



From Ancient Script to Cultural Identity: A Study on the Symbolic Value and Contemporary Dissemination of the Bird-Worm Seal Script

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Abstract

Background and Aim: The Bird-Worm Seal Script is a historically significant form of early Chinese calligraphy distinguished by its ornate, zoomorphic stroke patterns. Originating in the Shang and Zhou dynasties and flourishing through the Qin and Han periods, it served both communicative and ceremonial purposes. In modern times, the script has become a focal point in discussions of cultural revitalization, symbolic design, and identity construction. This study aims to explore the historical significance, symbolic value, and contemporary dissemination strategies of the Bird-Worm Seal Script in the context of design and intangible cultural heritage transmission.

Materials and Methods: The research employed a mixed-methods approach, including literature review, semi-structured interviews with designers and educators, visual analysis of contemporary design applications, and questionnaire-based evaluation of public perception. A conceptual framework grounded in Peircean semiotics and cultural design theory guided the analysis. Data were collected through case documentation, participant feedback, and artifact analysis to examine both historical interpretation and modern adaptation practices.

Results: The study finds that the Bird-Worm Seal Script retains strong symbolic potential in modern cultural communication, especially in heritage branding, museum merchandise, and youth-oriented design education. However, challenges persist, including semantic opacity, visual complexity, and risks of cultural dilution. Strategic pathways such as annotated mixed-script designs, digital vectorization tools, and educational integration are proposed. The script was perceived as high in cultural depth and visual uniqueness across student, expert, and designer groups, indicating its value in reinforcing cultural identity.

Conclusion: The Bird-Worm Seal Script functions not merely as an aesthetic relic but as a semiotic and cultural system with contemporary relevance. Its revitalization requires interdisciplinary collaboration, ethical design application, and public engagement strategies. This study contributes to ongoing efforts to bridge ancient cultural symbols with modern visual narratives, offering practical insights into sustainable cultural heritage dissemination in a digital, design-driven era.

Keywords: Bird-Worm Seal Script; Cultural Identity; Semiotic Design; Intangible Cultural Heritage; Script Revitalization

Introduction

The Bird-Worm Seal Script, known in Chinese as “niao chong zhuan” (Figure 1), represents a distinctive form of early Chinese writing that fuses textual function with ornamental artistry. Emerging during the Shang and Zhou dynasties and flourishing through the Qin and Han periods, this unique script was historically employed in religious rituals, imperial inscriptions, and high-status seals (Zhang, 2021). Characterized by its incorporation of bird-like and insect-like elements into the strokes of Chinese characters, the Bird-Worm Seal Script occupies a special place in the evolution of Chinese writing systems—not only as a practical tool but as a cultural artifact deeply embedded in ancient visual aesthetics and symbolic communication.





Figure 1 The Bird-Worm Seal Script (niao chong zhuan)

Note: <https://baike.baidu.com/>

In modern times, this script has largely faded from practical use, relegated to museums, archaeological artifacts, and academic discourse. However, the resurgence of interest in intangible cultural heritage, particularly within the framework of Chinese cultural revitalization, has brought renewed attention to this script as a powerful emblem of traditional identity. As China promotes its soft power and seeks to strengthen cultural self-confidence, rediscovering and recontextualizing traditional scripts like the Bird-Worm Seal becomes a culturally and politically significant endeavor. According to Xu Huiping (2019), contemporary design efforts that reintroduce ancient scripts into visual culture not only preserve endangered heritage but also foster new aesthetic dialogues that resonate with today's globalized visual environment.

The Bird-Worm Seal Script maintains considerable importance that extends past its historical and artistic aspects. The artifact serves as a semiotic connection between ancient times and present-day existence while functioning as both a visual sign and a linguistic record that preserves cultural remembrance and artistic progress. According to Wang (2018), ancient scripts act as repositories that preserve collective identity while representing philosophical rituals as well as sociopolitical significance, which developed through various dynasties. The Bird-Worm Seal Script stands as an essential cultural symbol that enables the transmission of values and worldview paradigms through its stylistic nuances between generations. Traditional scripts such as the Bird-Worm Seal Script provide essential cultural insights beyond heritage in our current globalized world with its blended cultural divisions and powerful media interactions. They function as tools for negotiating cultural identities and rejuvenating cultural heritage. Hall's 1997 research suggests identity development depends on a perpetual positioning process that finds its foundation in historical narratives and symbolic systems. The reintroduction of traditional scripts into modern conversation strengthens historical consistency and stimulates reinterpretation while promoting cross-cultural exchanges, particularly in creative fields like graphic design and visual storytelling (Kress & van Leeuwen, 2006). Traditional forms demonstrate aesthetic inspiration and communicative depth when reimagined for use in transnational contexts. The academic study of the Bird-Worm Seal Script remains limited despite its untapped potential. Existing research on the Bird-Worm Seal Script primarily analyzes philological interpretation and decorative classification without investigating its semiotic impact and cultural meaning in modern contexts. The current research deficiency denotes the requirement for interdisciplinary methodologies combining semiotics with design theory and cultural studies. These perspectives have the potential to demonstrate how the script can serve as a vehicle for expressing dynamic identities while affirming cultural independence and building bridges between different cultures (Barthes,



