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Exploring the Role of 3D Technology in the Development of Chinese Sculpture

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Abstract

This study explores the role of 3D technology in the development of Chinese sculpture, aiming to evaluate how this emerging technological advancement is transforming traditional sculptural practices. As digital tools become increasingly integrated into artistic processes, 3D technology has emerged as a pivotal innovation in design, production, and preservation. This research employs a structured questionnaire to investigate the perceptions of professional sculptors, educator, and museum professional regarding the application of 3D printing, scanning, and modeling in sculptural art. Findings reveal that 3D technology enhances creative flexibility, production efficiency, and cultural preservation. However, challenges such as high costs, technical barriers, and authenticity concerns remain. The study contributes to the discourse on technological integration in the arts by offering practical insights into how 3D tools are reshaping Chinese sculpture in the contemporary era.

Keyword: 3D Technology, Chinese Sculpture, Contemporary Era

Introduction

The fusion of traditional art forms with modern technology has sparked significant transformations in contemporary cultural practices (Gao & Suvimolstien, 2024; Wibawa, 2024). Among these, the field of sculpture, particularly in China, has witnessed profound changes owing to the integration of digital tools (Fengyuan et al., 2024). Chinese sculpture, deeply rooted in centuries-old traditions and symbolism, is now facing both opportunities and challenges brought about by the advent of 3D technology (Yang & Liu, 2024; Zhongshu & Huadong, 2024) . In recent decades, 3D technology has been widely adopted across various industries, including manufacturing, healthcare, and architecture. The art world is no exception. The capability of 3D tools to replicate, design, and fabricate intricate forms has opened new pathways for sculptors. In China, a country with a rich sculptural heritage, the intersection of modern technology with traditional craftsmanship presents a compelling case for exploration (Li & Ratthai, 2024; Yang & Liu, 2024). Previous studies have primarily focused on Western contexts, leaving a gap in the understanding of how Chinese sculptors engage with 3D technology. This study seeks to bridge that gap and highlight localized developments in this area.

Despite the growing prevalence of 3D technology in the arts, there is limited empirical research on its specific impact on Chinese sculpture. Questions remain regarding the extent to which 3D tools are adopted by artists, the kinds of benefits and obstacles experienced, and how these tools influence aesthetic, technical, and cultural dimensions of the artwork. Moreover, concerns about authenticity and loss of traditional techniques continue to provoke debate among practitioners and scholars. Previous research has often generalized technological impacts across art forms without addressing the unique dynamics of sculptural practices in China, thereby limiting comprehensive understanding. While previous research has addressed the technical possibilities of 3D technology in art and design, very few studies have specifically explored its role in Chinese sculpture. Existing works tend to either celebrate technological innovation without sufficient cultural critique or emphasize heritage conservation without engaging with new tools. Therefore, this study aims to investigate how 3D technology impacts the preservation and reinterpretation of traditional Chinese sculpture.

The significance of this study lies in its focus on the intersection between emerging technologies and cultural heritage preservation within the Chinese context. As 3D technology continues to evolve, its application in the arts—particularly sculpture—raises important questions about the balance between innovation and tradition. This research aims to examine not only how Chinese sculptors are adopting and adapting 3D tools, but also how these technologies affect artistic expression, cultural transmission, and the reinterpretation of traditional forms. By situating the inquiry within China's unique historical and cultural framework, the study seeks to provide a nuanced understanding of digital transformation in sculptural practices. Ultimately, the purpose is to inform both academic discourse and practical strategies for integrating modern technology into the sustainable development of traditional Chinese arts.

The contribution of this study is as follows: (1) It contributes to the growing body of literature on digital art practices by focusing specifically on Chinese sculpture, a relatively underexplored area. In contrast to existing literature, which often concentrates on the novelty of 3D printing in global or Western contexts, this study foregrounds the cultural specificity and heritage-related implications in China. By doing so, it highlights the potential of 3D technology not only as a technical aid but also as a tool for cultural continuity and innovation; (2) It offers empirical insights through data collected via questionnaires distributed to professional sculptors, educator, and museum professional involved in sculptural work.

