

Design Knowledge Transfer From Traditional Chinese Furniture: Contemporary Design and Expression of Tenon Structure Bamboo Furniture Space

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ABSTRACT

This article delves into the integration of traditional Chinese furniture design, particularly its mortise and tenon structure, into contemporary furniture design. It focuses on the sustainable and aesthetic values of these ancient techniques, emphasizing their relevance and adaptability in modern design contexts. Drawing from scholarly insights, the article bridges the gap between historical craftsmanship and modern design innovation, illustrating how traditional methods like the mortise and tenon can inspire and enhance modern furniture aesthetics. This exploration not only highlights the potential of these time-honored techniques to contribute to sustainable design practices but also underscores the importance of preserving cultural heritage within the evolving landscape of contemporary furniture design. Through this analysis, the article sheds light on the rich possibilities for incorporating traditional Chinese design principles into modern furniture, fostering a dialogue between past and present design philosophies.

Keywords: Traditional chinese design, Modern furniture innovation, Cultural heritage in design, Sustainable craftsmanship

INTRODUCTION

Embracing the rich legacy of traditional Chinese furniture design, this article examines the profound influence and application of the mortise and tenon structure in modern furniture design. This time-honored technique, deeply rooted in Chinese cultural heritage, is not merely a construction method but a symbol of aesthetic harmony and structural ingenuity. Scholars such as Li (2019) and Deng (2018) have underscored the significance of this traditional design element in contemporary furniture, noting its adaptability and relevance in modern contexts. As we navigate through the realms of sustainability and cultural preservation, the mortise and tenon joint, celebrated for its simplicity and strength, emerges as a key to bridging the past and the present. This exploration seeks to unravel the potential of traditional Chinese design principles in shaping the future of furniture design, while paying homage to the cultural depth and environmental consciousness inherent in these ancient practices.

In delving deeper into the essence of traditional culture, particularly in the context of Chinese craftsmanship, we find that it transcends mere physical artifacts and techniques. Traditional culture represents the crystallization of human civilization, embodying the collective wisdom and life experiences of our ancestors. It is a tapestry woven with the threads of political philosophy, national character, and spiritual literature Yu (2019). As we embrace and understand this prevailing culture, we gain a deeper appreciation of our historical roots. This intrinsic value of traditional culture, especially as observed in the mortise and tenon structure, is a testament to the ingenious minds that have shaped human history and culture.

Furthermore, the mortise and tenon technique, a staple in Chinese woodworking, exemplifies the intricate balance between functionality and artistry. Its widespread application and recognition across the world point to a universal appreciation of this craft. However, the current challenge lies in effectively displaying and spreading the knowledge of this ancient technique, especially in the modern era where technology and interactive means are reshaping the way we perceive and engage with cultural artifacts Portschy (2017). By integrating modern interactive design methodologies with traditional Chinese craftsmanship, we can create a vibrant dialogue between the old and the new. This fusion not only ensures the preservation of cultural heritage but also opens doors to innovative design possibilities, enhancing the relevance of traditional techniques in contemporary furniture design.

Thus, this article not only celebrates the mortise and tenon joint as a cornerstone of traditional Chinese furniture design but also advocates for its dynamic incorporation into modern design practices. In doing so, it aims to foster a richer understanding and appreciation of this ancient technique, ensuring its continuity and evolution in the ever-changing landscape of furniture design.

Historical Context and Significance

In this detailed exploration, we delve into the profound impact and continued relevance of the traditional Chinese mortise and tenon structure within the realm of modern furniture design. This technique, steeped in the rich tapestry of Chinese cultural heritage, transcends its original utilitarian purpose to symbolize aesthetic harmony and structural ingenuity. The scholarly works of Xu (2021) and Yu (2019) have been pivotal in underscoring the enduring significance of this traditional design element, particularly highlighting its adaptability and pertinence in contemporary contexts.

The mortise and tenon joint, celebrated for its simplicity and robustness, has historically served as more than a mere construction method. It represents a deeper philosophical and cultural ethos, mirroring the values of precision, harmony, and sustainability that are deeply rooted in Chinese tradition. This exploration seeks to unravel the potential of these enduring design principles in shaping the future of furniture design while respecting and preserving the rich cultural depth and environmental consciousness embedded in these practices.

Moreover, the article examines the role of the mortise and tenon joint as a bridge between past and present, offering a critical link that fuses historical craftsmanship with modern design innovations. In the current landscape, where sustainability and cultural preservation are increasingly paramount, the mortise and tenon structure emerges not only as a testament to the legacy of traditional Chinese design but also as a viable solution for sustainable and environmentally conscious design practices.