1977; Bhabha, 1994). Scholars gain enhanced insight into the representational potential of Bird-Worm Seal Script across historical and modern contexts by placing it within wider meaning-making discussions.

This study, therefore, positions the Bird-Worm Seal Script as a living cultural symbol, one whose visual and semantic properties offer rich opportunities for reinterpretation within contemporary cultural expression. By examining the symbolic significance, historical evolution, and modern dissemination of this script, the research aims to contribute to a deeper understanding of how traditional cultural forms continue to shape identity, meaning, and creative innovation in 21st-century society.

Objectives

1. To investigate the historical and cultural significance of the Bird-Worm Seal Script within the evolution of Chinese writing and its symbolic role in ancient ritual, political, and artistic contexts.
2. To examine how the Bird-Worm Seal Script contributes to cultural identity and symbolic communication in contemporary society through its reinterpretation in visual culture and design.
3. To analyze the challenges and strategies associated with revitalizing traditional scripts like the Bird-Worm Seal in the context of modern cultural dissemination.

Literature review

The Bird-Worm Seal Script, a visually intricate and symbolically rich form of writing, has drawn scholarly attention primarily within the fields of paleography, calligraphy, and visual culture. Zhang Wei (2021) provides one of the most comprehensive analyses of the script's use during the Qin and Han dynasties. His work documents how the Bird-Worm Seal Script evolved from ritualistic bronze inscriptions into an artistic form representing imperial authority. By tracing stylistic changes and contextual functions, Zhang emphasizes that this script not only served as a medium of communication but also embodied the socio-political order and spiritual beliefs of the early Chinese states.

Xu Huiping (2019), in her thesis on typographic experimentation, offers a more design-focused yet culturally grounded perspective. She analyzes how Bird-Worm Seal fonts can be disassembled, reorganized, and reconstructed to create new visual languages while preserving the essence of their historical origins. Her work demonstrates the potential of Bird-Worm Seal Script as a source for contemporary cultural production, suggesting that reinterpreting its structural complexity can strengthen cultural identity in visual communication. This study is particularly relevant for understanding how the script can be revitalized in modern applications without detaching from its roots.

Wang Hao (2021) explores the creative methodologies for producing Bird-Worm Seal Script in contemporary contexts. His research focuses on the intersection between visual expression and semiotic encoding, emphasizing the need to understand the script not merely as form but as meaning. He contends that the transmission of cultural knowledge through such scripts requires careful balancing between visual innovation and historical continuity. Wang's approach enriches the discourse on how ancient calligraphy can contribute to national cultural branding and educational outreach.

Zhao Wenqiang and Zang Xinci (2024) engage with semiotics, especially Peirce's triadic model, to explore how traditional Chinese scripts—including the Bird-Worm Seal—can be embedded in modern cultural and creative products through the lens of visual communication. Their work examines the symbolic resonance and communicative function of historical scripts when used in packaging and branding. They argue that such symbols become signifiers of collective memory and identity, particularly when deployed thoughtfully in cultural commodities aimed at younger demographics.

Finally, Guo Dongmei et al. (2001) delve into the mathematical dimension of cultural forms through their research on fractal geometry and its application in Chinese visual culture. Though more technical in scope, their study lays a theoretical foundation for understanding how the repetitive, organic patterns found in Bird-Worm Seal Script align with principles of self-similarity and visual recursion. This perspective provides a valuable framework for interpreting the script's formal beauty as not only aesthetic but inherently structured, allowing for meaningful integration into modern design systems.