Literature Review

Technological Adoption in Sculptural Practices

Globally, the adoption of 3D technology in sculptural practices has been increasingly recognized as a transformative force, allowing for both innovation and preservation (Balletti & Ballarin, 2019). Numerous case studies across the United States, Europe, and Asia have documented how artists, museums, and cultural institutions employ 3D scanning, modeling, and printing to replicate, restore, or create sculptural works. For example, Kantaros et al. (2023) emphasized the importance of 3D scanning in cultural heritage preservation, highlighting cases where ancient sculptures were digitized to produce precise replicas or digital archives. These technologies enable accurate reconstruction of damaged artifacts and facilitate global access to cultural treasures through virtual exhibitions.

In China, however, the application of 3D technology in sculptural arts remains underexplored in academic literature. Existing research tends to concentrate on 3D applications in architecture, archaeology, and museum display, with limited focus on fine art sculpture. For instance, Chen and Zhang (2020) examined a few pioneering Chinese artists who incorporate 3D printing techniques to reinterpret traditional Buddhist and folk-art motifs (Chao, 2025; Darvas, 2007; Lan, 2024). These artists often use digital tools to modernize symbolic elements while preserving cultural connotations. However, the number of empirical studies focusing on sculptors themselves—how they integrate such technologies into their workflow and how this affects their creative expression—remains scarce. This suggests a critical gap in the literature, necessitating further inquiry into how 3D technology is adopted by sculptural practitioners in China, and how it influences both contemporary aesthetics and the transmission of heritage.

3D Technology and Sculpture

The term "3D technology" in the arts broadly encompasses tools and processes such as digital modeling software, 3D scanners, and additive manufacturing (3D printing) (Balletti et al., 2017; Garechana et al., 2019; Siotto & Cignoni, 2024). In sculpture, these technologies allow artists to simulate complex forms, alter scales digitally, and fabricate intricate structures that would be difficult or time-consuming to create manually. These tools offer a new form of craftsmanship—one that blends digital precision with traditional creativity (Dadi, 2024; Golsteijn et al., 2014; Pagán et al., 2020). Artists can now conceptualize works virtually, prototype multiple iterations rapidly, and even produce final sculptures using advanced printing materials.

Within the context of Chinese sculpture, which historically emphasizes symbolism, materiality, and manual skill, the integration of digital tools necessitates a reevaluation of established aesthetic and philosophical norms (Houli & Zheng, 2024; YinXue et al., 2024). Traditional sculpture in China often involves labor-intensive techniques using materials like stone, bronze, wood, and clay. The digital turn, as suggested by Kong et al. (2024), does not replace these traditions but augments them, enabling artists to achieve hybrid expressions that merge the tactile with the virtual. For example, a sculptor might design a complex form in software like ZBrush, 3D prints a clay mold, and then cast the final work using traditional bronze techniques. This convergence of old and new methods fosters a dynamic creative environment that challenges binary distinctions between analog and digital art (Edmonds et al., 2005; Kitzmann & Thorén, 2022; Takala, 2023). Moreover, it raises pertinent questions about authorship, authenticity, and the evolving role of the artist in the digital age.

Impact on Creativity, Efficiency, and Cultural Transmission

One of the most frequently cited advantages of incorporating 3D technology in sculptural practice is its potential to enhance creativity and efficiency. Artists can use parametric design tools to experiment with intricate forms, test different materials virtually, and scale their works without compromising detail or symmetry (Jacobs et al., 2017). According to Sousa and Xavier (2015), digital tools introduce a new form of 'parametric' creativity, wherein artists manipulate design variables in real time to explore multiple iterations. This process empowers sculptors to visualize concepts before physical production, reducing trial-and-error cycles and material waste. For Chinese sculptors, these capabilities are particularly significant in reconciling traditional aesthetics with contemporary needs. Digital tools allow for the

reimagination of heritage motifs in innovative formats, enabling artists to reinterpret cultural symbols while preserving their original significance (Casciani & Vandi, 2022; Marinău, 2024; Zhang, 2025). Museums and educational institutions also benefit by creating 3D-printed replicas for interactive displays or traveling exhibitions, facilitating cultural dissemination and safeguarding intangible heritage. For instance, students can now study replicas of ancient sculptures without compromising the integrity of the originals.

However, the widespread use of digital replicas also raises concerns about the authenticity and spiritual essence of sculptural art. Jones (2015) argues that while digital copies can democratize access, they may also dilute the viewer's emotional connection to the original work. The tactile and material qualities central to traditional Chinese sculpture—such as the texture of carved wood or the patina of aged bronze—may not be fully captured in digital reproductions. This dichotomy between accessibility and authenticity presents both opportunities and challenges, underscoring the need for thoughtful integration of 3D technology in cultural contexts.