This comprehensive analysis illuminates how the integration of traditional methods into modern design can lead to a harmonious blend of old and new, fostering innovation while honoring ancestral wisdom. It highlights the opportunity for contemporary designers to draw inspiration from the mortise and tenon joint, applying its principles to create furniture that resonates with modern sensibilities and sustainable practices. Ultimately, this exploration into the historical context and significance of traditional Chinese furniture design advocates for a future in furniture design that deeply values and continuously evolves from its cultural heritage, promoting a dialogue between traditional craftsmanship and contemporary innovation.

Technical Overview of Mortise and Tenon Structure

The historical fabric of traditional Chinese furniture design, woven with the threads of the mortise and tenon joint, offers a unique lens through which we can view the intersection of art, culture, and engineering. This ancient technique, which has been a cornerstone in Chinese woodworking and architecture for millennia, transcends its functional purpose to become a narrative of China's rich cultural tapestry. The mortise and tenon structure, a testament to the ingenuity and foresight of ancient craftsmen, has endured through dynasties and societal transformations, symbolizing the enduring nature of Chinese heritage.

As scholars Xu (2021) and Yu (2019) point out, the adaptability of this design element in contemporary furniture is not just a matter of aesthetic revival; it's a reconnection with a philosophical ethos that values harmony, precision, and sustainability. These principles, deeply rooted in the Chinese way of life, are mirrored in the meticulous crafting and enduring stability of mortise and tenon joints. This method of joining wood, without the need for nails or adhesive, reflects a profound understanding of materials and a respectful approach to construction that aligns with modern sustainable practices.

The historical significance of the mortise and tenon technique also lies in its portrayal of social and political narratives. Each piece of furniture crafted using this method was not just a utilitarian item but a representation of the societal values and technological advancements of its time as discussed by Portschy (2017). For instance, the elegance and complexity of mortise and tenon joints in imperial furniture were indicative of the sophistication and grandeur of the ruling class, while simpler designs mirrored the modesty and functionality valued in everyday life.

Furthermore, the integration of this time-honored technique into modern furniture design is not just a nod to the past; it is a bold statement about the

future of design. In an age where sustainability is increasingly at the forefront of design philosophy, the mortise and tenon structure offers a compelling blueprint. It embodies the principle of doing more with less, maximizing the strength and longevity of furniture with minimal environmental impact. This approach resonates deeply in our contemporary world, which seeks to balance technological advancement with ecological responsibility based on Portschy (2017).

The exploration of traditional Chinese design principles, particularly the mortise and tenon joint, in the context of modern furniture design, is a journey that transcends geographical and temporal boundaries. It is a dialogue between the old and the new, a confluence of historical wisdom and contemporary innovation. This article aims to illuminate the paths through which these ancient practices can enrich and inform modern design, creating furniture that is not only visually appealing and functionally robust but also culturally and environmentally conscious as per discussions by Yu (2019). In understanding and appreciating the historical context and significance of these traditional techniques, we open up new avenues for creative expression and sustainable practices in furniture design, carrying forward the legacy of our ancestors into the future.

Contemporary Application and Adaptation

This section delves into the contemporary reinterpretation of the traditional mortise and tenon techniques in modern furniture design, a fusion that exemplifies the evolving landscape of design in the modern era. Through various case studies and practical examples, the article investigates how contemporary designers are innovating with these age-old methods, artfully combining them with modern materials and technological advancements. This exploration is enriched by insights from scholars like Li (2019) and Wan (2020), who have noted the use of the mortise and tenon joint for its structural simplicity and aesthetic versatility in contemporary design.

The article highlights how the mortise and tenon joint, a classic element of traditional Chinese craftsmanship, is being adapted to resonate with modern design sensibilities. This adaptation is not just a fusion of the old and the new; it is a thoughtful integration that maintains a deep connection to cultural heritage while embracing modern design needs. Contemporary designers are drawing on the mortise and tenon's inherent strengths—its robustness and aesthetic appeal—to create furniture that is both innovative and reflective of enduring design traditions.

Furthermore, this section examines how the incorporation of these traditional techniques in modern furniture design aligns with the current focus on sustainability and eco-friendliness in the design world. The mortise and tenon technique, known for minimizing the use of adhesives and metal fasteners, presents an environmentally responsible approach to furniture design, echoing the growing global emphasis on sustainable practices.

In essence, the contemporary utilization and adaptation of the mortise and tenon technique symbolize a harmonious blend of tradition and innovation. This approach is reflective of a broader trend in the design world,

where there is a growing appreciation for the value of traditional craftsmanship in contemporary contexts. It signifies a dynamic and evolving field, where the legacy of the past is not only preserved but also reimagined to meet the challenges and aesthetics of the present. This segment of the article thus captures the essence of how traditional design principles are being transformed and revitalized in modern furniture design, paving the way for a future where heritage and innovation coexist and complement each other.

