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Cultural rituality and heritage revitalization values of ancestral temple architecture painting art from the perspective of relational sociology theory

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Abstract

Recent research has primarily focused on the genealogical relationship between ancestral temple painting and its spatial carriers, highlighting a shift in perspective from artistry to symbolism to kinship. While some scholars have noted the influence of ritual culture on architectural painting, few have explored its kinship relationship with architectural carriers. By incorporating relational sociology theory, this study chronologically reviews events influencing the formation of ancestral temple ritual culture, constructs a developmental model, and conducts case studies on the ethicality of architectural painting art, thus establishing a relational sociology analysis framework. Findings: (1) Ancestral temple architectural painting exhibits the ethicality and educational value inherent in Confucian concepts; (2) Themes such as immortal life, literati and scholars, and common folk simplicity highlight the spiritual and material kinship of ancestral temple painting. The vocabulary used in titles such as "He (rapprochement-和)", "He (reunification-合)", "wealth (财)", "happiness (乐)", "blessing (福)", and "longevity (寿)" reveals a positive transmission of Confucian values; (3) The five main artistic expressions of ancestral temple painting are metaphor through objects (借物喻意), the personification of events (以人喻事), using the past to illuminate the present (借古喻今), expressing aspirations through objects (托物喻志), and pun-based symbolism (谐音寓意); (4) The decorative elements of ancestral temples correspond to the forms of their painting art, with the former extending the space of the tomb sacrificial system and the latter representing artistic inheritance. The development of ancestral temple architecture has formed dual developmental contexts centered on ritual culture and supplemented by academic dissemination, fluctuating with the status of Confucianism. The relational sociology model shows that the political aspects of ancestral temples form a sub-lineage of their ritual culture, closely linked to reforms in the educational system and transformations in building functions, further influencing architectural form and decorative art.

Keywords China ancestral temple, Architectural painting, Cultural origin, Decorative art, Ritual culture, Kinship, Relational sociology, Artistic heritage, Heritage revitalization, Cultural inheritance

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Introduction

Ancestral temples were significant sites for ancestor worship in ancient Chinese society, embodying clan culture's profound heritage and historical continuity [1]. Through kinship structures, ancestral temples are not only integral to clan heritage but also central to the formation of ritual ceremonies and ancestral hall architectural culture. Additionally, the art of ancestral temple painting reflects the unique connotations of ancestor worship culture [2]. Since the United Nations promulgated the Convention for the Safeguarding of Intangible Cultural Heritage in 2003, there has been a growing global consensus on cultural heritage protection, promoting the preservation and transmission of traditional cultural heritage worldwide [3]. In Japan, the document "ぶんかざい" [4] explicitly advocates for the protection of conventional Shinto shrine culture. Kim [5] also emphasizes incorporating Korean Shinto shrines into cultural heritage protection. The Koguryo Tombs, as a significant symbol of Korean ritual culture, were proposed for World Heritage protection in 2003 [6]. Balancing heritage and economy, traditional ceremonies like the Nguyen Dynasty ancestor worship in Vietnam are held regularly (e.g., Hue Imperial City God Temple-顺化皇城隍庙), with authorities incorporating such ritual culture into national intangible cultural heritage protection projects [7].

Ancestor worship is a critical component of traditional Chinese culture, embodying deep connotations of ancestor worship and ritual culture [8]. As spatial carriers of ritual activities, Confucian temples symbolize Confucian ethics and social structure [9]. Ancestral halls are also crucial to Confucian culture. Compared to other historical buildings, clan heritage is relatively marginalized in modern society [10]. Despite local governments' efforts to protect clan heritage, challenges remain [11]: (1) uneven resource distribution and insufficient protection funds; (2) low public participation and inadequate traditional cultural awareness; (3) imperfect laws and regulations, resulting in ineffective protection measures. Fundamentally, these issues stem from a societal lack of understanding of cultural heritage [12].

Li et al. [2] and Emerson [13] have explored how ritual art conveys and constructs kinship relations through visual content. Li et al. [14] and Rege [15] tend to focus on the social functionality of ritual art, emphasizing its role in strengthening community cohesion and fostering national identity. However, they largely overlook the complex interplay between artistic forms and social structures. Branson's [16] theory of cultural capital highlights how ritual art, as a form of symbolic capital, sustains and reinforces kinship relations within social networks. He asserts that artistic forms serve not only as a medium for cultural expression but also as a critical

tool for maintaining and reshaping social relations [17]. Hall's [18] concept of "ritual symbolic reconstruction" further posits that ritual art conveys social values and cultural identity through symbolic content, while also reflecting and influencing the transformation of social structures and spatial organization through the recombination and reinterpretation of symbols [19]. Despite these insights, current research has yet to fully elucidate the specific mechanisms by which artistic forms, across different cultural contexts, function both as a component of social capital and as a medium for reproducing kinship relations within social structures [20].

In ancestral temples, paintings serve not only as symbolic representations of kinship relations but also as vital instruments for maintaining clan cohesion. Elements such as family trees and genealogical charts not only document the historical lineage of the clan but also symbolize the prosperity and continuity of the family [21]. These paintings use visual symbols to communicate kinship relations and intergenerational continuity among clan members, thereby reinforcing collective identity within the clan. The depiction of mythical creatures like dragons, phoenixes, and qilins on the walls embodies the Confucian ideals of auspiciousness while simultaneously reflecting the hierarchical structure of ancient Chinese society [22]. These visual motifs convey social messages related to status, power, and morality, thereby reinforcing the internal hierarchy and ethical norms of the clan. Moreover, the placement of paintings within ancestral temples is closely aligned with the spatial arrangement of ritual activities. The location and content of different paintings serve to delineate functional zones and define ritual spaces within the temple [23, 24]. For example, the depiction of dragons and elephants on the walls of the sacrificial area signifies the sanctity of the space, while other paintings may be positioned at entrances or passageways to greet clan members participating in the rituals. Through such visual demarcation and signification of space, ritual culture is materialized within the physical environment, enhancing the solemnity and sanctity of ritual practices.

As a unique artistic heritage, ancestral temple painting reflects the symbolic significance of kinship and genealogy culture [25]. The kinship in ancestral temple mural art not only accurately reflects clan relations but has also ascended to the level of "genealogical identity symbolism and cultural identity" [2]. The focus areas include "ancestral temple painting decoration," "visual art's kinship," and "art heritage's architectural cultural continuity."

Li et al. [2] noted that with modernization, ancestral temple paintings have become symbols and cultural landscapes, tasked with educating the public and maintaining cultural identity. Zhang [26] highlighted that the

decorative art of Jing E Academy (菁莪书院) respects traditional Confucian teachings through its pattern combinations and decorative techniques. Kahn [27] posited that the mural art of Ma'ohi's "family-style temples" serves to foster community identity and showcase economic power. Vucetic [28] found that the art of Bodjani Monastery's old-period Colombian ancestral temple murals likely reveals the intersection of religious beliefs and local political power. Michell [29] revealed the progressive layout of mural art in Indian temples, where spatial elements like murals, sculptures, and decorative patterns create a space of religious nature. Zhou [30] interpreted Ming Dynasty official ancestral halls (宫祠), revealing the role of grey sculptures and color use in expressing genealogical ideology. Li [31] explored how family influence is artistically represented in ancestral hall imagery, uncovering that these visual elements stem from clan members' memory and reverence for ancestors, and revealing the complex connections behind the symbolism in Confucian temple architecture.

Koh and Lee [32] examined how ancestral temple murals serve the educational function of Sungkyunkwan (成均馆), analyzing the cultural continuity between the spatial layout of ancestral temple buildings and ritual ceremonies, and how mural themes strengthen community cohesion through symbolism and narrativity. Brereton [33] considered ancestral temple sacrificial activities as interdependent, manifested in shared murals that maintain the continuity of education and religious practice. Ji [34] emphasized the continuation of the ancient tomb system in traditional educational spaces, highlighting its importance in shaping clan power, and explored the symbolic meanings in tomb murals, such as ancestor worship and social status expression. Grapard [35] explored the relationship between the architecture of 22 Japanese Shinto shrines and the social concepts and ritual ideologies behind them, noting the demands of ritual culture during the Heian period, and suggesting that architectural painting reflects the social structure and religious beliefs of that time. Li et al. [11] found functional overlaps between the teaching and sacrificial functions of Song Dynasty academies, while the decorative position and content of tomb murals revealed the sociality and rituality of these functions [36].

In summary, recent research focuses on the genealogical relationship between ancestral temple painting and its spatial carriers, showing a shift from artistry to symbolism to kinship. Two academic questions arise: (1) How does genealogical culture express itself through painting in terms of artistry? (2) How does genealogical culture in ancestral temple painting manifest in different social structures in terms of kinship? Zhang et al. [12] noted that ancestral temples continue the early

tomb sacrifice system, while Li et al. [2] believed that the themes of ancestral hall murals fully reflect ritual culture. Although Li et al. [14], Miller [37], and Choi [38] have noted the influence of Chinese ritual culture on the artistic expression of ancestral temple painting, few have explored its kinship relationship with the development of ancestral temple architecture. To date, this relationship remains underexplored, which is where this study aims to contribute.

This study explores the artistic culture and heritage value of ancestral temple architectural painting from the perspective of relational sociology. The following assumptions are made in this study: the ritual culture embedded within the spatial layout of ancestral temples is primarily manifested through the ethical dimensions of their painting art. This research aims to extend the visual representation of artistic heritage into the realm of hermeneutics by establishing a kinship relationship between ancestral temples and their painting art, thereby providing a research paradigm for the application of relational sociological theory and qualitative case study methods.

Methodology

Data sources

This study's research materials are sourced from the first and second volumes of "Guangzhou Ancestral Hall Architectural Murals" published by Liu [39, 40]. These books aim to systematically organize and study the unique ancestral hall mural art in the Guangzhou region. As a distinct art form vulnerable to environmental damage, the documentation and dissemination of these murals depend on literature materials such as books. Considering cultural preservation, academic research, and educational dissemination, Liu [39, 40] meticulously documents 521 representative ancestral hall murals with illustrations, covering their origins, themes, techniques, stylistic features, and their associations with the respective ancestral halls.

To focus on the topic, this paper extracts information related to mural descriptions from the books and categorizes and lists data such as images, author information, dates, painting titles, decorative locations, and dimensions. Further classification categorizes the themes and story content of the murals into groups A and B, respectively, for preliminary coding of the initial classification. Selective coding is applied to highly similar content information (Table 1). Figure 1 shows the number of murals in groups A and B after selective coding.