Conceptual Framework

This study is grounded in the intersection of semiotic theory, cultural heritage revitalization, and design innovation. The conceptual framework is structured around the Bird-Worm Seal Script as the central cultural object, analyzed through three interconnected lenses: (1) its historical-symbolic function, (2) its reinterpretation in contemporary design, and (3) the tensions and challenges of revitalization. The framework incorporates Peircean semiotics to interpret the script's symbolic function, design theory to guide its visual transformation, and cultural communication theory to assess its modern relevance. These dimensions are interlinked through digital and educational strategies that aim to ensure culturally coherent and participatory revitalization. The framework thus supports a holistic understanding of how ancient textual forms can be sustainably integrated into modern visual culture (Figure 2).

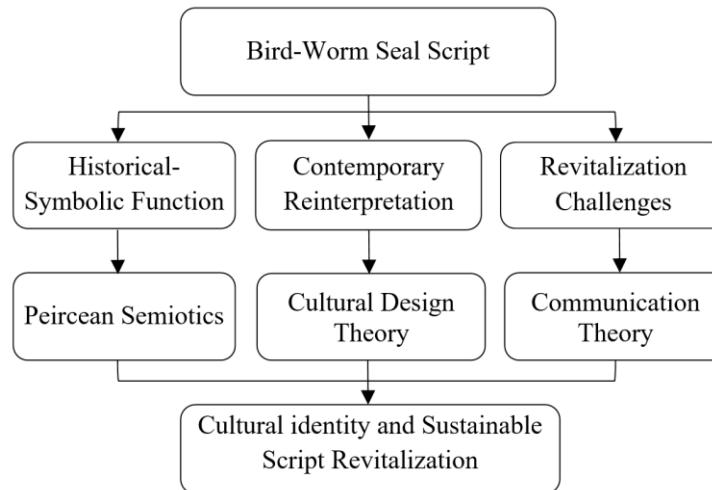


Figure 2 Research Framework
Note: Constructed by the researcher

Methodology

This study employed a mixed-methods approach combining literature review, semi-structured interviews, and quantitative survey analysis to comprehensively investigate the impact of internet subcultures on university students' civic values in central Fujian.

1. Literature Review Method

The initial phase of the study involved an extensive review of academic literature to clarify the core characteristics of internet subcultures and their potential influence on university students' value formation. This review helped construct the theoretical framework of the study and guided the identification of key analytical dimensions—namely, national consciousness, social responsibility, and individual behavior. Furthermore, the literature review supported the selection and classification of prevalent internet subcultures among Chinese youth, particularly in the context of higher education.

2. Semi-Structured Interviews

To validate and contextualize the findings from the literature, semi-structured interviews were conducted with teachers responsible for civic values education in nine public comprehensive universities located in central Fujian (Fuzhou and Putian area). These regions represent the educational core of the province, attracting a demographically diverse student population. The interviews aimed to: (1) identify the most influential and widespread forms of internet subculture among students, (2) understand the modes of student participation in these subcultures, and (3) examine how these cultural engagements correlate with observable behaviors and attitudes related to civic values. Insights from the interviews informed the design and refinement of the questionnaire used in the next stage.

3. Questionnaire Survey and Statistical Analysis



Building upon the qualitative findings, a structured questionnaire was developed to quantitatively assess the relationship between internet subcultures and students' civic values. The instrument comprised four sections: demographic information; frequency and form of internet subculture participation; engagement with five specific internet subcultures (fan culture, game culture, ACG culture, Buddha-like/Lying Flat culture, and live streaming/internet celebrity culture); and indicators of national consciousness, social responsibility, and individual behavior.

The questionnaire contained 82 items measured on a 5-point Likert scale. Content validity was ensured via Item-Objective Congruence (IOC) assessment by five domain experts, with all items scoring above 0.80. A pilot study with 30 participants yielded high reliability, with Cronbach's alpha values exceeding 0.86 for independent variables and 0.90 for dependent variables.

Cluster sampling was used to select participants from nine universities in the Fuzhou and Putian regions. Based on Cochran's formula, a minimum sample size of 383 was determined. To ensure robustness, 530 questionnaires were distributed; after data cleaning, 514 valid responses were retained for analysis using proportional stratified sampling.

Data analysis was conducted using statistical software. Frequency analysis was employed to describe demographic patterns and internet subculture participation. Exploratory Factor Analysis (EFA) was conducted to validate the constructs. Descriptive statistics and correlation analyses explored variable distributions and interrelations. Finally, multiple regression analysis was used to determine the influence of the five internet subcultures on university students' national consciousness, social responsibility, and individual behavior.