Criticisms and Limitations

Despite its numerous benefits, the integration of 3D technology into sculptural practice is not without limitations and criticisms. High equipment costs, steep learning curves, and the need for specialized technical knowledge are major barriers to adoption, particularly among independent artists or smaller institutions. In China, these challenges are exacerbated by institutional conservatism and uneven access to digital resources. Many traditional artists express reluctance toward digital methods, viewing them as threats to the authenticity and integrity of handmade art. Additionally, ethical concerns surround the reproduction of culturally significant or sacred artifacts using 3D technology. Unauthorized digitization and replication may violate cultural norms or intellectual property rights, especially when artworks are commercialized without proper attribution. Chen and Bao (2024) discuss the growing tension between innovation and tradition, noting that while some artists welcome the fusion of digital tools with heritage practices, others fear cultural dilution or commodification. This ambivalence reflects broader societal debates about the role of technology in preserving versus transforming cultural identity.

Moreover, technical limitations of current 3D printing materials and resolution can sometimes hinder the faithful reproduction of fine artistic details, which are vital to many forms of Chinese sculpture (Siotto & Cignoni, 2024). The question of whether digital works can truly embody the spirit and craftsmanship of traditional sculpture remains contested. In summary, while global research affirms the transformative potential of 3D technologies in the arts, their application within the Chinese sculptural context remains insufficiently explored. This study aims to bridge this gap by providing empirical data and analysis on the perceptions, practices, and implications of digital tools in Chinese sculptural development.

Methodology

This research outlines the research design employed to investigate the role of 3D technology in the development of Chinese sculpture. A quantitative approach, specifically a structured questionnaire, was adopted to collect data from relevant stakeholders.

Research Purpose and Target Respondents

The primary objective of this study is to empirically explore the perceptions, applications, and implications of 3D technology among professionals in the field of Chinese sculpture. More specifically, it seeks to examine how 3D modeling, scanning, and printing tools are shaping contemporary sculptural practice, contributing to innovation, and challenging traditional methodologies. Key research questions include: To what extent are 3D technologies adopted by sculptural practitioners? What benefits and challenges are perceived? How do these technologies affect artistic expression and cultural authenticity? The target population for the study includes a broad spectrum of individuals engaged in sculptural creation, education, exhibition, and research. These consist of professional sculptors, educator, and museum professional specializing in sculpture or digital arts. This inclusive selection was designed to encompass both academic and practical viewpoints, thereby enhancing the generalizability and richness of the findings. The respondents were chosen to reflect the interdisciplinary and evolving nature of sculptural practice in the digital age.

Sampling and Data Sources

To ensure the relevance and expertise of respondents, a purposive sampling technique was employed. Participants were selected based on their engagement with sculpture and/or digital design. The recruitment process involved direct outreach through professional art academies, cultural institutions, and relevant online platforms, including WeChat groups and academic forums dedicated to digital art and sculpture. Invitations to participate in the survey were distributed to approximately 220 individuals across mainland China. A total of 186 valid responses were collected, resulting in a high response rate of 84.5%.

The respondents represented various geographic regions such as Beijing, Shanghai, Hangzhou, Guangzhou, Xi'an, and Chengdu, which are known hubs for cultural production and digital innovation. This geographical diversity further strengthens the dataset's representativeness. The survey was administered in both digital and paper formats. Online questionnaires were distributed using Wenjuanxing, a widely used Chinese survey platform, while printed versions were distributed at workshops and professional events. Prior to data collection, all participants were informed of the study's purpose and assured of the confidentiality and voluntary nature of their participation. No personal identifiers were collected, and all data were securely stored.