Theoretical and analytical framework of relational sociology

The factors influencing the ritual culture formed by ancestral temple architecture are complex, making this

Table 1 Table of initial versus selective coding for Groups A and B

Initial encoding			Initial encoding		
Group A: Topic selection/coding			Group B: Content/coding		
Landscapes (a), Character Scene (b), Flowers & Birds (c), Portfolio Pictures (d), Bird & Beast (e), Plant (f), Flowers & Birds- Patterned (g), Flowers & Birds & Rare Birds (h), People (i), Fish & Insects (j), Scenes (k)			Aspiring life (a), Historical Allusion (b), Myths & Legends (c), Beautiful yearning (d), Good Luck (e), Harmonic Allegory (f), Strive For Prestige (g), Folk Stories (h), Legendary Stories (i), Fables (j), History People (k), Fisherman Farming (l), Character Image (m), Folklore (n), Life as a resident (o), Birds & Flowers (p)		
Selective encoding					
Code	Number	Component element	Code	Number	Component element
Scenery ①	37	a, k	Historical Allusion ⑥	183	b, g, l
Character ②	318	b, i	Legendary Story ⑦	99	c, k, h, n, j
Floral Plant ③	137	c, f	Aspiring Life ⑧	58	a, d, o
Portfolio Pictures ④	18	d, g	Auspicious Parable ⑨	176	e, f, p
Bird & Beast ⑤	11	e, h, j	Celebrity Story ⑩	5	k, m

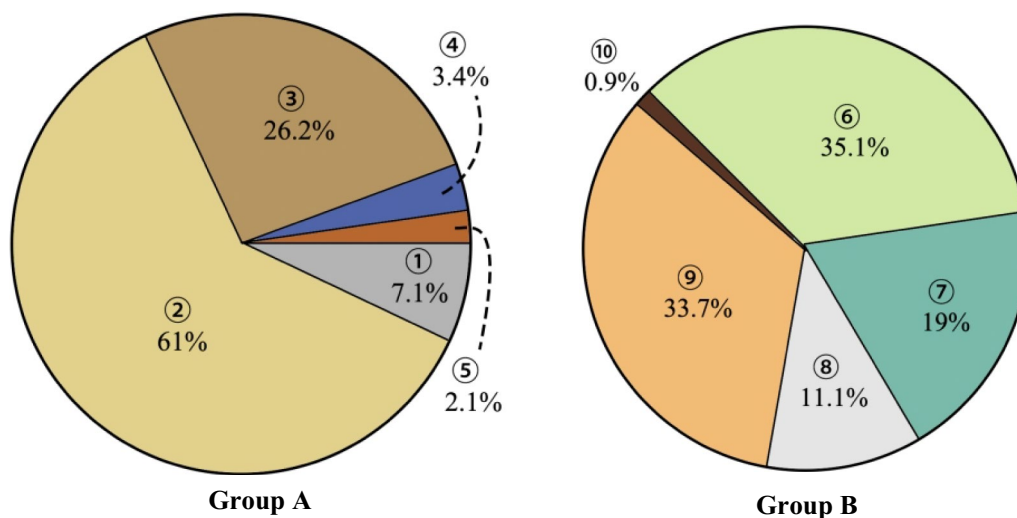


Fig. 1 Number of murals in groups A and B after selective coding

paper a multidisciplinary study integrating history, sociology, and architectural phenomenology. The theory of relational sociology and its related analytical methods are particularly suitable for this study. This theory can be traced back to the concept of "social relations" defined by Belgian sociologist Dubreuil in 1912 [41]. After the 1950s, Tilly [42] expanded relational social research to the motivational level and proposed the concepts of 'Chains of Interaction' and 'Social Movements'. He suggested that understanding social phenomena and the dynamic processes of social structure is based on three elements [42]: social ties, interaction patterns, and institutional contexts. By incorporating Historical Sociology [43] and Geopolitics [44] to describe the complexity of social

phenomena, Tilly [45] proposed a sociology research method based on interactive relationships, providing a new direction for analyzing social structures and power dynamics. Through the developments by Alimi et al. [46], Fox and Alldred [47], Denzin [48], and Murphy [49], it has evolved into a mature and widely recognized theoretical and methodological system, shifting social structure research to a dynamic relationship paradigm.

This theory views social structure as a system that can shape individual behavior and social dynamics, with the fundamental principle being that social phenomena are not static structures but constantly changing relational networks. Tilly [45] defined 'relation' as a dynamic process that can be analyzed and interpreted, embedded in

social interactions and power relationships. On a macro level, Demetriou [50] considered social relations to be interaction patterns within large social structures and institutions, while on a micro level, they refer to direct interactions and communications between individuals. Building on Tilly's theory, he proposed the social relationship analysis method of "dynamic interaction." Incorporating the frameworks of Hu [51] and Xia et al. [52], this paper constructs an analysis framework of relational sociology (Table 2a) to illustrate the core concepts of this theory [42–45].

This research framework draws on the logical diagram format of Zhang and Wang [53] (Table 2b): (1) Conduct a literature review on the selected topic, establishing the research question, gap, aim, objective, and hypothesis, thereby exploring the relationship between the ritual culture of ancestral temples and their architectural painting; (2) Match appropriate theoretical methods to the topic and construct an analytical framework; (3) Examine relevant historical events influencing the development of ancestral temple architecture from the perspective of ritual culture, detailing the time, location, participants, and actions, to investigate the motives behind these events. Based on the social impact of these events, classify them into several impact layers, code them, and construct a model of the relationships and development trajectories among events to explore the dynamic patterns of development; (4) Use ancestral temple architectural painting as a case study, analyzing its story topics and meanings in terms of visual art's ethicality and educational value, to find the relationship between these paintings and the rituals and cultural origins of the ancestral temple; (5) Establish a model of the interaction between the ancestral temple's ancestral worship culture and its architectural painting ritual art, comparing and discussing research findings with similar studies. Finally, create an academic contribution map to illustrate how this research advances the field; (6) Thoroughly discuss the research results and limitations, identify new unresolved issues, and propose effective improvements.

During the event encoding phase, this study collected over 2000 historical events related to the development of ancestral temples from the works of Wang [54], Huang [55], Kong [56, 57], and various historical archives (Appendix A—Historical event list). From this extensive dataset, 26 events were selected and encoded based on their significant impact on the evolution of ancestral temple architecture, with a focus on their temporal development. Given the continuity of Chinese ritual culture, the timeframe for these events extends back to the Qin dynasty (213 B.C.), ensuring comprehensive coverage and historical depth in the analysis. These events encompass various dimensions, including changes in

ritual systems, political transformations, economic developments, military influences, architectural functions, and ideological shifts. The impact of historical events is inherently multidimensional. Encoding each event under a single influencing layer could lead to a one-sided interpretation of the research findings. Therefore, events were encoded under one or more influencing layers based on their social impact, ensuring the scientific rigor and precision required for constructing the subsequent relational sociological model [45]. This methodological approach aids in identifying both the primary and secondary trajectories that have shaped the development of ancestral temples.

Results

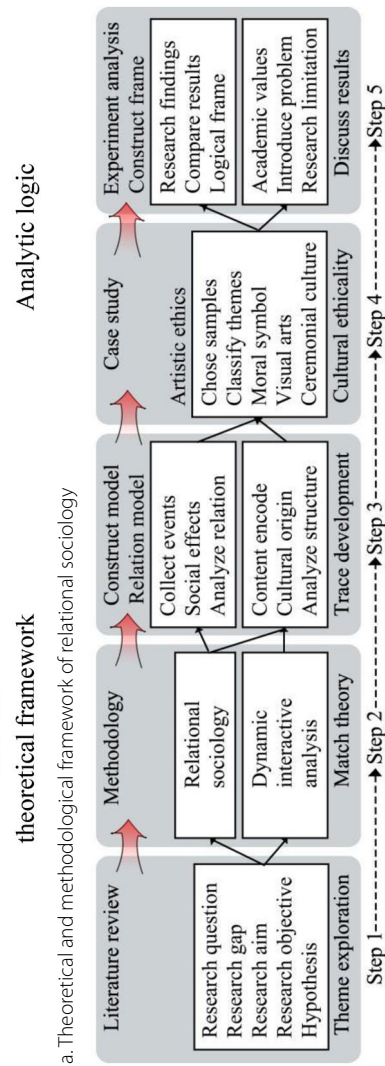
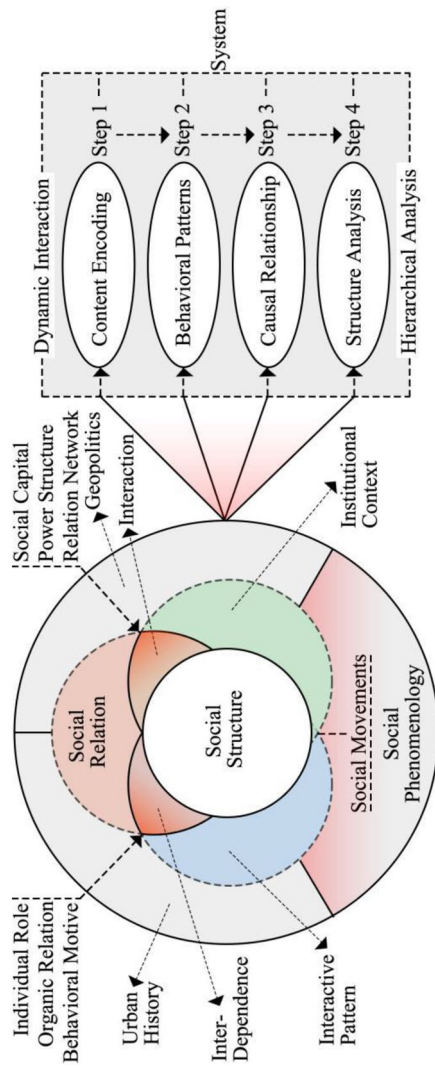
The culture of ancestral temples has developed in the dual vein of ritual culture, supplemented by scholarly communication

The reform of the ancient Chinese ritual system significantly combined patriarchal authority and consolidation of governance [2]. While Zhang et al. [12] argued that ancestral temple architecture reflected the spatial continuity of the early tomb sacrifice system, this paper posits that the architectural functions evolved with shifts in state intentions and economic development. Table 3 chronologically lists significant events from 213 B.C. to the early twenty-first century that impacted the development of ancestral temples, aiming to uncover the social logic behind the formation of their ritual culture.

Table 3 displays 26 key events influencing the cultural origin of ancestral temples and reflects the main development trajectory under the guidance of ancestor worship. The ancestral temple culture gradually shifted from deity worship during the Chu State period (223 B.C.) to ancestor worship, meeting the needs of religious rituals [39]. For example, the wall paintings in the Tomb Chamber of King Wu'an (武安王墓室) depicting generals and mythical beasts not only served to ward off evil but also enhanced the atmosphere of the sacrificial rituals through symbolic imagery [58]. By the Sui, Tang, and Song dynasties (581–1279), the rituality of the ancestral temple architectural space was strengthened. The reform of the educational system [56] transformed "temples" into "Study Temples (学庙)" [59], and the imperial examination system (科举制) integrated Study Palaces (学宫), Academies (书院), and Private Sishu (民间私塾) into sacrificial spaces [57], presenting a situation of 'integration of official and private education' (官学融合), where talent cultivation was closely linked to Confucianism. The emergence of the Confucian Temple of Academies (书院孔子庙) marked the formation of a 'balanced emphasis on politics and education' (政教并置), highlighting the importance of ancestor worship ritual culture centered

Table 2 Theories, methodologies and research ideas in relational sociology

No.	Concepts	Methodologies
1	The importance of social relationships emphasizes their crucial role in shaping individual behavior and social structure	Content encoding involves analyzing the content of interactions and communication methods to reveal the nature and characteristics of social relationships
2	The dynamics of interaction necessitate attention to how social interactions emerge and change in different contexts	Behavioral patterns refer to studying the behavior patterns and interaction processes of individuals and groups in specific contexts
3	The influence of the institutional context refers to analyzing how social systems and cultural backgrounds shape social relationships and interaction patterns	Causal relationships examine how social relationships influence social phenomena and individual behavior
4	The distribution of power and resources explores how power and resources are allocated within social relationships and their impact on social interactions	Structure analysis uses social network analysis techniques to uncover relationship patterns and power distribution within social structures



b. Research ideas and steps

Table 3 Relevant events affecting the formation of ritual culture in ancestral temples