Results

1. Cultural-Historical Significance of the Bird-Worm Seal Script

The Bird-Worm Seal Script, with its origins in the Shang and Zhou dynasties, occupies a unique position within the evolutionary arc of Chinese writing systems. As this study demonstrates, its significance lies not only in its linguistic function but more critically in its cultural symbolism and ceremonial applications. Unlike regular script forms used for administrative or daily writing, the Bird-Worm Seal Script evolved as a *sacred textual form*, often inscribed on bronze vessels, jades, and ritual artifacts, thereby embodying a communicative channel between the human and the divine realms.

Historical sources reveal that during the Spring and Autumn and Warring States periods, the script was frequently employed in the context of ancestral worship and state rituals. Its decorative complexity—characterized by stylized, zoomorphic strokes mimicking birds and insects—conveyed a cosmological worldview in which writing itself was a spiritual act (Zhang, 2021). For example, characters were often composed to form bilateral symmetry or were merged with totemic imagery, reflecting the ancient belief in the unity of heaven, earth, and humankind. This sacred quality distinguished Bird-Worm Seal Script from other contemporary scripts, such as the greater and lesser seal scripts.

Moreover, during the Qin dynasty's political consolidation under Emperor Qin Shihuang, Bird-Worm Seal Script was selectively retained and utilized on imperial seals and monuments. This selective adoption illustrates the dual function of the script: it served both as a symbol of political authority and as a means of asserting cultural legitimacy across the newly unified Chinese state. The famous jade seal bearing the inscription "Mandated by Heaven, long life and prosperity" exemplifies how the script carried the weight of dynastic mandate and divine sanction.

This study also notes the enduring artistic impact of the script, which extended into the calligraphic practices of later dynasties such as the Han and even the Qing, albeit in more stylized or commemorative forms. In particular, the Bird-Worm Seal Script's intertwining of form and symbolism influenced both literati aesthetics and official seal engraving traditions. Its survival across dynasties—despite being supplanted in practical use—speaks to its deep cultural resonance and its status as an object of reverence and artistic emulation.





In summary, the Bird-Worm Seal Script is not merely an archaic form of writing but a semiotic vessel for expressing metaphysical, political, and artistic values in ancient China. Understanding its historical use and symbolic importance provides critical insight into the ways early Chinese societies encoded power, lineage, and cosmology into their visual-linguistic systems. These findings offer a foundational understanding for subsequent analysis of how the script may be meaningfully recontextualized in modern visual culture.

2. Contemporary Symbolism and Cultural Identity in the Reuse of Bird-Worm Seal Script

As traditional Chinese culture undergoes renewed appreciation in modern society, the Bird-Worm Seal Script has re-emerged as a potent cultural symbol, particularly within design, education, and branding sectors. This study finds that the script's revival is not driven by its textual readability but by its visual and symbolic richness, which designers and cultural practitioners are increasingly leveraging to foster cultural identity, particularly among younger generations.

Through qualitative interviews and field observation, several symbolic functions of the Bird-Worm Seal Script in modern design contexts were identified. These include its role in enhancing cultural authenticity, reinforcing heritage narratives, and visually encoding traditional values into modern artifacts. Table 1 summarizes these functions, along with representative examples.

Table 1 Contemporary Symbolic Functions of Bird-Worm Seal Script in Visual Culture

Symbolic Function	Application Context	Interpretive Meaning	Examples
Cultural Authenticity	Cultural branding; product packaging	Reinforces the "Chineseness" of a product or experience	Teaware brands using bird-worm fonts on logos and labels
Heritage Continuity	Museum merchandise; commemorative objects	Suggests historical depth and civilizational pride	National Museum bookmarks and souvenirs
Visual Ritualization	Interior design; exhibitions	Evokes spiritual reverence and respect for tradition	Cultural exhibitions with seal-script-themed decor
Youth Cultural Identity	Educational kits; design workshops	Serves as a cultural touchpoint for youth exploring Chinese heritage	Student-designed badges, stamps, digital avatars
Semiotic Reinterpretation	Graphic design; cross-cultural fashion products	Enables hybrid meaning through the fusion of ancient and modern elements	T-shirts with re-stylized seal scripts integrated with icons

In interviews with designers and educators, the Bird-Worm Seal Script was consistently described as a *"carrier of symbolic complexity"*—its unusual stroke patterns and animal-like forms invite interpretation beyond literal text. Participants highlighted that incorporating the script into visual culture allows audiences to intuitively engage with traditional heritage without requiring classical literacy. This makes it an ideal vehicle for *non-verbal cultural transmission* in an image-driven age.