Innovative Integration of Traditional Mortise and Tenon Techniques into Modern Furniture Design

In this part, the study explores the innovative integration of traditional mortise and tenon techniques into modern furniture design. Through case studies and practical examples, we examine how contemporary designers are reinterpreting these age-old methods, blending them with modern materials and technologies. This includes a focus on how designers, as highlighted by scholars like Byars (2020) and Wan (2020), are utilizing the structural simplicity and aesthetic flexibility of the mortise and tenon joint to create furniture that resonates with modern sensibilities while maintaining a connection to cultural heritage. This adaptation showcases a marriage of tradition and innovation, reflecting the evolving landscape of furniture design in the modern era.

In recent years, there has been a significant surge in the application of these traditional joinery techniques in various forms of contemporary design. Designers have been inspired by the functional elegance of the mortise and tenon joint, exploring its potential in various contexts. For instance, the interactive media wall project, as discussed in “Interactive media wall (conductive ink, projection mapping) - Music Playing Wall” (2019), demonstrates how traditional design elements can be incorporated into cutting-edge interactive installations, creating a bridge between historical craftsmanship and modern technology.

The adaptation of the mortise and tenon technique in contemporary furniture design also aligns with the growing trend of sustainability in design. As noted in “Mortise and tenon woodworking joints” (Craftsman Space, 2018), this ancient method of joinery not only offers strength and durability but also aligns with eco-friendly practices by minimizing the use of harmful adhesives and metals. This approach is increasingly relevant in today’s environmentally conscious society. Moreover, the aesthetic appeal of mortise and tenon joints has been celebrated in various modern design exhibitions and installations. For example, *The Local Projects | Please Touch the Art Exhibition* (2018) showcases how traditional craftsmanship can be made interactive and engaging for contemporary audiences, thereby ensuring that these age-old techniques continue to be relevant and appreciated.

The global relevance of traditional Chinese joinery techniques is also highlighted in various cultural contexts, as seen in *Ming Style Burmese Rosewood Chair* (2019), where the elegance and timelessness of these techniques are celebrated in furniture styles around the world. This global appreciation

underscores the universal appeal of the mortise and tenon joint and its adaptability across different cultures and design philosophies.

The contemporary application and adaptation of traditional mortise and tenon techniques in modern furniture design signify a harmonious blend of historical reverence and forward-thinking innovation. By embracing these age-old methods and reinterpreting them in the context of modern materials, technologies, and ecological considerations, designers are not only preserving a rich cultural legacy but also paving the way for future explorations in sustainable and aesthetically appealing furniture design.

Sustainability and Environmental Impact

This segment highlights the role of traditional techniques like bamboo utilization and the mortise and tenon structure in promoting sustainability in modern design. Drawing upon the research of scholars such as Yu (2021) and Wan (2020), we explore how these age-old practices not only ensure longevity and durability but also minimize environmental impact due to their eco-friendly nature. The discussion extends to how contemporary designers are incorporating these sustainable practices, demonstrating a commitment to environmentally responsible design while honouring traditional craftsmanship.

In the context of global environmental concerns, the relevance of sustainable practices in design has never been more pronounced. Traditional techniques, such as those seen in the mortise and tenon joints, offer an exemplary model of sustainability. As noted in *Mortise and tenon woodworking joints* (Craftsman Space, 2018), these joints eliminate the need for harmful adhesives and reduce reliance on metal fasteners, which are both energy-intensive and environmentally detrimental. This practice not only resonates with current sustainable design philosophies but also highlights the timeless wisdom embedded in traditional craftsmanship.

Furthermore, the use of natural materials like bamboo, as discussed in *Furniture - History* (n.d.), aligns with the principles of ecological design. Bamboo is not only renewable but also boasts a high carbon capture rate, making it an ideal material for sustainable furniture design. This approach is deeply rooted in the principles of circular economy and resource efficiency, ensuring that the design process contributes positively to environmental conservation.

The integration of these traditional practices into contemporary design is also evident in projects like *Interactive media wall (conductive ink, projection mapping) - Music Playing Wall* (2019), where sustainable materials and methods are employed in innovative ways. This project showcases how traditional craftsmanship can be adapted to modern contexts, creating designs that are both environmentally responsible and technologically advanced.

Additionally, the research by Hagedorn-Saupe and Ermert (2014) on European Museum Statistics provides insights into how cultural institutions are increasingly emphasizing sustainability in their exhibits and operations. This trend reflects a broader societal shift towards valuing and preserving traditional techniques as part of our cultural and environmental heritage.

The emphasis on sustainability and environmental impact in the field of modern design underscores the enduring relevance and importance of traditional techniques like bamboo utilization and the mortise and tenon structure. By drawing inspiration from these age-old practices, contemporary designers are not only creating products that are durable and aesthetically pleasing but also contributing to a more sustainable and ecologically conscious world. This approach ensures that the legacy of traditional craftsmanship is carried forward, not just as a cultural artifact, but as a living, evolving practice that responds to the pressing environmental challenges of our time.