Code	Year	Dynasty	Events	Influence	IL
1	213 B.C. - 212 B.C.	Qin	The "Burning of Books and Burying of Scholars (焚书坑儒)" incident resulted in the destruction of numerous Confucian texts and the persecution of over 460 Confucian scholars [55]	The policy of suppressing Confucianism affected the construction of Confucius temples among the populace	◆ ◆ ● ○
2	223 B.C.	State of Chu	Wang Yi (王逸), in his work "Questions to Heaven (天问)" recorded that the paintings in the Temple of the King of Chu (楚王庙) depicted scenes of "mountains, rivers, and the heavens," "spirits and monsters (神灵怪物)," and "ancient sages and worthies (古代圣贤)" [39]	This fact reflects that ancestral temple paintings served as tools for propaganda and education, and also had symbolic significance, playing a role in "Establishing education and assisting in human relations (成教化, 助人伦)"	○ ■
3	195 B.C.	Western Han	During the suppression of regional uprisings, Emperor Liu Bang (刘邦) of the Han Dynasty made a special visit to the Confucian temple to offer sacrifices to Confucius [56]	This event initiated the practice of emperors worshipping Confucius, established the status of Confucianism in ancient China, and promoted the development of ancestral temples	□ ◇
4	134 B.C.	Western Han	The authorities reinstated Confucianism while suppressing other schools of thought, and ordered the establishment of Study Palaces (学官) in various regions to educate the populace [56]	Confucian thought was elevated to the national level, promoting the construction of Study Palaces (学官), which combined ancestor worship and education	◇ ◆ ○
5	220	Northern and Southern Dynasty	Power struggles triggered significant changes in academic thought. At that time, metaphysics emerged, and other schools of thought such as Buddhism and Daoism began to gain popularity [64]	The situation of the hundred schools of thought (百家争鸣) weakened the status of Confucianism. Compared to ancestral temples, the number of Buddhist temples and Daoist temples increased	◆ ● ◇
6	472	Wei of the Northern Dynasty	The authorities implemented Sinicization policies, adhering to the Confucian family ritual culture [56]	The authorities' reverence for Confucius solidified the status of Confucianism under the rule of the Xianbei tribe and promoted the prevalence of ancestor-worship culture in local areas	◇ ◆
7	571	Southern Dynasty	At the entrance of the Tomb of the King of Wu'an (武安王墓室), the walls were painted with images of generals to ward off evil spirits. The corridor walls featured symbolic paintings, with some figures not representing the tomb's owner but reflecting daily life. Besides human figures, there were engravings of mythical creatures like the azure dragon, divine bird, and white tiger. These paintings created an atmosphere during sacrificial ceremonies [58]	This phenomenon reflects that sacrificial paintings were closely related to the cultures of ancestor worship and rituality, and their content highlighted the themes and atmosphere of ceremonial activities. The themes of the paintings conveyed moral and behavioral norms to educate descendants in traditional ethics	○ ◇ ■
8	581	Sui	The authorities reestablished the centralization of power, reformed the educational system, and implemented the imperial examination system (科举制) [56]	The flourishing of Confucian education and the development of the imperial examination system laid the foundation for the transformation of temples from "ancestral halls" to "Study Ancestral Halls (学祠)"	◆ ○ △
9	630	Tang	The authorities ordered the construction of Confucius temples in schools across various regions [59]	Policy support enabled ancestral temples to exhibit a fusion of sacrificial and educational functions, establishing the basic paradigm of "Integration of temple and school (庙学合一)"	◆ ○ △ ▽ ◇
10	725		The reigning emperor offered sacrifices to Confucius and posthumously honored him as the King of Wenxuan (文宣王). Consequently, local Confucius temples were elevated from folk buildings to "Royal Temples (王庙)" [57]	The event of Confucius being conferred the title of king further consolidated his ideological dominance and made ancestral temple buildings the center of local belief	◇ ◆
11	918	Five Dynasties and Ten Kingdoms	Although the reigning emperor encouraged academic debates and ordered the support of local construction of Confucius temples [59], Buddhist temples, and Daoist temples [65], the Confucius temples were still given the highest priority [59]	Although Confucianism remains the foremost among many ideologies, the widespread dissemination of multiple academic disciplines has, to some extent, weakened Confucianism's status	◆ ● ◇

Table 3 (continued)

Code	Year	Dynasty	Events	Influence	IL
12	1008	Northern Song	Following the example of Emperor Xuanzong of Tang, Emperor Zhenzong of Song also personally visited Confucius temples to perform sacrificial rituals and continued to bestow titles upon Confucius. Additionally, the reigning emperor implemented policies to favor the descendants of Confucius. During this period, the concept of "The Confucian Temple of Academies" (书院孔子庙) emerged, integrating Confucius temples within academies [56]	The emergence of new architectural forms distinguishes itself from the traditional integration of lectures within ancestral temples by formally incorporating sacrificial spaces within educational buildings. This highlights the significance of ancestral worship culture in talent cultivation	◆ ◆ △ ▽ ○
13	1151		Huang Gongdu advocated for the layout of "temple in the east, academy in the west" (东庙西学), which meant separating schools and ancestral temples into independent functional spaces. This proposal was first implemented in military schools and included residential features [57]	This event demonstrates the formation of a "balanced emphasis on politics and education" during that period. The layout of ancestral temples shifted from the "Integration of temple and school" to the "temple in the east, academy in the west" format, providing independence for both sacrificial and educational functions	▽ △ □ ○
14	1167		Wang Kui (王遵) completed the murals of the Rock Mountain Temple (岩石山寺庙) in Shanxi Province, primarily depicting court life [60]	Temple architectural paintings with court themes fully display ethical concepts such as loyalty, ritual propriety, and hierarchical order	○ ◆ ■
15	1214	Yuan	Despite orders from the authorities to protect ancestral temples and prohibiting military occupancy, many temples were destroyed during wartime. Some ancestral temples were burned down [54]	This event reflects that during periods of military turmoil, national security remained paramount, underscoring the importance of political stability for the dissemination of Confucianism	◆ □ ◆
16	1368	Ming	The reigning emperor believed that those who made significant contributions to the country should also be honored in sacrificial ceremonies, thus ordering their inclusion. Consequently, ancestral temples were categorized into types such as Ancestral Hall for the Esteemed Sages (先贤祠), Official Ancestral Hall (官祠), and Ancestral Hall of Local Worthies (乡贤祠), along with commemorative structures like Zhaobi (照壁), Memorial Archways (牌坊), and Pai Archways (牌楼) [57]	Policy support expanded the number and scale of civilian ancestral temple buildings, and the diversity of ancestral worship objects symbolized the authorities' inclusiveness towards folk beliefs	◆ △ ◆
17	1456		The murals of Duofu Temple (多福寺) were painted on the east, north, and west walls of the Great Hero Hall (大雄宝殿), all featuring religious themes [60]	The placement of temple architectural paintings enhanced the sacredness of ritual spaces, and the mythological content conveyed ethical notions from religious doctrines, such as retribution for good and evil and compassion	○ ■
18	1499		Lightning damaged parts of ancestral temples, prompting authorities to dispatch local officials for sacrificial ceremonies and allocate funds for repair and reconstruction [56]	This event proves the court's emphasis on ancestral temples, highlighting the esteemed social status of Confucianism	△ ◆

Table 3 (continued)

Code	Year	Dynasty	Events	Influence	IL
19	1644	Qing	People customarily painted murals on the walls of ancestral halls, temples, Sishu (私塾), and residences. For instance, the Zeng Clan Ancestral Hall in Xin Qiao Village, Shajing Street, Shenzhen, has over 200 murals [61]	The phenomenon reflects that architectural paintings conveying Confucian ideas were fully integrated into various aspects of ancient life, playing a role in ethical propaganda and social education. These paintings, through the worship of genealogy culture, conveyed filial piety, loyalty, and family ethics	○ ◇ ■
20	1665		Taiwan built its first fully regulated Tainan Confucius Temple (台南孔子廟), with the adjacent Minglun Hall (明倫堂) serving as a place for lectures and reading. This building was later renamed "Taiwan Fu Academy" (台灣府學) [59]	This event shows that ancestral worship culture and education had become inseparable, with the construction of new schools partially continuing the spatial functions of ancestral temples	△ ▽ ○
21	1906		The authorities elevated the sacrificial status of Confucius temples from medium to grand sacrifice (大祀), making them one of the highest levels of national sacrificial temples. The architectural roof design of Confucius temples changed from single to double eaves, and their scale significantly expanded [57]	Changes in roof styles signified an increase in architectural hierarchy and indicated that ritual culture had become a means to consolidate power and maintain social order	◆ ■ ◇
22	1919	Republic of China	Chen Duxiu (陈独秀) led the New Culture Movement, advocating against old Confucianism and calling for the destruction of Confucius temples and the abolition of sacrificial ceremonies nationwide [59]	The spread of new ideas advocating liberty and science attacked traditional Confucian rituals, rapidly diminishing Confucius status. Concurrently, local ancestral temples ceased to be used for worship, with most being converted into schools	● ◇ ▽
23	1929		The promulgated Law for the Preservation of Confucius Temple Properties formalized the practice of converting many Confucius temples into schools. This policy stipulated that the properties of ancestral temples could only be used for educational purposes and required standardized management [62]	This event signifies that many ancestral temples had lost their original sacrificial functions and exited the historical stage, becoming part of the symbolic culture of ancestral worship. Nevertheless, the authorities believed that statues of Confucius should still be preserved and commemorated on his birthday	◆ △ ○ ◇
24	1966	People's Republic of China	Confucius' thoughts were labeled as feudal during the Cultural Revolution [59], leading to the removal of sacred niches, spirit tablets, inscription plaques, couplets, and the smashing of many stone steles in ancestral temples	This movement dealt a fatal blow to Confucian culture and the status of Confucius, with the number of Confucius temples nationwide reducing from over 1,700 to just over 500, and well-preserved ones to around 100 [56]	◇ ● △ ■ ○
25	2004		The first International Confucian Forum on Confucius Worship was held, discussing the restoration of Confucian culture and sacrificial activities [63]	This event underscores the increased attention to the cultural heritage protection of ancestral temple architecture	◇
26	2007		Results from the third national cultural relics census indicated that there were tens of thousands of murals in ancient buildings in the Guangzhou area alone [66]	The vast number of ancestral temple murals reflects their influence on traditional Chinese culture and ritual concepts, as well as their educational value	○

IL Influence Layer

Politics-◆: Confucianism's status-◇; Philosophy-●; Education-○; Decoration-■; Military-□; Functionality-△; Layout-▽

around ancestral halls [56]. However, due to practical needs, the layout of ancestral halls, originally centered, was transformed into a parallel arrangement of 'temple in the east, academy in the west' (东庙西学) on the proposal of Huang Gongdu (黄公度), ensuring the independence of ancestor worship and educational functions [57]. As common decorations in sacrificial spaces, the architectural paintings in the Rock Mountain Temple (岩山寺庙), themed on court life, fully exhibited the ethical concepts of loyalty, ritual, and hierarchical order [60].

From the Song to the Qing dynasty (960–1912), the ancestral temple played a more significant role in society as the status of Confucianism rose, reflected in the court's policy of funding the repair of temples damaged in wars and natural disasters [54, 56]. With the popularization of Confucianism in folk beliefs, family ancestors and other sages were also included as objects of worship, and those who made significant contributions to the nation were recorded in the sacrificial ceremonies [57]. In this context, ancestral temples were meticulously classified into Official Ancestral Halls (官祠), Rural Temples (乡庙), Study Temples (学庙), United Ancestral Halls (联宗祠), Ancestral Halls for the Esteemed Sages (先贤祠), and more, including commemorative buildings like Memorial Archways (牌坊) and Pai Archways (牌楼). The painting art of these buildings was often closely related to memorial ceremonies and worship objects [2]. It is worth noting that architectural paintings also broke out of ancestral temples and integrated into public life (decorating bedrooms and courtyards), with themes usually centered on ethical indoctrination [61]. Overall, during this period, Confucianism rose to the national political level and became a tool for consolidating power and maintaining social order [57].

With the rapid decline of Confucianism's status, the development of ancestral temple architecture stagnated after the Republic of China (1912), and many buildings were destroyed. In 1915, the New Culture Movement advocating "liberty" and "science" called for the destruction of local Confucius temples and the cessation of sacrificial activities [59]. The development of ancestral temple architecture suffered a second severe blow during the Cultural Revolution in 1966, when numerous Confucian texts, ancestral halls, and decorations were destroyed. With the spread of new ideas and the emergence of more modern schools [62], ancestral temples gradually lost their function as places for ancestor worship and became part of the cultural landscape. It was not until the twenty-first century that ancestral temple architecture began to receive attention and protection again [63].

Sippola et al. [67] pointed out that the essence of historical research is to reveal the relationship between cultural capital and power in social structures. To clearly

present the development trajectory of Chinese ancestral temple architecture from the perspective of relational sociology, this paper categorizes and encodes the 26 events in Table 3 into six types (politics, Confucianism's status, philosophy, education, decoration, military, functionality, layout) according to Tilly's [45] theory of relational sociology, reflecting the nature of their impact. Then, based on the interrelationships between the events, this paper constructs a multi-layered model of the formation of ancestral temple culture. Figure 2a is the event relationship model, reflecting direct impact relationships, indirect impact relationships, and causal relationships between the events. Figure 2b is the development trajectory model, which reflects the main development trajectory through the aggregation trend of events. When many events gather in one category, it indicates the overall trend of event development. Events marked with red lines constitute the main trajectory of event development, while those marked with blue represent branch trajectories. These models aim to show how ancestral temple architecture in different periods was influenced by multiple factors and reveal the specific roles of these factors in shaping ritual culture.