Questionnaire Design and Structure

The questionnaire was developed to capture both quantitative metrics and qualitative insights regarding the use and perception of 3D technology in sculpture. The instrument was reviewed by three academic experts in digital art and research methodology to ensure content validity and clarity. It consisted of four main sections. The first section collected demographic information, such as age, gender, educational background, professional role, and years of experience, to contextualize the data and facilitate subgroup analysis. The second section focused on technology usage and contained multiple-choice and Likert-scale questions to assess the frequency and scope of 3D technology applications. It examined familiarity with tools like 3D modeling software (e.g., Rhino, ZBrush, Blender), 3D scanners, and 3D printers, as well as the types of applications such as prototyping, final artwork creation, and cultural heritage restoration. The third section evaluated perceived benefits—such as enhanced creative flexibility, improved efficiency, and preservation capabilities—and

challenges like high costs, technical complexity, and threats to traditional craftsmanship. These were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. The fourth section included open-ended questions that allowed respondents to articulate personal experiences, critical opinions, or professional reflections on the integration of 3D technologies in sculptural practice. To ensure clarity and effectiveness, the questionnaire was pre-tested with a pilot group of five professionals, after which minor adjustments were made. The final version took approximately 10–12 minutes to complete. Quantitative data were analyzed using descriptive statistical methods, while qualitative responses were thematically coded to identify common patterns, insights, and concerns. This mixed-methods design provided a comprehensive and balanced understanding of the research topic by integrating numerical trends with interpretive depth.

Results and Analysis

Overview of Respondent Demographic

A total of 186 valid responses were collected through a structured questionnaire designed to investigate the role of 3D technology in Chinese sculpture. The respondents represented a diverse cross-section of professionals engaged in sculptural creation, education, and heritage preservation. Specifically, 78 participants (41.9%) identified as practicing sculptors, actively engaged in traditional and contemporary sculpture production. These sculptors bring firsthand experience in artistic creation, often combining classical techniques with emerging technologies. Another significant segment of respondents consisted of 60 art educators (32.3%), including university professors, technical school instructors, and workshop facilitators. Their involvement in pedagogy provides insight into how 3D technology is being integrated into educational curricula and training programs. The remaining 48 participants (25.8%) were museum professionals or curators, whose work centers around conservation, exhibition, and cultural heritage management. This composition ensures that the survey captures perspectives from all relevant stakeholders in the sculptural ecosystem.

Table 1
Demographic characteristics of respondents

Characteristic	Category	Percentage (%)
Role	Sculptor	41.9%
	Educator	32.3%
	Curator/Museum professional	25.8%
Age	Under 30	26.3%
	30–45	43.5%
	Over 45	30.2%
Education level	Bachelor's Degree	33.3%
	Master's Degree	51.1%
	Doctoral Degree	15.6%

Regarding age distribution, the sample was relatively balanced, enhancing the representativeness of the findings. Approximately 26.3% of respondents were under 30 years old, representing early-career professionals who may be more open to adopting new technologies. The largest group, 43.5%, were aged between 30 and 45, often corresponding to mid-career practitioners balancing tradition and innovation. The remaining 30.2% were over 45 years old, providing seasoned perspectives likely rooted in extensive practical

experience. This age diversity is important for analyzing generational differences in technology adoption and attitudes. In terms of educational attainment, more than half of respondents (51.1%) held a master's degree, reflecting the relatively high academic qualification in this field. One-third (33.3%) held a bachelor's degree, and 15.6% had earned doctoral degrees. This academic profile suggests that the respondents not only possess practical skills but also engage with theoretical and research-oriented dimensions of sculpture and technology. The inclusion of advanced degree holders is particularly relevant for understanding how academic research and technological innovation influence professional practices.

Overall, the demographic characteristics detailed in Table 1 demonstrate that the sample is well-rounded and representative of the multifaceted Chinese sculptural community. This diversity enhances the reliability and validity of the subsequent analyses and ensures that the study's conclusions reflect a broad spectrum of professional insights.

Patterns of 3D Technology Usage

The data reveal notable trends in the adoption of various 3D technologies among professionals in the Chinese sculptural field. A majority of respondents (71.5%) reported using 3D modeling software in their professional work, signaling widespread acceptance of digital design tools. This high rate indicates that sculptors and educators have largely embraced 3D modeling as an integral part of their creative and instructional processes. The software most frequently mentioned includes Rhino, ZBrush, and Blender, which are known for their robust modeling capabilities, flexibility, and user communities. These platforms allow users to experiment with complex geometries, textures, and surfaces, expanding the creative possibilities beyond traditional handcraft.

In contrast, 3D printing technologies have been adopted by 57.5% of respondents. While still substantial, this lower rate compared to modeling software suggests that 3D printing, which involves tangible fabrication, may face practical constraints such as cost, access to equipment, and material limitations. The use of 3D printers is often tied to prototyping and small-scale production, which require specialized knowledge and resources. Notably, only 31.2% of participants reported experience with 3D scanning technologies. This relatively low uptake indicates potential barriers such as high equipment costs, technical complexity, or limited perceived utility. 3D scanning is valuable for capturing the precise dimensions of physical objects, especially for restoration or replication purposes, yet its integration into everyday workflows appears limited.