Furthermore, this study observed that reinterpretations of the script often serve as *aesthetic markers* of resistance against cultural homogenization. In a landscape dominated by minimalist, globalized branding, the expressive intricacy of Bird-Worm Seal Script functions as an identity counterpoint—reminding audiences of cultural diversity and artistic depth. As shown in Table 2, participants across demographic groups (students, designers, and experts) ranked the script's "cultural depth" and "visual uniqueness" as its two most valued attributes.

Table 2 Perceived Value Attributes of Bird-Worm Seal Script among Different Groups (n = 27)

Value Attribute	Students (n=9)	Designers (n=9)	Experts (n=9)	Overall Rank
Cultural depth	9/9	8/9	9/9	1
Visual uniqueness	8/9	9/9	9/9	2
Symbolic potential	7/9	7/9	8/9	3
Ease of reinterpretation	6/9	7/9	6/9	4





Value Attribute	Students (n=9)	Designers (n=9)	Experts (n=9)	Overall Rank
Market adaptability	5/9	6/9	4/9	5

In sum, the Bird-Worm Seal Script has transitioned from a ceremonial text into a semiotic resource for cultural reinvention, particularly in visual fields. Its use in contemporary design strengthens the cultural self-identification of audiences and offers an emotionally resonant way to engage with heritage—one that moves beyond static preservation to dynamic reinterpretation.

3. Challenges and Strategic Pathways for Revitalizing the Bird-Worm Seal Script

While the Bird-Worm Seal Script offers rich symbolic and cultural value for modern applications, this study identifies several persistent challenges that hinder its broader dissemination and integration into contemporary design and cultural communication. Through interviews, fieldwork, and literature review, three major categories of challenges emerged: *semantic inaccessibility*, *design adaptation difficulties*, and *market-cultural misalignment*. Each of these issues demands targeted strategies to ensure that revitalization efforts maintain both cultural integrity and communicative relevance.

3.1 Challenges in Revitalization

Semantic and Functional Inaccessibility: The Bird-Worm Seal Script, being highly stylized and archaic, is not easily recognized or read by modern audiences. Unlike regular seal script, it lacks standardized forms, making it inaccessible to those without specialized training. As many interviewees noted, this semantic opacity can result in the script being perceived as “mere decoration,” stripping it of its cultural depth.

Visual and Technical Adaptation Barriers: Designers often face difficulties in translating the complex line structures and animalistic strokes of the Bird-Worm Seal Script into scalable, digital-friendly formats. For example, intricate stroke overlaps can pose problems in 3D modeling, printing, and interface responsiveness in digital applications. Additionally, the lack of vectorized font databases limits practical experimentation in commercial design software.

Cultural and Market Misalignment: There is a risk of superficial or inappropriate use of the script in mass-produced products, especially when the cultural context is ignored. Several experts warned of the dangers of “symbol dilution,” where over-commercialization detaches the script from its ritual, philosophical, or historical meanings, leading to consumer fatigue or misinterpretation.

These challenges, however, are not insurmountable. The study identifies a series of strategic interventions that can promote thoughtful revitalization while addressing technical, cultural, and educational gaps.

3.2 Strategic Pathways for Dissemination

Table 3 Identified Challenges and Corresponding Strategic Responses

Challenge	Strategic Response
Semantic opacity	Introduce annotated designs or mixed-type layouts combining Bird-Worm and standard script.
Lack of digital compatibility	Develop open-source vectorized font sets and plug-ins for design tools.
Technical design barriers	Collaborate with typographic engineers and visual coders to simplify character systems.
Cultural misappropriation risk	Promote context-based design education and cultural licensing frameworks.
Public unfamiliarity	Incorporate Bird-Worm elements into national educational materials and museum kits.

One of the most promising strategies lies in the “layered communication model,” which integrates Bird-Worm Seal forms with modern simplified characters in tandem. This approach was piloted in student workshops and demonstrated that dual-script designs help bridge the gap between visual unfamiliarity and semantic clarity, while preserving symbolic complexity.





Another effective pathway involves the development of digitally adaptive toolkits, such as those using fractal-based simplification algorithms, which allow designers to retain the visual characteristics of the script while adapting it to a range of media and scales. Additionally, initiatives such as seal-script-themed mobile keyboards and type-in games were suggested as playful, low-barrier entry points for youth engagement.