Figure 2a demonstrates the relationships between events. Events 1→3→4 have a causal relationship. The Qin Dynasty's "Burning of books and burying of scholars" (焚书坑儒) (event-1) undermined Confucianism's status but also laid the foundation for the restoration of Confucian thought, prompting Liu Ban (刘邦) of the Western Han to worship Confucius (event-3) and re-promote Confucianism and the construction of Study Palaces (学宫) (event-4). Additionally, Events 4→8→9→10 also exhibit a causal relationship. The re-promotion of Confucianism and establishment of Study Palaces (学宫) during the Western Han (event-4) laid the ideological foundation for the Sui Dynasty's centralization and the implementation of the imperial examination system (event-8), which also encouraged the phenomenon of temple construction during the Tang Dynasty (event-9). These events demonstrate the dominance of Confucian thought at the time and provide a rationale for the upgrade of Confucius temples from ordinary folk buildings to "Kings of Temples" (王庙).

Events 9→10→12 have a direct impact relationship. The construction of Confucius temples in local schools during the Tang Dynasty (event-9) and the posthumous title of King of Wenxuan (文宣王) given to Confucius (event-10) laid the foundation for Emperor Zhenzong of Song to follow Emperor Xuanzong of Tang in performing Confucian worship activities and granting Confucius titles (event-12), further promoting the spread of Confucianism and ancestral temple culture. Events 22→24→25 also have a direct impact relationship. The

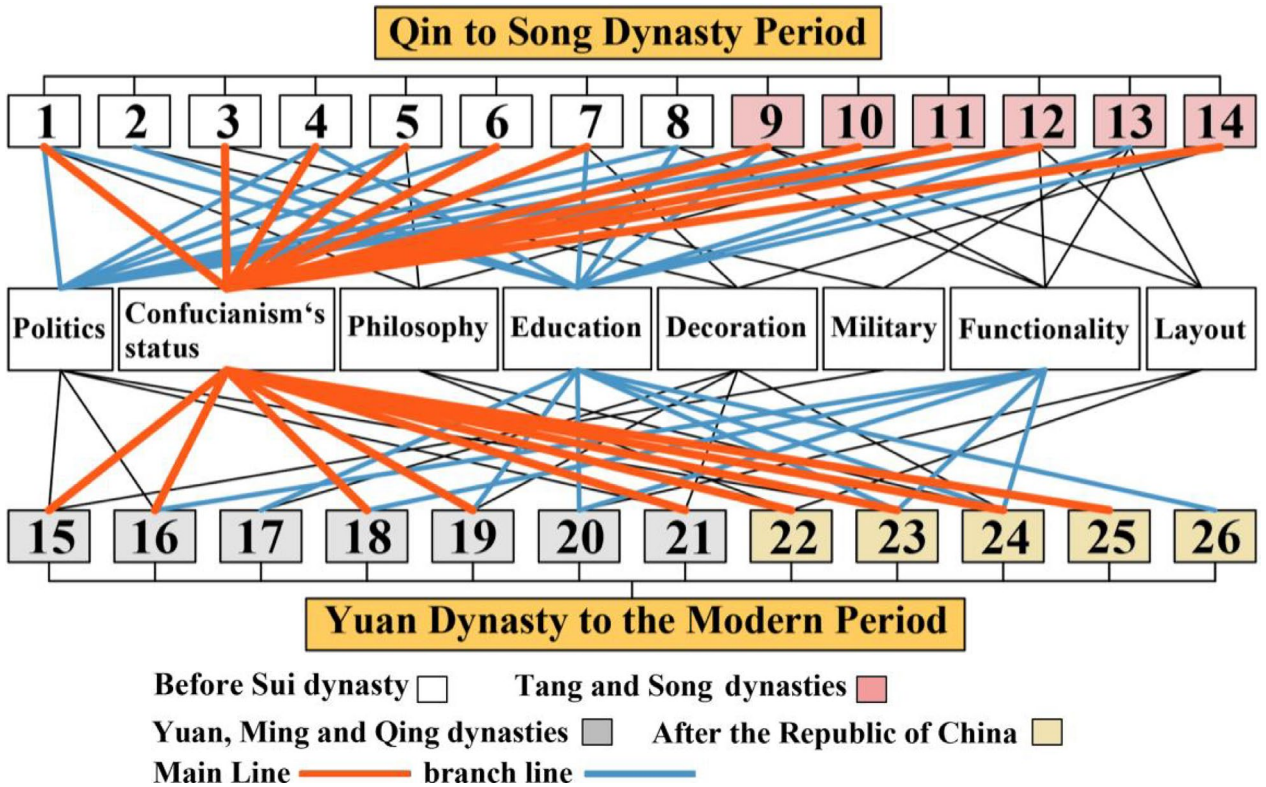
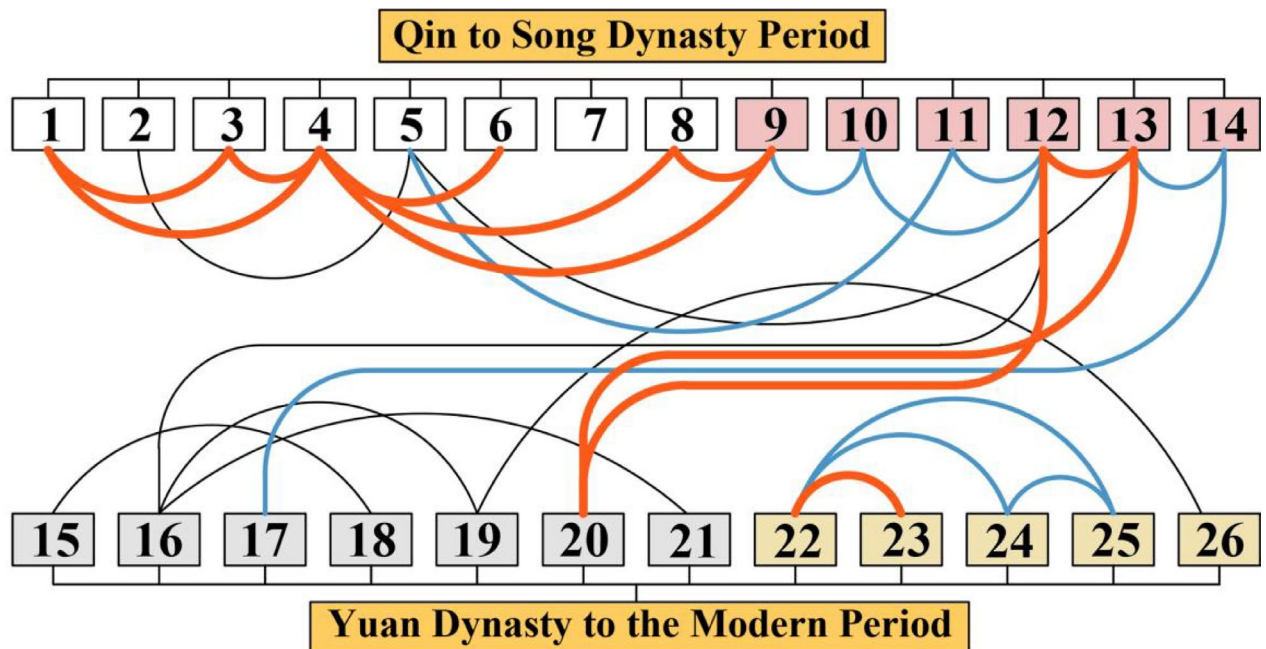


Fig. 2 Historical origins of ritual culture in Chinese ancestral temple architecture

ideological liberation movement opposing old Confucianism (event-22) can partly explain why Confucian thought was labeled as feudal during the Cultural Revolution (event-24). The cultural movement's blind rejection of traditional Confucianism led to the destruction of many valuable relics and texts (event-24), thus promoting efforts to protect Confucian and ancestral temple heritage (event-25).

Events 2 → 5 → 13 → 14 have an indirect impact relationship. The deity worship phenomenon reflected in the Chu State's "Questions to Heaven" (天问) (event-2) marked the popularity of early religious thought. Power struggles during the Northern and Southern Dynasties triggered academic thought reforms (event-5), promoting the rise of other schools of thought. The advocacy of "temple in the east, academy in the west" (东庙西学) by Huang Gongdu (黄公度) during the Southern Song (event-13) and the creation of murals in the Rock Mountain Temple (岩山寺庙) (event-14) indirectly reflected the integration of religious and ethical culture in architecture. Events 11 → 16 → 19 → 26 also have an indirect impact relationship. The increase in the hundred schools of thought (百家争鸣) and folk beliefs (event-11) liberated thought, and ancestor worship was no longer confined to Confucius alone. This indirectly corresponds to the diversity of ancestral temple types and worship objects (event-16). The popularity of folk ancestor worship partly explains event-19: ancestral temple architectural painting became a popular folk culture. Event-26 provides real data for event-19: many private residences and ancient buildings have architectural paintings.

Figure 2b reveals that, from the perspective of relational sociology, the events dominated by ancestor worship culture constitute the main development trajectory influencing the ritual culture of ancestral temple architecture. These events revolve around the social fluctuations of Confucianism's status. Meanwhile, the political nature of ancestral temples forms the branch trajectory of their ritual culture, often closely linked to changes in the educational system and the transformation of architectural functions. The bureaucratic system prevalent and hereditary in ancient China endowed the architecture itself with a hierarchical system, and reforms in the ritual system at different times formed part of the ancestor worship culture of ancestral temples, viewed as tools for ideological unification. For example, the upgrade of Confucius temples to national-level "Kings of Temples" (王庙) during the Tang Dynasty (event-10) not only reinforced the status of Confucianism in national ideology but also symbolized the unification of state power and cultural heritage through the elevation of architectural hierarchy. Similarly, the elevation of Confucius's temple sacrificial status to grand sacrifice (大祀) during the Qing

Dynasty (event-21) further solidified its top position in the national sacrificial system, highlighting the esteemed status of Confucianism through changes in architectural form.

The thematic story reflects the Confucian idea of ethicality: diligence, rapprochement, benevolence and love

The architectural paintings in Chinese ancestral temples commonly feature themes of "loyalty and filial piety (忠孝)," "propriety and righteousness (礼义)," and "integrity and sense of shame (廉耻)," highlighting the emphasis on Confucian ethical values such as diligence, rapprochement, benevolence, and love. These themes reflect the traditional society's constraints on moral norms to a certain extent [2]. The 16 samples in Table 4 collectively illustrate the ethical characteristics of ancestral temple architectural paintings, depicting scenes such as drinking and merrymaking, farming, the pursuit of knowledge, and the pursuit of fortune [39, 40]. Samples 1–7 emphasize simple ethical concepts such as indifference to fame and fortune, the pursuit of knowledge, and diligence. Using situational narrative (情景叙事) as an artistic expression, the work "Poetry, Wine, Music, and Chess (诗酒琴棋)" portrays the talents of Sun Guangxian (孙光宪) of the Song Dynasty, while "music, chess, calligraphy, and painting" depict the lifestyle of prominent families and literati. Despite using the same mode of expression, the work "Reading (读)" conveys its meaning in a very implicit manner. It requires interpreting subtle changes in the expressions of the characters in the painting and the symbolic significance of the books, metaphorically suggesting the importance of knowledge and reverence for scholarship. The character is based on Su Qin (苏秦) from the Warring States period, who often read until late at night. When he felt sleepy, he would prick his thigh with an awl to stay awake [68]. This story aligns with the spirits conveyed in "Bores a Hole in the Wall to Borrow Light (凿壁借光)" [69] and "Hanging the Beam and Stabbing the Thigh (悬梁刺股)" [70], all emphasizing that only by reading good books can one achieve official success. The works "Fishing, Woodcutting, Farming, and Studying (渔樵耕读)" [71] and "Wuniang Figures (五娘图)" [72] mainly use detailed brushstrokes and vivid depictions of characters, clothing, and expressions to showcase the different life stages and spiritual outlooks of lower-class workers and housewives, emphasizing the values of both labor and the pursuit of knowledge. The latter depicts Zhao Wuniang (赵五娘) from the Han Dynasty, portraying her taking on heavy burdens and earning money to support her family. Later, she sells her hair to bury her in-laws and travels a long distance to find her husband in the capital. She has become a symbol of diligence, kindness, virtue, and filial piety.