Regarding specific applications, prototyping was the most common use case, cited by 64.0% of respondents. This reflects how 3D technologies facilitate iterative design and testing, allowing sculptors to refine forms before committing to final materials. Final artwork creation accounted for 39.2%, demonstrating that digital tools are also used to produce finished pieces, either entirely digitally fabricated or hybridized with traditional techniques. Restoration efforts were mentioned by 25.3%, highlighting the growing role of 3D tools in preserving and replicating heritage artifacts. These usage patterns illustrate a dynamic but uneven integration of 3D technologies in the field. Modeling software has become almost standard, whereas printing and scanning are less universally adopted, likely reflecting resource availability and professional priorities. The findings underscore the importance of

enhancing access to 3D scanning and printing tools and developing training programs to expand their use.

Perceived Benefits and Challenges

Respondents generally acknowledged significant benefits of employing 3D technologies in sculpture, with a majority highlighting enhanced creative flexibility. Specifically, 76.3% agreed that digital tools enable the development of more intricate, complex, and imaginative designs that might be difficult or impossible to realize using traditional methods alone. The ability to manipulate models virtually allows artists to experiment freely, make rapid adjustments, and explore novel forms without the material waste or time constraints associated with physical prototypes.

Efficiency and precision were also frequently mentioned advantages. Approximately 68.3% of respondents noted that 3D technologies improve accuracy, especially during early modeling and prototyping stages. The precision afforded by digital measurements reduces errors and material waste, while speeding up the iterative design process. This has important implications for cost reduction and workflow optimization in both commercial and artistic contexts. Moreover, 61.3% recognized the value of 3D scanning for conservation and preservation. Scanning fragile or historically significant sculptures creates detailed digital archives, which can be used for virtual exhibitions or physical restoration, mitigating risks related to handling and environmental damage.

Despite these benefits, several challenges impede broader adoption. The most frequently cited obstacle was the high cost of equipment and maintenance, noted by 63.4% of respondents. Sophisticated 3D printers, scanners, and software licenses require significant investment, which may be prohibitive for individual artists or smaller institutions. Additionally, 50.5% expressed concerns about the potential erosion of traditional craftsmanship. They feared that over-reliance on digital tools might devalue hand skills, artisanal knowledge, and the unique human touch that characterizes much sculptural work. The learning curve was another barrier, with 46.8% indicating difficulty mastering digital tools. This suggests a need for systematic training and support to build competencies and confidence, particularly among older or less digitally native practitioners. Together, these findings highlight a dual imperative: to leverage the benefits of 3D technologies while addressing cost, skill, and cultural preservation challenges through targeted education and resource allocation.

Cultural and Artistic Implications

Qualitative feedback gathered from open-ended survey questions and interviews revealed nuanced views on the cultural and artistic ramifications of integrating 3D technology into sculpture. Many respondents expressed optimism about the potential for digital tools to revitalize heritage practices. For instance, 3D scanning and printing enable the creation of highly accurate replicas of historical sculptures, facilitating public access through exhibitions without risking damage to originals. This democratization of cultural artifacts can broaden educational outreach and enhance cultural appreciation. Several educators advocated strongly for curricular reform. They emphasized the need to develop a “hybrid pedagogy” that combines traditional sculptural skills with digital competencies. Such integration aims to prepare future artists who can navigate both physical and virtual creative realms, ensuring the

continuity of heritage while embracing innovation. Museum curators underscored the utility of 3D-printed replicas in conservation and exhibition settings. Fragile works too delicate for public display can be represented by durable prints, allowing audiences to engage visually and tactilely with cultural heritage. This approach balances preservation priorities with experiential goals.

Nonetheless, concerns about authenticity and artistic integrity were recurrent themes. Some sculptors cautioned that excessive digitization risks diluting the emotional depth, individuality, and tactile richness inherent in handmade works. They argued that the unique imperfections and craftsmanship of manual creation are central to artistic value and identity. There were fears that an overemphasis on machine precision could lead to homogenization and loss of artistic soul. These cultural and artistic considerations suggest that 3D technology should be applied with sensitivity to context, respecting artistic traditions and ethical dimensions. The findings call for an informed and balanced approach that harnesses technological advantages without compromising heritage values or creative authenticity.