Challenges and Opportunities

This article now addresses the challenges in merging traditional and contemporary design methods while also highlighting the opportunities this fusion creates for innovation. We discuss the complexities involved in integrating the meticulousness of traditional mortise and tenon techniques with modern design aesthetics and technologies. The insights of scholars like Sun (2017) and Wan (2020) guide this exploration, illuminating both the hurdles in preserving the integrity of traditional methods and the potential for creative innovation. This fusion not only respects cultural heritage but also opens avenues for sustainable, forward-thinking design solutions.

The marriage of traditional and contemporary design poses unique challenges, particularly in maintaining the authenticity and integrity of age-old techniques like the mortise and tenon joint. As outlined in *Mortise and Tenon Woodworking Joints* (Craftsman Space, 2018), these methods require precision and skill that can be at odds with mass production methods dominant in contemporary furniture manufacturing. Balancing the need for efficiency with the desire to preserve these detailed techniques is a significant challenge in modern design.

On the other hand, this fusion presents unparalleled opportunities for innovation. Projects such as the *Interactive Media wall (conductive ink, projection mapping) - Music Playing Wall* (2019) demonstrate how traditional elements can be reimaged through modern technology, creating interactive and dynamic designs that were previously unattainable. This blend of old and new not only preserves traditional craftsmanship but also pushes the boundaries of what is possible in design.

Furthermore, the integration of traditional methods in contemporary design aligns with the growing emphasis on sustainability. As discussed in *Furniture - History* (n.d.), the use of eco-friendly materials and techniques is becoming increasingly important. Traditional methods like the mortise and tenon joint, which minimize waste and use renewable resources, are now seen as not just culturally significant but also environmentally responsible.

The research by Hagedorn-Saupe and Ermert (2004) in *A Guide to European Museum Statistics* provides insights into how museums are adapting to showcase both traditional and contemporary designs. This trend indicates a growing public interest in the fusion of historical and modern aesthetics, suggesting a market that is receptive to designs that blend these elements.

While the integration of traditional and contemporary design methods presents certain challenges, it also offers a wealth of opportunities for innovation and sustainability. By acknowledging and overcoming these challenges, designers can create works that not only pay homage to traditional craftsmanship but also align with modern aesthetics and environmental considerations. This approach opens up new avenues for design that are culturally enriching, environmentally conscious, and forward-looking.

CONCLUSION AND FUTURE DIRECTIONS

In conclusion, this article has explored the intersection of traditional Chinese mortise and tenon techniques with modern furniture design, highlighting the importance of sustainability, cultural heritage, and innovation. The challenges and opportunities presented by this fusion suggest a rich area for future research and design exploration. Future directions could include deeper studies into sustainable materials, technological advancements in furniture making, and the global application of these traditional techniques. Emphasizing the importance of cultural preservation in design, this article encourages ongoing dialogue and experimentation in the field of furniture design.

As we look towards the future, the potential for integrating sustainable materials in furniture design, as noted in *Furniture - History* (n.d.), becomes increasingly significant. The exploration of renewable resources such as bamboo and the application of eco-friendly joinery methods like the mortise and tenon can lead to groundbreaking developments in sustainable design. These practices not only align with environmental objectives but also offer new aesthetic possibilities.

Technological advancements, particularly in digital fabrication and interactive design, offer another promising avenue for future exploration. The success of projects like *Interactive media wall (conductive ink, projection mapping) - Music Playing Wall* (2019) demonstrates the potential for incorporating technology into furniture design in ways that enhance both functionality and user experience. Furthermore, the global application of traditional techniques, as documented in *Mortise and tenon woodworking joints* (Craftsman Space, 2018), suggests an exciting possibility for cross-cultural exchange and innovation in design. By adapting these techniques to various cultural contexts, designers can create furniture that resonates with a global audience while preserving and honoring traditional craftsmanship.

Research into museum practices, as explored in *A Guide to European Museum Statistics* by Hagedorn-Saupe and Ermert (2004), can also inform future directions in furniture design. Museums, as custodians of cultural heritage, provide valuable insights into how traditional and contemporary designs can be presented and preserved for future generations.

In sum, the integration of traditional Chinese mortise and tenon techniques in modern furniture design opens a multitude of paths for future exploration and development. This convergence of the old and the new not only enriches the field of furniture design but also contributes to broader discussions about sustainability, cultural exchange, and technological innovation.

As we move forward, it is crucial to continue this dialogue and experimentation, pushing the boundaries of what is possible in the realm of furniture design while respecting and preserving the rich heritage from which these techniques originate.

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