Table 4 Characteristic expressions of ethicality in the art of ancestral temple architectural paintings (before 1911)





Painting	
	
Name	1-Poetry, Wine, Music, and Chess (诗酒琴棋-1887)
Scales/cm	L = 260, W = 98
Author	Unknown
Place	The Ancient Emperor Temple in Hengsha Village, Chini Town-赤坭镇横沙村帝王古庙
Position	The stone inscription above the main gate (头门石额之上)
Types	Historical Anecdote
Description	The scene depicts literati and scholars gathering to drink, recite poetry, and play musical instruments
Meaning	The work emphasizes friendship and refined taste, reflecting elegance and noble character
Painting	
	
Name	3-Fishing, Woodcutting, Farming, and Studying (渔樵耕读-1798)
Scales/cm	L = 264, W = 96
Author	Luo Jiazi (罗贾子)
Place	The Lu Gong Ancestral Hall in Team One of Luoshan, Luoxian Village, Shiling Town-狮岭镇罗山村一队罗山卢公祠
Position	The lintel of the front gate wall (头门墙楣)
Types	Fable
Description	The scene presents the lives of four professions: fisherman, woodcutter, farmer, and scholar, highlighting the balance between labor and study
Name	2-Reading (读-1847)
Scales/cm	L = 72, W = 42
Author	Unknown
Place	The Xie Ancestral Hall in Wener Village, Tanbu Town-炭步镇文二村谢氏宗祠
Position	The two corridors (两廊)
Types	Aspiration for Life
Description	The scene illustrates Su Qin (苏秦) from the Warring States period, who often read late into the night. Whenever he felt drowsy, he would prick his thigh with an awl to stay awake
Meaning	The work highlights the spirit of reading to repay the nation
Painting	
Name	4-Wuniang Figures (五娘图-1893)
Scales/cm	L = 48, W = 72
Author	Wang Xuefang (王雪舫)
Place	The Mai Ancestral Hall in Tianxin Village, Chini Town-赤坭镇天心村麦氏大宗祠
Position	The two corridors (两廊)
Types	Historical Anecdote
Description	The scene portrays a woman shouldering family responsibilities, embodying the virtues of diligence, kindness, wisdom, and filial piety

Table 4 (continued)





Meaning Painting	The work underscores the importance of diligence and learning		The work reflects Confucian values of female virtue and family harmony	
Name	5-式气高升 (1894)	6-The Fisherman (钓鱼翁 -1893)		
Scales/cm	L = 206, W = 120	L = 72, W = 90		
Author	Wang Xuefang (王雪枋)	Wang Xuefang (王雪枋)		
Place	The Xu Ancestral Hall in Xihua Society, Sanhua Village, Xinhua Street-新华街三华村西华社次华徐公祠	The Mai Ancestral Hall in Tianxin Village, Chini Town-赤泥镇田心村麦氏大宗祠		
Position	The corridor of the main hall (中堂轩廊)	The plaques above the doors of the two corridors (两廊门额)		
Types	Aspiration for Life			
Description	The scene describes an altar and incense burner, along with the pious expressions and breath of an elderly man, sketching a certain ritual	The scene depicts a resolute fisherman dressed in plain clothes		
Meaning	The work illustrates people's hope to bring good fortune and prosperity to their family through such rituals	The work praises simplicity and hard work, while also reflecting the common people's concern for the country, thus highlighting the pursuit of peace		
Painting				
Name	7-Family Poetry and Prose (式家词赋-1904)	8-Gongsun of Happiness at Play (公孙耍乐-1875)		
Scales/cm	L = 276, W = 103	L = 120, W = 90		
Author	Li Yingyang (黎英阳)	Unknown		

Table 4 (continued)


Place	The Zhang Ancestral Hall in Shikeng Village, Chini Town-赤泥镇石坑村坤高张公祠	The Nanzhi Wang Ancestral Hall in Dongkeng Natural Village, Qianjin Village, Shiling Town-狮岭镇前进村东坑自然村南枝王公祠
Position	The area below the eaves of the front gate wall (头门墙檐下)	The two corridors (两廊)
Types	Historical Anecdote	Aspiration for Life
Description	The scene illustrates two elderly men composing poetry at a table	The scene depicts interactions between an elderly person and their children
Meaning	The work embodies Confucian ideals of valuing family and literary cultivation	The work emphasizes the importance of family harmony and reunion
Painting		
Name	9-Harmony Brings Wealth (和生财-1887)	10-Harmony generates wealth (和气生财-1911)
Scales/cm	L = 192, W = 96	L = 260, W = 60
Author	Huang Nanshan (黄南山)	Unknown
Place	The Zhang Ancestral Hall in Lianying, Sanxiang Village, Xinya Street-新雅街三向村张英张公祠	The Tan Ancestral Hall in Wenyicun, Tanbu Town-炭步镇文一村谭氏宗祠
Position	The area below the eaves of the rear hall wall (后堂墙檐)	The gable wall at the front of the rear hall (后堂正面山墙)
Types	Myth and Legend	Aspiration for Life
Description	The scene depicts two deities holding an ear of grain and a round box. The homophones "He (ear of grain-禾)" and "He (box-盒)" correspond to "He He (rapprochement and reunification-和合)", symbolizing family harmony and boundless blessings	The scene depicts a harmonious living situation
Meaning	The work underscores the significance of cooperation and harmony in society and family	The work highlights the moral values of family harmony and neighborly kindness
Painting		

Table 4 (continued)





Name	11-Three Stars of Happiness at Play (三星耍乐)-1887)	12-Double blessings of happiness and longevity (福寿双全-1887)
Scales/cm	L=72, W=60	L=192, W=90
Author	Li Jianquan (李鉴泉)	Unknown
Place	The Luo Gong Ancestral Hall in Tenth Society, Liantang Village, Chini Town-赤坨镇莲塘村十社柳品路公祠	The Ancient Emperor Temple in Hengsha Village, Chini Town-赤坨镇横沙村帝王古庙
Position	The lintel of the front gate wall (头门墙楣)	The area below the eaves of the secondary space of the front gate (头门次间檐下)
Types	Auspicious Meaning	Myth and Legend
Description	The scene depicts the Stars of Happiness (福星), Prosperity (禄星), and Longevity (寿星) gathered together	The scene shows the Star of Longevity sitting with a child holding a bat, symbolizing double blessings of happiness and longevity
Meaning	The work reflects people's longing for happiness, wealth, and longevity	The work reflects the expectation of family happiness and longevity, embodying the Confucian concepts of family values and filial piety
Painting		
Name	13-Immortal Donating a Crane (仙人捐鹤-1893)	14-Bats Coming from Heaven (蝠自天来-1863)
Scales/cm	L=126, W=60	L=312, W=112
Author	Wang Xuefang (王雪舫)	Fengshan Taiquan (凤山太泉)
Place	The Mai Ancestral Hall in Tianxin Village, Chini Town-赤坨镇田心村麦氏大宗祠	Xinhua Street, Sanhua Village, Hengruxi Ancestral Hall of Xu Clan (华街三华村亨之徐公祠)
Position	The two corridors (两廊)	The area below the eaves of the secondary space of the front gate (头门次间檐下)
Types	Auspicious Meaning	Harmonic Meaning
Description	The scene illustrates a celestial being presenting a crane to a Daoist	The scene depicts bats flying from the sky
Meaning	The work demonstrates Confucian respect for virtue and longevity	Bats symbolize good fortune in Chinese culture. The work conveys people's expectations for happiness and good luck

Table 4 (continued)

Painting	
	<p>Name 15-Longevity with Pine and Ganoderma (益寿松芝 - 1798)</p> <p>Scales/cm L = 240, W = 96</p> <p>Author Yang Guanting (杨贯亭)</p> <p>Place Changgang Village, Team One, Shiziling Town, Chunzai Lu Ancestral Hall (狮岭镇长岗村一队纯斋卢公祠)</p> <p>Position The two corridors (两廊)</p> <p>Types Auspicious Meaning</p> <p>Description The scene portrays an elderly man sitting on a giant carp, while another elder holds a Ganoderma. The scene also features planted pine trees, which have long symbolized longevity and health</p> <p>Meaning This painting conveys the beautiful wishes for longevity and health</p>
	<p>Name 16-The Immortal Bestows Fruit (仙翁赐果 - 1897)</p> <p>L = 156, W = 96</p> <p>Author Deng Zhizhou (邓子舟)</p> <p>Place The Li Ancestral Hall in Buyun Village, Tanbu Town-炭步镇步云村李氏宗祠</p> <p>Position The area below the eaves of the main hall veranda wall (中堂卷棚檐下)</p> <p>Types Auspicious Meaning</p> <p>Description The scene depicts a celestial elder bestowing a longevity fruit upon a mortal</p> <p>Meaning The work reflects folk expectations for longevity and auspiciousness</p>

Samples 8–10 highlight the qualities of rapprochement in Confucian culture [39]. The work "Gongsun of Happiness at Play (公孙耍乐)" depicts the harmonious scene of Gongsun Ce (公孙策) of the Northern Song Dynasty with his children, implying that family harmony depends on social fairness and justice through the portrayal of just and fair officials. The expression of pun-based symbolism is concentrated in the works "Harmony Brings Wealth (和合生财)" and "Harmony Generates Wealth (和气生财)," which use mascots and symbolic icons to convey the philosophy that harmony brings wealth and happiness. Rapprochement and wealth were common pursuits of ancient people. "Han Shan (寒山)" and "Shi De (拾得)" are two saints frequently appearing in Chinese folk New Year pictures, often holding an ear of grain and a round box. In terms of homophony, He (ear of grain-禾), He (box-盒), and "He He (和合)" sound the same. Symbolically, the ear of grain represents food, signifying adequate food and clothing, while the round box represents a gift box, symbolizing wealth. Therefore, the picture reflects people's pursuit of family harmony, adequate food and clothing, and wealth.

Samples 11–16 praise the qualities of benevolence and love in Confucian governance concepts [40]. The works "Three Stars of Happiness at Play (三星耍乐)" and "Double Blessings of Happiness and Longevity (福寿双全)" adopt the personification of events' double meaning (复指手法), vividly interpreting virtues and visions such as benevolence and love, happiness, and longevity through character portrayal and scene setting. The Star of Happiness (福星), Star of Prosperity (禄星), and Star of Longevity (寿星) are three deities symbolizing happiness, wealth, and longevity. They sometimes appear in human form and sometimes as a combination of bats, deer, and immortal peaches to represent the pattern of the three stars. Their appearance symbolizes happiness, good fortune, and prosperity [73]. Samples 13–16 employ metaphor through objects (借物喻意), using specific objects like the immortal crane and pine tree to symbolize qualities such as longevity, loyalty, and fidelity. In ancient China, the crane was the mount of immortals, known as "Riding a Crane (鹤驾)" or "Harnessing a Crane (鹤驭)" [74]. In the work "Immortal Donating a Crane (仙人捐鹤)," an immortal gives a crane to an elderly person. The elderly person holds a longevity staff, while the accompanying boy carries a gourd. The picture implies people's longing for the carefree life of immortals and their pursuit of longevity, happiness, prosperity, and harmony between grandfather and grandson.

