

Technical Analysis of the Creative and Functional Aspects of Archaeological Wooden Collectibles

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Abstract: The study focuses on the creative and functional aspects of wooden artifacts from archaeological sites, emphasizing the technological, artistic, and cultural practices of ancient civilizations. Wooden artifacts offer valuable insights into past societies, reflecting not only daily life and craftsmanship but also symbolic and aesthetic expressions. The research explores ancient woodworking techniques, investigating methods used for carving, shaping, and joining wood. It also examines the artistic elements embedded in these artifacts, such as design, decoration, and the role of wood in religious or ritual contexts. Furthermore, the study addresses the preservation of wooden objects, analyzing ancient methods of protecting them from environmental degradation. These preservation strategies are critical for the survival of such artifacts, which are vulnerable to decay over time due to natural factors like moisture and temperature, the research adopts an interdisciplinary approach, integrating perspectives from archaeology, art history, and conservation science. By combining these disciplines, the study provides a comprehensive view of the creation, use, and preservation of wooden artifacts, highlighting their importance as both functional tools and cultural symbols. The findings contribute to our understanding of ancient craftsmanship and offer insights into modern-day preservation techniques for wooden objects found in archaeological contexts.

Keywords: Archaeological wood, craftsmanship, preservation techniques, functional analysis, ancient woodworking, conservation science.

1. Introduction

Wooden artifacts are among the most significant but fragile archaeological finds (Taylor et al., 2018). These items ranging from everyday tools to ceremonial objects are important for understanding past societies. However, due to the organic nature of wood, many such items have deteriorated over time. Despite these challenges, the preservation of archaeological wooden objects remains critical for historical, cultural, and artistic scholarship. This paper seeks to analyze both the creative and functional dimensions of wooden collectibles, investigating the techniques used by ancient artisans and modern conservation efforts to preserve them.

In addition, environmental factors such as humidity, temperature fluctuations, microbial activity, and insect infestation play a major role in accelerating the degradation of wooden materials (Martín & López, 2023). Without proper preservation conditions, wooden artifacts can quickly lose their structural integrity and surface details, which are essential for interpretation. Therefore, conservation strategies such as controlled storage environments, chemical stabilization, and advanced imaging technologies are increasingly employed to extend the lifespan of these objects. Furthermore, interdisciplinary collaboration between archaeologists, conservators, and material scientists has enhanced the understanding of wood preservation techniques, ensuring that these valuable cultural assets can be studied and appreciated by future generations.

Moreover, the study of wooden artifacts also provides insight into the technological advancement and cultural identity of past civilizations. Variations in carving styles, joinery techniques, and decorative patterns reflect the local resources, beliefs, and craftsmanship traditions of different communities. By examining these elements, researchers can reconstruct aspects of social structure, trade networks, and daily life that are not always visible in other types of

archaeological remains. In this context, wooden collectibles are not only physical remnants of the past but also valuable narratives that connect present societies with their historical roots. Wooden furniture in ancient Egypt represents a remarkable combination of functionality, symbolism, and artistic excellence. Royal objects, in particular, were often crafted with meticulous attention to detail, incorporating precious materials such as gold leaf, ivory, and semi-precious stones. These elements not only enhanced the aesthetic value of the objects but also conveyed social hierarchy and divine associations. Thrones, as symbols of authority and power, were designed to reflect the status of the ruler while also embodying religious and cultural meanings embedded in their decorative features. The following figure illustrates one of the most iconic examples of such craftsmanship.



Fig. 1 - The throne of Tutankhamun, showcasing intricate decorative motifs and symbolic artistry that reflect royal status and religious beliefs in ancient Egypt. Source: Nicholas Reeves, *The Complete Tutankhamun: The King, the Tomb, the Royal Treasure*. London: Thames & Hudson, 1990.

As shown in Figure 1, the throne demonstrates the sophisticated craftsmanship of ancient Egyptian artisans, particularly in the use of detailed carvings and symbolic imagery. The iconography depicted on the throne, including scenes of royal life and divine protection, emphasizes the close relationship between kingship and religion in ancient Egyptian society. Furthermore, the combination of wood with luxurious decorative materials highlights both the functional and ceremonial roles of such objects. This example underscores how wooden artifacts can serve not only as practical items but also as powerful cultural expressions that provide valuable insights into the beliefs, values, and technological capabilities of past civilizations.

2. Creative Aspects of Archaeological Wooden Collectibles

2.1 Artistic Techniques and Ornamentation

Wooden artifacts often served not just functional purposes, but also as canvases for artistic expression. Ancient woodworking involved sophisticated design techniques, which varied across cultures and periods. These artistic features can be divided into the following categories.