From a cultural governance perspective, this study also recommends that public institutions—particularly museums, cultural parks, and universities—serve as incubators for interdisciplinary collaborations that fuse semiotics, technology, and heritage studies. Establishing design guidelines or cultural use protocols for traditional scripts can help prevent trivialization or commodification, ensuring a more respectful and sustainable trajectory of cultural dissemination.

3.3 Summary of Insights

Revitalizing the Bird-Worm Seal Script requires more than aesthetic reuse; it involves cultural stewardship, technological adaptation, and community education. Addressing these challenges through layered communication, interdisciplinary design, and strategic policy can transform this endangered script into a dynamic symbol of cultural resilience—relevant not only for historical remembrance but also for contemporary cultural innovation.

Discussion

This study's findings highlight both the cultural significance and the practical complexity of reviving the Bird-Worm Seal Script in modern visual and symbolic design. While the research confirms its potential as a medium for cultural identity and semiotic communication, it also reveals barriers related to semantic opacity, digital adaptation, and symbolic oversimplification.

The notion that traditional forms can be creatively revitalized through digital technology and design theory finds resonance with Zhan Xujun et al. (2024), who explore AIGC's role in reinterpreting traditional Chinese garden paintings. Their research emphasizes the importance of preserving the visual logic of historical artworks while allowing AI to assist in structural reconstruction. This aligns with the present study's conclusion that the Bird-Worm Seal Script, despite its complexity, can be integrated into modern design through structured reinterpretation, provided cultural coherence is maintained.

However, a point of divergence arises when considering the limits of algorithmic interpretation. While Zhan et al. are optimistic about AI's ability to capture and replicate cultural essence, this study suggests that the Bird-Worm Seal Script—unlike traditional paintings—functions as a hybrid of image and language, requiring not only visual balance but also symbolic literacy. Without human-guided semiotic framing, the deep meanings embedded in the script risk being flattened into decorative abstractions.

Additionally, Guo Yingli's (2022) exploration of fractal-based design algorithms provides a useful counterpoint. Yao emphasizes that the application of fractal principles in visual space can enhance complexity while maintaining coherence—a strategy echoed in this study's recommendation to use computational simplification for stroke systems without erasing their character. However, Yao's focus remains on formal structure, whereas this research insists on integrating narrative and cultural context alongside geometry.

Conclusion

This study examined the Bird-Worm Seal Script as a culturally symbolic, historically rich, and visually distinctive form of ancient Chinese script, focusing on its contemporary revitalization in the context of cultural identity and design. The findings revealed that while the script holds great potential for cultural communication, several critical barriers—semantic inaccessibility, visual complexity, and commercialization risks—must be addressed for meaningful application.

By analyzing the symbolic features of the script, the study confirmed its relevance in communicating historical consciousness and collective identity in modern cultural products. Through digital reinterpretation strategies such as visual layering, modular stroke simplification, and semiotic bridging, the





Bird-Worm Seal Script can be made more accessible and engaging without compromising its cultural depth. However, this process requires thoughtful mediation between tradition and innovation, especially in preventing symbolic dilution in mass-market usage.

Ultimately, the Bird-Worm Seal Script should not be treated solely as an aesthetic artifact but as a living cultural system that demands design literacy, cultural sensitivity, and narrative coherence.

Recommendation

To ensure the sustainable revitalization of the Bird-Worm Seal Script, the following recommendations are proposed:

1. Cultural and Educational Integration

Design education programs, museum exhibitions, and public cultural initiatives should include guided interpretation of the Bird-Worm Seal Script. Interactive tools—such as annotated script books or AR-based character decoding—can help users understand its structure, origin, and meaning, enhancing cultural identification among younger generations.

2. Technological Support and Co-creation

Encourage interdisciplinary collaboration between visual designers, typographers, AI developers, and cultural historians to build open-source design toolkits. These should include vectorized stroke libraries, semantic-linked font systems, and dynamic layout templates that balance formal accuracy with digital adaptability.

3. Contextual and Ethical Application

Establish guidelines for the commercial use of Bird-Worm Seal forms to avoid cultural misrepresentation. Applications should be embedded within appropriate cultural narratives, ensuring authenticity while enabling creative expression.

4. Further Research

Future studies may explore audience reception of Bird-Worm Seal-based products in different cultural contexts, or test the effectiveness of design interventions (e.g., mixed-script typography or gamified learning modules) through empirical user studies. Comparative analysis with other ancient scripts—such as Oracle Bone Script or Tibetan Lantsa script—may also yield broader insights into symbolic revitalization in Chinese visual culture.

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