Artistic differences reflected in the context of creation: themes, values, and colors

Compared to the 16 paintings created during the mid-to-late Qing Dynasty (1636–1911) as shown in Table 4, the eight paintings produced after 1911 (Table 5) exhibit significant differences in artistic expression. Among the 318 paintings analyzed, over 250 were created before the Republic of China. The stylistic differences among these samples can be summarized as follows: (1) In thematic focus, early samples predominantly centered on Confucian ethics, kinship ties, and historical anecdotes, whereas paintings from the Republic of China period increasingly depicted scenes of everyday life and the livelihoods of ordinary people, reflecting shifts in social dynamics; (2) In value transmission, the paintings of the Qing Dynasty are characterized by a pronounced materiality and realism, often portraying the hardships of lower-class occupations, the patriotic concerns of fishermen, and the virtues of women. These themes present both positive and negative aspects. In contrast, later paintings adopt a more idealistic tone, featuring scenes of banquets and leisure activities; (3) In color usage, the paintings of the Qing Dynasty are marked by high color saturation and significant use of dark tones, which collectively create a solemn and dignified atmosphere. Conversely, paintings from the Republic of China period favor softer, brighter tones, emphasizing visual comfort and a naturalistic aesthetic.

The divergence in stylistic features is closely related to the historical context in which these paintings were created. During the mid-to-late Qing Dynasty, the policy of isolationism and the consolidation of central authority reflected the state's control over local power, as evidenced by the regulation of clan systems, lineage management, and the standardization of temple construction. Ancestral hall rituals, which were elevated from local to national significance during this time [57], underscored the increasing importance of clan activities within the state political structure. Additionally, the reopening of the Imperial Examination System (科举制) [75], along with the establishment of institutions such as the Guozijian (国子监) and Study Palaces (学宫) [76], imbued the paintings with a strong emphasis on ethics and education. As noted by Li et al. [2], these paintings functioned as crucial tools for maintaining social order and disseminating Confucian moral values, frequently highlighting themes of moral instruction, family lineage, and loyalty. Furthermore, social upheavals such as the Taiping Rebellion (太平天国运动) [77], the Opium Wars (鸦片战争) [78], and the signing of unequal treaties [79] left a profound imprint on the content of paintings [79]. This is

Table 5 Characteristic expressions of ethicality in the art of ancestral temple architectural paintings (After 1911)





Painting		
Name	17-Playing in the Jade Pool (瑶池耍乐-1918)	18-The Dai Family's Poetry and Prose (代家诗赋-1921)
Scales/cm	L = 314, W = 106	L = 264, W = 92
Author	Unknown	Unknown
Place	The Lai Ancestral Hall, Xiayan Natural Village, Hexi Village, Chini Town (赤泥镇荷溪村下石燕自然村赖氏宗祠)	The Liu Ancestral Hall, Butou Village, Tanbu Town (炭步镇布头村刘氏宗祠)
Position	The stone inscription above the main gate (头门石额之上)	The area below the eaves of the front gate wall (头门墙檐下)
Types	Legendary Story	Historical Anecdote
Description	The scene depicts numerous immortals playing in the Jade Pool Paradise, where they are surrounded by auspicious clouds, playing and frolicking in a harmonious and joyful atmosphere	The scene depicts several literati and scholars gathered together, composing poems and essays. They are writing by the desk, creating an atmosphere of elegance and solemnity
Meaning	The work reflects an idealized portrayal of life in the celestial realms, drawn from ancient Chinese mythology, expressing a longing for a beautiful life and immortality, symbolizing good fortune and happiness	The work emphasizes the Confucian spirit of the literati and the educational role of poetry, books, rites, and music, highlighting the importance of cultural heritage and the pursuit of knowledge
Painting		
Name	19-Immortal Scenery of Penglai (蓬莱仙境-1922)	20-The Eighteen Great Scholars (十八大学士-1925)
Scales/cm	L = 262, W = 90	L = 341, W = 154
Author	Guangxing Guantong (贯行关通)	Lin Xingquan (林星权)
Place	The Yangshu Tang Ancestral Hall, Shihushan Village, Tanbu Town (炭步镇石湖山村仰湖汤公祠)	The Liang Ancestral Hall, Gangtuo Natural Village, Xibian Village, Chini Town (赤泥镇西边村岗头自然村梁氏宗祠)
Position	The area below the eaves of the secondary space of the front gate (头门次间檐下)	The area below the eaves of the front gate wall (头门墙檐下)
Types	Legendary Story	Historical Anecdote
Description	The scene showcases the beautiful landscape of the mythical Penglai Island, where immortals leisurely stroll amidst mountains, rivers, and exotic plants	The scene portrays eighteen scholars dressed in long robes, holding scrolls, engaged in either academic discussions or deep contemplation, conveying an atmosphere of scholarly exchange

Table 5 (continued)

Meaning	The work expresses a longing for life in the celestial realms, symbolizing the pursuit of spiritual ideals and transcendence from the mundane, reflecting the Daoist philosophy of seeking immortality		The work reflects the significance of academic achievement and knowledge, symbolizing reverence for scholarly expertise and conveying the social values of respecting knowledge and prioritizing education	
Painting	A traditional Chinese ink and wash painting depicting several figures in a landscape, some sitting and some standing, engaged in sunbathing or leisure activities.		A colorful painting showing a group of figures in traditional attire, some playing musical instruments and others in conversation, set in a garden-like environment.	
Name	21-The Sunbathing Picture (晒腰图-1930)	22-The Joy of Immortals (群仙耍乐-1933)		
Scales/cm	L = 312, W = 96	L = 314, W = 120		
Author	Yang Guanting (杨贵亭)	Xuan Shoufu (袁寿甫)		
Place	The Yang Gong Ancestral Hall of Xiangfeng Society, Yang'er Village, Shiling Town (狮岭镇杨二村祥风社堂礼物公祠)	The Li Ancestral Hall, Hexi Village, Chini Town (赤泥镇荷溪村利氏宗祠)		
Position	The stone inscription above the main gate (头门石额之上)	The stone inscription above the main gate (头门石额之上)		
Types	Historical Anecdote	Legendary story		
Description	The scene depicts a scholar exposing scrolls from his abdomen to the sunlight, a symbolic gesture implying that his mind is full of knowledge	The scene presents numerous immortals gathered together, playing musical instruments in a celebratory atmosphere, showcasing harmony and joy		
Meaning	The work satirizes those who emphasize appearance over actual learning, highlighting the importance of practical knowledge	The work symbolizes harmony and unity, reflecting the ideal of collective happiness and social stability, expressing the pursuit of a better life		
Painting	A painting depicting seven figures in traditional Chinese attire, some seated and some standing, in a bamboo grove setting.	A painting showing a group of figures in a garden setting, engaged in a banquet or social gathering.		
Name	23-The Seven Sages of the Bamboo Grove (竹林七贤-1936)	24-Spring Banquet at the Peach and Plum Garden (桃李园春夜宴-1941)		
Scales/cm	L = 234, W = 90	L = 314, W = 90		
Author	Unknown	Li Yunxuan (李云轩)		
Place	The Kangfuyingyuan Ancestral Hall, Shegang Village, Tanbu Town (炭步镇社岗村康辅应元祖祠)	The Wancheng Tang Ancestral Hall, Chatang Village, Tanbu Town (炭步镇茶塘村万成汤公祠)		
Position	Under the eaves of the right corridor wall (右廊墙檐下)	The stone inscription above the main gate (头门石额之上)		
Types	Historical Anecdote	Historical Anecdote		

Table 5 (continued)

Description	The scene depicts the seven sages of the Wei and Jin periods leisurely drinking, playing the zither, and composing poetry in a bamboo grove, portraying the demeanor of reclusive scholars	The scene displays a night banquet held in a garden full of blooming peach and plum trees, where guests gather to drink, make merry, and enjoy the beauty of a spring night
Meaning	The work expresses admiration for noble and independent character, symbolizing a refusal to conform to worldly norms and the pursuit of a free spirit, embodying the Wei-Jin spirit and Daoist thought	The work symbolizes harmony, prosperity, and a fulfilling life, expressing praise for spring, vitality, and friendship, while also highlighting the pursuit of social harmony and family happiness

evident in paintings from Henan temples depicting battle scenes, as well as Sample-2, which portrays diligent students, Sample-3, which depicts the hard work of farmers, and Sample-6, which captures the simple life of fishermen. These detailed portrayals of lower-class occupations reflect the difficult circumstances and resilient spirit of various social strata during turbulent times. The ritual culture inherent in Qing Dynasty architectural art [80] was also subject to ethical constraints [81], particularly in color representation. The color schemes of Qing Dynasty paintings adhered strictly to both imperial and folk standards, while also conforming to the norms of Confucian ritual practices [82]. For example, the vibrant colors used in official attire were intended to symbolize power and status [83].

In contrast, during the Republic of China period, political stability, social harmony, and intellectual enlightenment had a profound influence on the ritual art of ancestral hall paintings. The Revolution of 1911 (辛亥革命), which marked the end of thousands of years of feudal rule, brought about political stability and social restructuring, fostering a sense of hope and anticipation for a new social order and way of life [84]. This collective optimism is evident in the painting's creations depicted in Table 5, which feature themes of positivity, optimism, and idealism. The relative social harmony of the time further facilitated a shift in the painting's themes from the hierarchical relations rooted in traditional rituals to the promotion of values such as harmony and equality, as depicted in the paintings illustrating communal harmony (Table 5). This transition is closely linked to the influence of new ideas of liberty and scientific thought introduced during the New Culture Movement (新文化运动) [85]. The ideological liberation promoted by the "Western Learning Movement (西学东渐)" revitalized traditional painting art, as the rigid artistic styles of the past increasingly failed to meet the evolving aesthetic preferences of the public. During this period, many ancestral halls were converted or expanded into public schools [86], a functional transformation that further impacted the artistic expression of paintings, particularly in terms of color usage. Unlike the paintings from Table 4, which predominantly employed primary colors (such as vibrant yellows and blues) and somber tones (emphasizing a sense of gravity and painting strength, and highlighting the internal order of clans and society), the paintings created after 1911 boldly utilized mixed, soft, and bright secondary colors (Table 5). This color shift reflects the ethical transition from feudalism to openness [14]. However, certain paintings, such as Sample-18 (The Dai Family's Poetry and Prose), Sample-20 (The Eighteen Great Scholars), and Sample-24 (Spring Banquet at the Peach and Plum Garden), retain traditional color schemes in specific

sections, indicating an adaptive process between tradition and innovation.

Discussions

Interpretation of results

The development of ancestral temple architecture has formed a dual developmental context, primarily centered around ritual culture and secondarily on academic dissemination, evolving with fluctuations in Confucianism's status. The relational sociology model demonstrates that the political undertones of the ancestral temple contribute to its ritual culture, while related events are closely linked to changes in the educational system and transformations in architectural functions, further impacting the architectural form and decorative arts. The architectural painting art of ancestral temples showcases the ethicality and educational value aligned with Confucian ideas, reflecting the building's cultural origin and illustrating the ancient society's adherence to moral standards. A total of 181 works, themed around historical anecdotes such as the pursuit of study, diligent labor, and pastoral life, extol the virtues of the quest for knowledge, industriousness, and indifference to fame and fortune. Fifty-five works depict themes like grandfather and grandson enjoying time together, deliberation on state affairs, and prayers for peace and safety, illustrating people's aspirations for family and societal harmony, echoing the Confucian value of rapprochement. Seventeen works use puns to display auspicious meanings of peace, good fortune, and unity, symbolized through elements like "He (ear of grain-禾)", "Fu (bat-蝠)", and "He (box-盒)", embodying the qualities of benevolence and love in Confucianism. The three main themes of immortal life, literati and scholars, and common folk simplicity highlight the spiritual and material content of ancestral temple painting. Titles such as "He (rapprochement-和)", "He (reunification-合)", "wealth (财)", "happiness (乐)", "blessing (福)", and "longevity (寿)" reveal a positive orientation towards Confucian values. Samples 1–8 and 14 focus on realistic depictions of the lower strata of life, such as scholars, freshmen, woodcutters, and women, showcasing the human-centric characteristics of ancestral temple architectural painting. The context of the era in which the art was created makes the ancestral temple's paintings of the Qing and Republican periods show significant differences in terms of thematic storytelling, value transmission, and color expression, such as the use of colors from pure colors to secondary colors.

