figure 5: The Types of the Fund Projects by Year

research result of "Research on Chinese Rock Art" funded by the "211" project of Minzu University of China.

The paper "Painting in Painting' and 'Painting outside Painting': Multiple Spaces of Rock Art in the Badain Jaran Desert" published in the journal of "National Art" in April 2018, has been cited up to 30 times among CSCD. Its authors are Ph.D FENG Siwo from Jinna University and Professor WANG Yuhong from Guangdong University of Foreign Studies. This paper was the research result of "Image Language and Aesthetic Quality of Rock Paintings in Badain Jaran Desert"(15AF002) hosted by Professor WANG Yuhong, the key project supported by the National Office for Philosophy and Social Sciences in 2015.

The paper "Historical Review of Chinese Rock Art Research in Zuojiang since 1949" published in the journal of "National Art" in January 2015, has been cited superlatively among AMI. The author is XIAO Bo, a research librarian at Nanjing Normal University and Anthropology Museum of Guangxi. The paper was the research result of "Research on Squatting Humanoid Rock Art in Zuojiang, Guangxi"(13YJC850004) hosted by Professor Huang Yaqi, the Youth Fund approved by Ministry of Education of the People's Republic of China in 2013.

5. RESEARCH CONCLUSIONS AND DISCUSSIONS

To sort out the development process of Chinese rock art research, the funded papers containing the "岩画(Rock Art)" by title are collected and summarized in the CNKI's "China Knowledge Resources Database" and the 4 core journals in the "China Academic Journals Online Publishing Database" (CAJD). The fund projects' information are extracted from each funded paper on Chinese rock art research, supplemented and corrected according to the project category and project approval number, the annual project establishment notice of the funding institution, classified and coded by the approval number of each project.

As of September 2024, 413 funded papers of Chinese rock art research are selected that supported by various fund projects, 258 fund projects have complete fund project information. Among them, the number of national-level projects is about twice that of ministerial-level projects, and the total number of the two projects reaches 107, which is much larger than the number of ministerial-level and above projects obtained by searching only "岩画(Rock Art)". This may be because there are many Natural Science Fund projects that focus on "rocks" or social science fund projects related to "primitive art".

As early as 1990, the funded paper "Cultural Images on the Cliff-Inspection and Preliminary Exploration of Ancient Rock Paintings in Guanling" was published in the Journal of Guizhou University (Social Science Edition), which was supported by the Science Foundation Project of Guizhou University. The publication time of funded papers is later than that of papers without fund projects.

The quantitative analysis results of funded papers show that Chinese rock art research can be from 2001 roughly divided into the initial stage from 2001 to 2008, the development stage from 2009 to 2013, and the

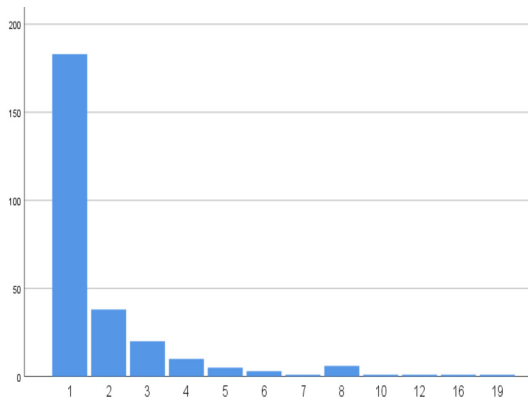


Figure 3: The Number of the Funded Paper Supported by the Fund Projects

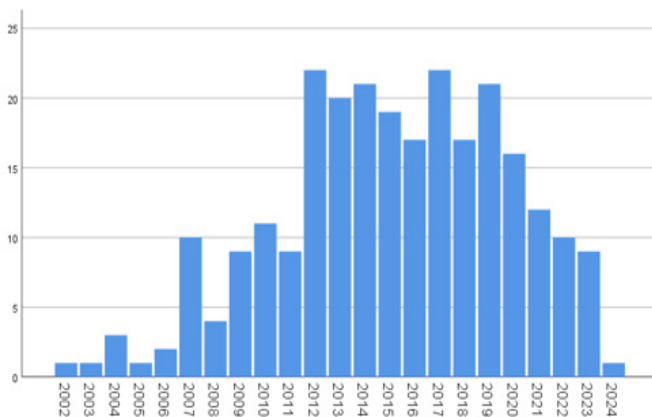


Figure 4: The Number of the Fund Projects by Year

steady development stage from 2014 to the present. The vast majority of fund projects only publish one paper of Chinese rock art research, the national and ministerial projects have a large number of documents issued, but it's worrying that the proportion of funded papers with more than 10 papers published. The number of funded papers of Chinese rock art research still has great potential to be tapped with the increase in the proportion of provincial projects approved in 2012.

Judging from the source database of Chinese rock art research, the number of funded papers collected from the China Academic Journals Online Publishing Database (CAJD) is the largest (350 papers), accounting for the 28.64% of the total number of funded papers. But the cross-analysis results with the 4 core journal databases show that it's relatively low that the number of funded papers published in the 4 core journal databases. The highest citation frequency of the 4 core journal databases is much lower than that of the related disciplines, such as archaeology, art, history, etc. The quality of Chinese rock art research needs to be improved urgently.

Only the research results of Chinese rock art research supported by various Chinese fund projects are analyzed, and whose papers are published in Chinese in this study. It does not collect research results issued and published with support from foreign fund projects, nor does it include results supported by Chinese fund projects but not published in Chinese papers. In addition, some fund projects are based on research reports, monographs and other results, but have not published Chinese journal papers, or the Chinese journals that published papers have not been included in CNKI's databases, or the project has been approved for a short time and the research results have not yet been published. The further fund projects of various research results will be paid attention by this study to be continuously improved. If any results are missed, I will apologize, and please contact the research team in time to jointly build an academic community for Chinese rock art research under the leadership of the Chinese Rock Art Society.

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