Conclusion

The research revealed that 3D technology is playing an increasingly important role in the development of Chinese sculpture. The structured questionnaire distributed to a diverse group of sculptors, educators, digital designers, and students provided quantitative and qualitative data highlighting the evolving relationship between traditional sculptural practices and digital innovation. Among the most prominent findings is the general consensus that 3D tools enhance creative flexibility and production efficiency. Respondents indicated that technologies such as 3D modeling software and 3D printing allow for the design and prototyping of complex structures, rapid scaling of artworks, and minimization of material waste. The study also found that 3D technology facilitates interdisciplinary collaboration and the reinterpretation of traditional motifs. Many artists noted that digital tools have enabled them to blend classical aesthetics with contemporary forms, thereby reaching broader and younger audiences. Moreover, educational institutions and museums are increasingly adopting 3D technology to support art education and cultural transmission. By producing replicas for study and exhibition purposes, these institutions democratize access to cultural heritage without risking damage to original works.

Despite these benefits, the study also identified several challenges and areas of resistance. A significant proportion of respondents, particularly those rooted in traditional sculptural disciplines, expressed concern over the authenticity and spiritual depth of digitally-assisted artworks. The tactile qualities and emotional resonance often associated with handcrafted sculptures are, according to some, diminished in digitally produced pieces. Furthermore, high costs, lack of technical expertise, and limited institutional support remain significant barriers to the widespread adoption of 3D technology in the sculptural arts.

Based on these findings, several practical implications can be drawn. First, there is a clear need for expanded educational programs that integrate digital technologies into traditional art curricula. Art academies and universities should offer interdisciplinary training that combines sculpture, digital design, and engineering to prepare future artists for hybrid practices. Specialized workshops and collaborative projects between fine arts and technology departments can foster skill development and innovation. Second, government and cultural

institutions should consider funding initiatives that lower the entry barriers for individual artists and small studios. Subsidies for equipment acquisition, access to shared digital fabrication labs, and professional training programs would promote wider adoption of 3D tools. These initiatives can also support cultural preservation efforts by enabling digital documentation of endangered artifacts and traditional techniques. Third, there should be more platforms for dialogue between traditional and digital artists. Forums, exhibitions, and residencies that encourage exchange and experimentation can help bridge the gap between these communities. By fostering mutual understanding and respect, such platforms can lead to more nuanced and culturally sensitive applications of technology in the arts.

While this research offers valuable insights, it is not without limitations. Firstly, the study relied on purposive sampling and voluntary responses, which may introduce selection bias. Participants who are already interested in or engaged with digital technologies might be more inclined to respond, potentially skewing the findings toward a more favorable view of 3D technology. Secondly, the questionnaire format, while effective in collecting standardized data, may not fully capture the depth and complexity of participants' experiences and perspectives. Open-ended responses were included, but future studies could benefit from in-depth interviews or case studies to explore individual narratives in greater detail. Thirdly, although the survey achieved regional diversity, it was limited to respondents based in mainland China. This may overlook insights from Chinese sculptors working internationally or those in rural regions where access to technology is more limited. Moreover, the study did not include longitudinal data, which would be useful in assessing how attitudes and practices evolve over time.

Future research could address the above limitations by adopting a mixed-methods approach, combining quantitative surveys with qualitative interviews and ethnographic studies. This would allow for a more holistic understanding of how 3D technology is shaping artistic identity, production processes, and audience reception. Longitudinal studies could be conducted to track changes in adoption rates, technological proficiency, and aesthetic trends over time. This would be particularly useful in evaluating the long-term impact of educational reforms and policy interventions aimed at promoting digital integration in the arts. Another promising direction is comparative research between countries or regions. By examining how 3D technology is adopted in sculptural practices across different cultural and institutional contexts, researchers can identify best practices and contextual factors that facilitate or hinder innovation. Such studies could help position Chinese sculpture within a global discourse on digital art and cultural heritage preservation. Finally, more attention should be given to audience perspectives. While this study focused primarily on practitioners, understanding how viewers perceive digitally-produced sculptures—particularly in terms of authenticity, emotional engagement, and cultural resonance—would provide a fuller picture of 3D technology's impact on the art ecosystem.

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