Five major artistic techniques of ancestral temple architectural painting include: (1) Metaphor through

objects-借物喻意 (e.g., sample-13's crane representing immortal life and longevity); (2) Personification of events-以人喻事 (e.g., sample-3 portraying the equality of wealth and poverty through four lower-class professions); (3) Using the past to illuminate the present-借古喻今 (e.g., sample-2 using the study state of Su Qin from the Warring States period to encourage diligent study); (4) Expressing aspirations through objects-托物喻志 (e.g., sample-9's ear of grain symbolizing harmony and prosperity); (5) Pun-based symbolism-谐音寓意 (e.g., sample-14's "Fu-蝠" homophonic with "blessing-福").

The research findings respond to the two academic questions posed in the introduction: (1) There is an intrinsic relationship between the ritual culture of ancestral temples and their architectural painting art. The latter not only serves as a visual representation of ritual culture but also reflects the ancestral temple's cultural heritage and social educational function; (2) The thematic content of ancestral temple architectural painting revolves around the five cultural values in Confucian thought: Ren (benevolence-仁), Yi (righteousness-义), Li (ritual propriety-礼), Zhi (wisdom-智), and Xin (integrity-信), emphasizing the ancient society's emphasis on kinship and family values. The findings partially support the original hypothesis: while the Confucian ethicality and educational value of the paintings augment the ritual culture of the ancestral temple's architectural space, the emotional transmission of these works also encompasses broader social dimensions. For example, sample-6 not only praises the labor form of freshmen but also hints at the concerns of lower-class people about national internal and external troubles [87]. It is noteworthy that the artistic expression of these paintings varies across different historical periods, reflecting changes in Confucian ethical views. For instance, realistic themes during times of turmoil highlight a longing for peace, stability, and sustenance, whereas idealistic themes in peaceful times focus more on family harmony, personal cultivation, and the pursuit of spiritual wealth [14].

Zhang et al. [12] found that the layout of Chinese ancestral temples is a continuation of the tomb sacrificial system, heavily influenced by ritual culture. By constructing a relational sociological model, this study identifies that ancestral temple paintings are also influenced by institutional culture, though their primary function is to enhance spatial rituality and disseminate spirituality [88]. This is evident in the depictions of figures and mythical creatures in the Tomb of the King of Wu'an (武安王墓室), the hierarchical differentiation of ancestral temples, and the elevation of Confucius Temple (孔子庙) to a major sacrificial site. From an architectural perspective, Li et al. [11] suggest that the development of kinship culture in ancestral temples is driven by political influence,

and they further hypothesize that the expression of ritual art results from the interplay between macro-political environments and micro-geographical factors. This study provides partial evidence supporting their hypothesis but does not address geographical factors. From a decorative perspective, this study reveals that the ritualistic aspects of ancestral temple paintings are directly influenced by the status of Confucianism, with political factors playing a secondary role. Additionally, by analyzing the thematic narratives of the paintings, this study highlights the didactic function of ritual art [89]. Eisenstein and Glowski [90] further expanded the discussion of ancestral temple paintings to Academies (书院), which combine sacrificial and educational functions. Yan [91] found that the paintings in Clan Ancestral Halls (Clan Academy Building-陈氏祠堂书院) were not heavily influenced by traditional ritual norms, a finding consistent with the data mining results of Li et al. [2]. However, this study argues that these artworks are constrained by ethical and moral norms. This discrepancy may be attributed to the functional differences between traditional temples and temples with study rooms. Based on analyses using the Semantic Differential and Delphi methods, Li et al. [14] discovered that the emotional value conveyed by most ancestral temple paintings is positive, revealing both the materiality and spirituality of cultural transmission. This aligns with the descriptive statistical results of this study's analysis of the stories, titles, and themes of the paintings, while this study further delves into the depiction of various occupational figures within these artworks.

The differences in ritual art between ancestral temple paintings during the Qing Dynasty and the Republic of China period reflect, to a certain extent, the evolution of Chinese sacrificial culture [2, 14, 92, 93]. These changes are evidenced by: (1) The transition from localized to state-level rituals, which illustrates the elevation of clan activities in social status and the state's increasing control over local power; (2) The shift from traditional ethical education to the influence of new ideologies, highlighting the transformation of social consciousness and cultural values; (3) The evolution from solemn and austere artistic expressions to those prioritizing visual comfort, reflecting the adaptability of artistic styles amid social change; (4) The movement from a closed, ritualistic framework to an open, culturally integrated one, marking the profound changes experienced by Chinese society as it transitioned from feudal norms to a modern societal structure.

Li et al. [2] suggest that the gradual erosion of certain valuable cultural genes within the traditional ritual system is, to some extent, driven by the value orientation inherent in ancestral hall decoration art. However, the renowned Chinese art educator Guo Degang poses the question, "What is the purpose of art, if not education?"

This inquiry reflects a broader academic trend in rethinking the significance of studying the past [94–96]. Consequently, it raises the question of whether the art of ancestral temple paintings itself possesses an intrinsic mechanism for driving societal progress in the future. The role of education in the arts extends beyond the mere transfer of knowledge and skills; it encompasses the transmission of culture and values. Ancestral temple paintings, as a visual medium, transcend temporal and spatial boundaries to convey specific messages or values. In this context, these paintings are more than just art; they encapsulate the memory of history, culture, and society. Therefore, as the traditional elements within these paintings gradually fade or become diluted, the culture and values they embody are similarly impacted. Art and education are not mutually exclusive; rather, they can complement each other, collectively contributing to the advancement of society and culture. Beyond ritual art, general urban and architectural illustrations inherently possess educational, familial, and social significance, driving societal progress.

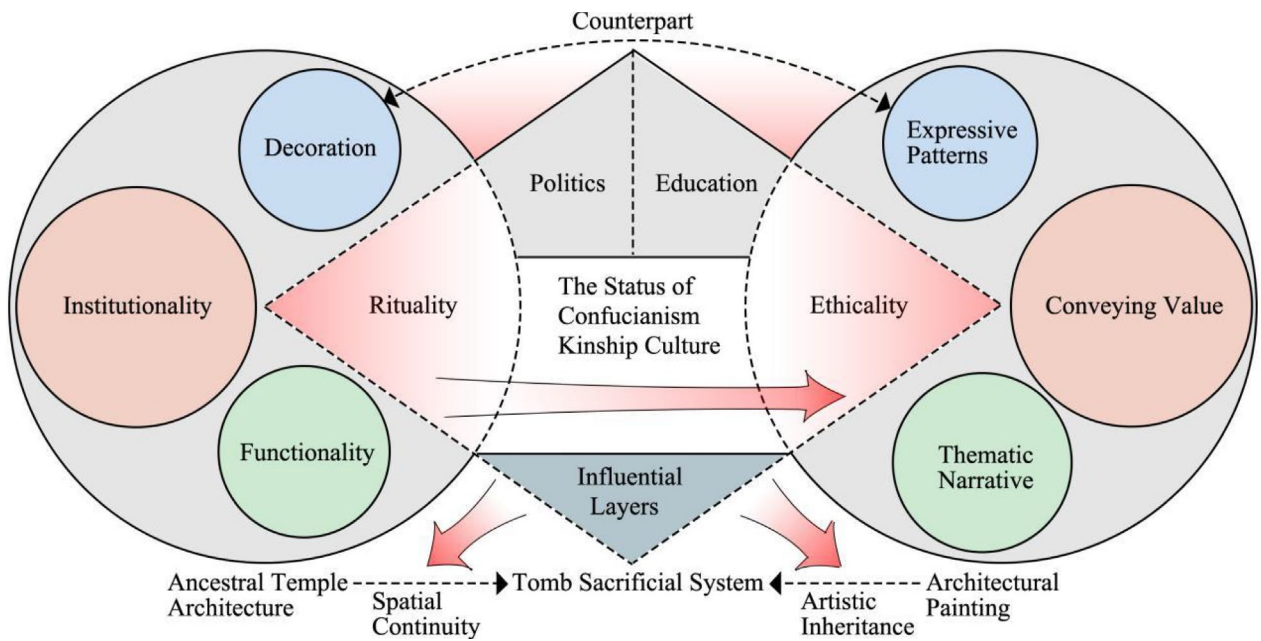
Research values and academic contribution map

Suleyeva et al. [97] analyzed the Berlin Wall paintings from a communication studies perspective, examining how these artworks, as part of spatial expression, interpret social critique within a specific historical context. In contrast, de-Miguel-Molina [98] focused on London's war murals, highlighting their role in reinforcing community cohesion by emphasizing their traditional function. He argued that the introduction of public art strategies in non-tourist areas could support long-term community development by providing cultural sustainability from a heritage perspective. This paper expands on this dialogue by using a time-chronicle-based relational sociology model to explore the kinship culture between ancestral temples and their painting art, offering a unique perspective on the forms of artistic exchange. Rivera [99] pointed out that colonial murals promote critical thinking about decolonization by reinterpreting the past, thereby reconstructing historical narratives. Building on this, the present study identified five major artistic expression techniques and variations in ancestral temple paintings, revealing their close connection to the social realities of the time. This finding challenges traditional understandings and provides empirical support for Tansem's [100] critical framework, enhancing its applicability. In the field of semiotics, researchers typically focus on the cultural meanings and social impacts behind artistic symbols. In the realm of art studies, scholars delve deeper into the complex relationship between artistic expression and social structure. Communication studies

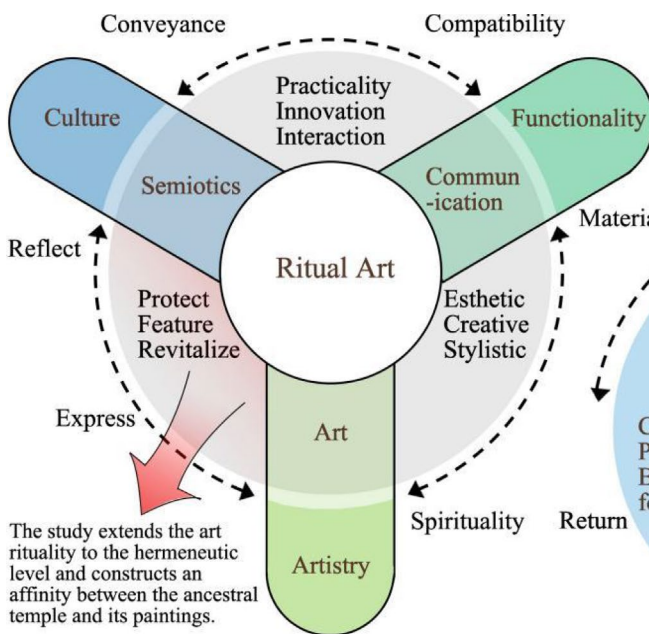
often emphasize the social intentions and cultural dissemination mechanisms behind artworks. Staiff [101], for instance, analyzed religious ritual art in Florence, symbolizing sacred spaces and emphasizing their role in constructing national identity. This paper traces the origins of the forms influencing artworks back to their material heritage, extending the analysis to how Confucian philosophical ideology shaped and influenced ancestral temples and their painting art. Additionally, by integrating relational sociological theory with case studies, this research offers a paradigm for the study of heritage art.

This study constructs a relational sociology model of the connection between ancestral temples and their architectural painting art ritual culture (Fig. 3a). Both ancestral temples and their architectural painting art are influenced by changes in the status of Confucianism over different periods, closely related to political changes and educational system reforms, together forming the impact layer of their ritual culture kinship. The rituality of ancestral temple architectural culture is mainly reflected in its institutionality, functionality, and decoration. The ethical culture of ancestral temple architectural painting is primarily reflected in the values it conveys, the narrative of themes, and the forms of visual art. Architectural decoration and forms only constitute a small part of the ritual culture of ancestral temples and their architectural painting. Architectural painting often appears in the ritual spaces of ancestral temples, enriching the ritual sense of the space with its visual artistic expressions, indicating a corresponding relationship between the two. Ancestral temple architecture is a spatial continuation of the tomb sacrificial system, while its architectural painting is an artistic inheritance. These relationships collectively form the relational sociology model of the ritual culture of ancestral temples and their architectural painting art.

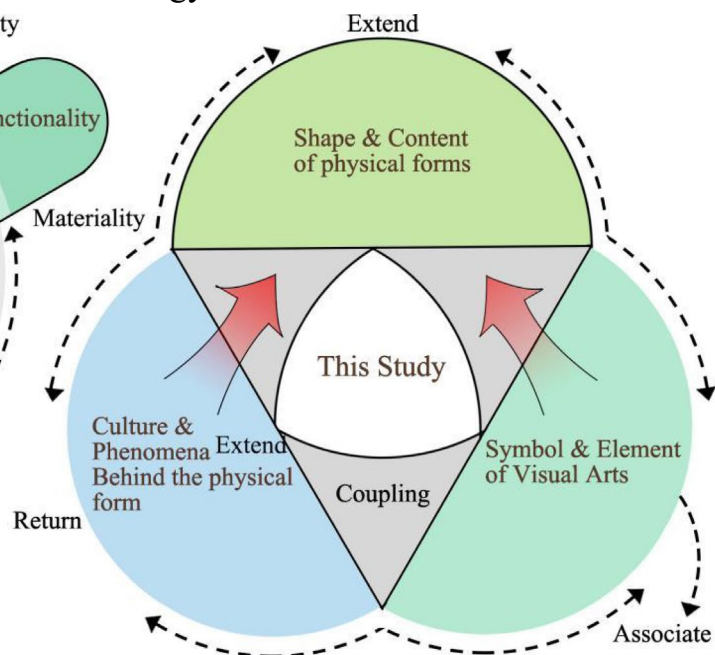
Art scholars focusing on ritual art (Fig. 3b) have developed distinct research focuses on the topic of "material heritage and cultural art": (1) In art studies, research primarily centers on the aesthetic forms and symbolic meanings of ritual art, exploring how various artistic forms convey social values and religious beliefs through visual symbols and composition; (2) In terms of functionality, research examines the role of ritual art in social functions, including its contribution to strengthening social cohesion, maintaining social order, and transmitting cultural traditions; (3) In cultural studies, scholars investigate how ritual art reflects and constructs identity and social relationships within specific cultures. The research has explored how ritual art uses cultural symbols and ritual behaviors to recreate and sustain particular social structures and cultural traditions. Relevant articles have evolved from focusing on "form and content" to "symbolic elements" and eventually to "cultural



a. Relational sociology model



b. Theory and subject area



c. Methods and realization paths

Fig. 3 Relational sociology model and academic contribution map

phenomena," deeply extending the analysis to the level of social meaning (Fig. 3c). While early studies predominantly examined the visual and symbolic functions of ritual art, scholars such as Vucetic et al. [28], Kahn [27], and Choi [38] have explored the multifaceted roles of ritual art in diverse social and cultural contexts, emphasizing

the intricate relationship between ritual art, social order, and cultural identity. Given the multi-layered and complex nature of ritual art, research in this area often adopts interdisciplinary perspectives, including sociology, anthropology, and cultural studies.

Eisenstein and Glowski [90], along with Brereton [33], argued that material culture not only reflects social realities but also serves as a mirror of cultural change, revealing shifts in power relations, identity, and cultural values within society. Meanwhile, Alexander [102] traced the study of material art back to its historical origins, constructing a theoretical framework that examines the relationship between material culture and social structure. He demonstrated how the evolution of ritual art over different historical periods not only mirrored changes in social structures but also influenced the development of social culture. By incorporating relational sociology theory and analytical models, this paper, combined with case studies, constructed a convergence in the formation of kinship culture within ancestral temple architecture and its painting art, thereby undertaking a multidisciplinary study that integrates art studies, design, phenomenology, and semiotics. Compared to traditional single-discipline perspectives and research methods, this paper offers a broad perspective, framework, and example from the angle of cultural and ritual critique.

Research limitations and eliciting new questions

In addition to its thematic content, this paper identifies the following characteristics of ancestral temple architectural painting in terms of color: (1) Backgrounds predominantly feature low-luminance colors, while vivid primary colors such as blue, white, yellow, and black are extensively used to depict figures; (2) Compared to materiality-focused works, ancestral temple architectural paintings that emphasize spirituality tend to use colors with high brightness and saturation. However, studies by Su et al. [103], Zhou and Taylor [83], and Huang [104] suggest that the use of colors in the costumes of figures in Chinese ancestral temple architectural paintings differs from the traditional color systems promoted in ancient folk culture. This raises the following questions for further exploration: (1) What are the color patterns of ancestral temple architectural painting, and do they conform to the ancient regulated folk color systems?; (2) Are the background and figure colors in ancestral temples influenced by kinship culture? If so, what aspects are affected?

Emerson [13] highlighted that the core purpose of heritage art research lies in uncovering the historical cultural connotations and social values it embodies and in exploring how these artistic forms have evolved and persisted through different historical periods. Regev [15] emphasized that heritage art research should not merely aim to reconstruct its historical context but also to reveal its contemporary significance and value in modern society. From an archaeological perspective, Uribe [16] asserted that heritage art research should focus on the interaction

between its material form and cultural symbolism, offering new perspectives for understanding heritage value in contemporary culture through the exploration of its historical functions. This paper establishes a relationship between the ritual culture of ancestral temple architecture and the ethical art of its architectural paintings and explores how Confucian traditional rituals influenced the themes, content, and value transmission of architectural paintings. From a semiotic perspective, ritual art is not only a symbolic expression of culture but also a visual representation of social values and ethical norms. In the context of multicultural integration, the question of how heritage art research can promote unity and cohesion among different ethnic cultures is worth further exploration [105]. In terms of ritual education, the painting art of ancestral temple architecture has the potential to convey social values and ethical norms, offering a new perspective on how art can promote social harmony.

The 16 samples in Table 4 and the 8 samples in Table 5 were not selected randomly. Due to the complexity of the ritual art in these paintings, random sampling would not adequately capture their diversity and representativeness [106]. Consequently, a stratified sampling method was employed to select 24 samples from a total of 318 paintings for the case study [107]. The sampling criteria are as follows (Appendix B—Sample categorization table): (1) The 318 paintings were initially categorized into five distinct themes based on visual and descriptive content (first-level stratification); (2) Further stratification was conducted based on factors such as narrative content (e.g., education, aspiration, fortune-seeking, labor, and reunion), decorative elements (e.g., mountains, stones, plants, animals, furniture, books, and figures), the artists, color schemes, the type of ancestral temple (e.g., public, family, or clan), the scale of the temple (e.g., large, medium, or small), and the placement of the paintings within the temple (e.g., lintels, corridors, main halls, central halls); (3) From each stratum, typical samples that varied in period, theme, style, and artistic technique were selected for comparative analysis. This selection process ensured the scientific rigor of the study by accounting for the diversity, richness, uniqueness, and variability of the themes and content.

By incorporating relational sociological theory and employing case study methodology, this paper examines the role and relationship of ancestral temples and their painting art in the construction of kinship culture. However, the reliance on purely qualitative research has highlighted certain limitations in the theoretical framework. Although preliminary descriptive statistics and results analysis were conducted on 521 samples, the study lacks quantitative research during the content analysis phase

of the art. For instance, approaches like Sun et al. [108] using K-means clustering to explore correlations between thematic distribution and artistic techniques in murals, or Zeng et al. [109] employing term frequency analysis to examine the proportional composition of figures, objects, plants, and various decorative elements in murals, are absent. The model presented in Fig. 3a illustrates two significant relational chains in the ritual art of ancestral temples—rituality and politics, ethicality and education—but lacks a rigorous evaluation framework.

To improve the research framework and ensure the objectivity and systematicity of the study, future research will proceed as follows: (1) Employing ROST CM 6.0, developed by Wuhan University, to conduct text mining on Liu's [39, 40] works, and analyzing the proportion of positive, negative, and neutral adjectives to uncover the emotional expression and value transmission characteristics of ancestral temple paintings, along with their social impact; (2) Categorizing pairs of adjectives and utilizing a Likert scale to evaluate the perception of murals across different themes, thus exploring how emotional resonance is expressed artistically in varied cultural contexts; (3) Introducing arousal theory, as demonstrated by Li et al. [2], to investigate how artworks elicit social identification and cultural resonance at both visual and emotional levels, and analyzing the social functions and cultural values of ancestral temple paintings in relation to specific ritual cultures and political influences; (4) Integrating new cultural semiotics theories to explore how visual symbols in different cultural contexts convey social values through ancestral temple painting art, thereby constructing a more explanatory theoretical framework to reveal the complex interactions between art forms and social structures.

The coverage of the selected murals limits the scope of this work. A total of 269 samples (51.6%) were decorated at the entrances of ancestral temple buildings, while the rest were decorated in the chapels, rear halls, and other parts. The content of religious art is often related to its decorative location and spatial purpose, which highlights the insufficiencies of this study in this area. Suggested improvements include: (1) Expand the sample scope by including murals from different decorative positions to more comprehensively analyze the interaction between religious art and spatial function; (2) Introduce multidisciplinary approaches, such as spatial analysis and visual culture studies, to further investigate how the placement of murals influences their content expression and functional transmission; (3) In future research, enhance focus on the artistic expressions within non-religious functional spaces, exploring the diverse functions and social significance of religious art in varying spatial contexts.

Conclusions

Findings: (1) Ancestral temple architectural paintings themed around the pursuit of study, diligent labor, and pastoral life commend the virtues of the quest for knowledge, industriousness, and indifference to fame and fortune; (2) The homophonic representation of "He (ear of grain-禾)," "Fu (bat-蝠)," and "He (box-盒)" conveys auspicious meanings of peace, good fortune, and unity, symbolizing the Confucian qualities of benevolence and love; (3) The three major themes of immortal life, literati and scholars, and common folk simplicity highlight the spiritual and material affinity in ancestral temple paintings. Titles like "He (rapprochement-和)," "He (reunification-合)," "wealth (财)," "happiness (乐)," "blessing (福)," and "longevity (寿)" reflect a positive and proactive transmission of Confucian values; (4) The artistic expression of ancestral temple architectural paintings demonstrates the ethical and educational value aligned with Confucian principles; (5) The five main artistic expressions of ancestral temple painting are: metaphor through objects (借物喻意), personification of events (以人喻事), using the past to illuminate the present (借古喻今), expressing aspirations through objects (托物喻志), and pun-based symbolism (谐音寓意); (6) The decorative nature of ancestral temple architecture corresponds with the artistic forms of its paintings. The former extends the spatial context of the tomb sacrificial system, while the latter inherits the artistic tradition; (7) The context of the era in which the art was created makes the ancestral temple's paintings of the Qing and Republican periods show significant differences in terms of thematic storytelling, value transmission, and color expression, such as the use of colors from pure colors to secondary colors.

To deeply explore the causes of the styles in ancestral temple architecture and its paintings, it is essential not only to interpret the characteristics of its architectural functions and decorative patterns but also to reveal the expression of their ritual culture within the social structure. The development of ancestral temple architecture formed a dual trajectory focusing on ritual culture and supplemented by academic dissemination, fluctuating with the status of Confucianism. The relational sociology model shows that the political aspects of ancestral temples constitute a secondary thread of their ritual culture, with related events closely linked to changes in the educational system and the transformation of architectural functions, further influencing architectural forms and decorative arts. As a supplement to kinship culture, ancestral temple painting enhances the ritual culture of ancestral temple architecture through the ethical and educational value of visual art, embodying traditional ritualistic thought. Our team's future research will focus on

the ritual cultural aspects of the color in ancestral temple architectural paintings.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40494-024-01456-2>.

Supplementary Material 1.

Supplementary Material 2.

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Author contributions

Q.X., J.H., H.L. and J.A. were responsible for investigation and data collection. W.L. and Q.X. were responsible for data analysis and visualization. W.L. and W.S. wrote the initial manuscript. W.L. and W.S. reviewed and revised the manuscript. Q.X. provided financial support.

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Data availability

All data generated or analysed during this study are included in this published article. The data underlying the research for this paper can be found in the appendix A (Historical event list) and appendix B (Sample categorization table).

Declarations

Ethics approval and consent to participate

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

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