2.1.1 Carving and Relief Work

Carving was one of the earliest and most common methods used in ancient woodworking. Artisans would use tools like chisels, knives, and gouges to create reliefs on wooden surfaces. The depth and complexity of these carvings could range from simple geometric patterns to intricate depictions of figures and scenes (Chen et al., 2008). Notable examples include the Egyptian tomb furniture and Celtic ceremonial objects, both of which demonstrate high levels of detail. As illustrated in Figure 3, carved wooden figurines such as ushabti statues demonstrate the precision and technical mastery of ancient artisans in transforming raw wood into highly detailed human representations. The careful shaping of anatomical features, combined with the addition of incised hieroglyphic inscriptions, reflects not only artistic skill but also the functional and spiritual significance of these objects. In ancient Egyptian funerary practices, ushabti figures were believed to serve the deceased in the afterlife, highlighting the integration of craftsmanship with religious beliefs. Furthermore, the durability of these carvings, despite the organic nature of wood, indicates the advanced techniques employed by artisans to ensure both aesthetic quality and longevity. This example reinforces the importance of carving as a fundamental technique in ancient woodworking, bridging practical function, artistic expression, and symbolic meaning. In addition, the stylistic consistency observed in carved wooden figures suggests the existence of established artistic conventions and workshop traditions in ancient societies. Artisans likely followed standardized proportions, poses, and iconographic elements to

ensure that the objects fulfilled their intended symbolic and ritual functions. At the same time, subtle variations in carving techniques and detailing may indicate differences in craftsmanship, regional styles, or the social status of the object's owner. This highlights that carving was not merely a technical process, but also a culturally embedded practice shaped by tradition, belief systems, and societal structure. Consequently, the study of carved wooden artifacts provides valuable insights into both the technological capabilities and the socio-cultural frameworks of past civilizations.



Fig. 2 - Carved wooden ushabti figures displaying detailed relief work and inscriptions, representing the craftsmanship of ancient Egyptian artisans. Source: Freepik.

2.1.2 Inlay and Decoration

Inlay work involved embedding materials such as ivory, bone, precious metals, and stone into the wooden surface. This technique was prevalent in ancient Mesopotamian, Egyptian, and Roman cultures. The inlay of ivory and bone was particularly common in Egyptian funerary goods, where wood was often used as a base for elaborate inlay designs (Petraakis & Leontsini, 2022). These items were sometimes further decorated with pigment to enhance their visual impact.

2.1.3 Paint and Pigmentation

Ancient wooden objects were frequently painted using natural pigments derived from minerals and plants. For example, Egyptian wooden coffins were often brightly colored with symbolic representations of the afterlife (Abdrabou et al., 2022). Paint not only served decorative purposes but also had cultural significance, often symbolizing concepts such as divinity or immortality. This is evident in painted wooden fragments such as those shown in Figure 3, where the use of vivid pigments and symbolic hieroglyphs illustrates both artistic sophistication and religious meaning. These visual elements were not merely decorative but conveyed beliefs related to the afterlife and divine protection.



Fig. 3 - Painted wooden fragments with hieroglyphic decoration, illustrating the use of pigment and symbolic imagery in ancient Egyptian funerary objects. Source: Storage Record 386 (German Mission Record).

2.2 Symbolism and Cultural Significance

Wooden objects were often imbued with cultural symbolism, reflecting the values, beliefs, and rituals of the societies that produced them.

2.2.1 Religious Significance

Wooden items like idols, statues, and ritual implements were central to religious practices. The Maya and Aztec cultures, for instance, used carved wooden statues of gods in their ceremonies (Christie, 2005). These carvings were often highly stylized, with symbolic meaning encoded into the shapes and forms.

2.2.2 Status and Power

Wooden objects were also used as symbols of status and power. For instance, Sumerian and Akkadian thrones were often made from highly polished and inlaid wood to signify the ruler's divinity (Van Dijk, 2016). Viking longboats and weapons were similarly carved with decorative motifs that reflected both artistic achievement and social rank.

3. Functional Aspects of Archaeological Wooden Collectibles

3.1 Practical Uses of Wooden Artifacts

Wood was a versatile material used in ancient times for a wide range of functional objects.

3.1.1 Architectural Applications

Wooden elements were central to the construction of both domestic and religious structures. For instance, the ancient Egyptians used wooden beams for the roofs of temples and tombs (Spencer, 2023). Similarly, wooden doors, windows, and beams have been discovered in the ruins of Roman villas and Greek temples (Malacrino, 2010).

3.1.2 Everyday Tools and Household Items

In addition to architectural uses, wood was employed in making furniture, tools, and utensils. Examples include chairs, tables, and storage chests in ancient Egypt and Roman furniture (Killen et al., 2022). The functionality of these wooden objects highlights their importance in daily life.



Fig. 4 - Infographic-About-Houses-in-Ancient-Egypt-Ancient-Egyptian-Architecture-Egypt-Tours-Portal, <https://www.egypttoursportal.com/ancient-egyptian-architecture/> 2025

3.1.3 Weapons and Military Tools

Ancient civilizations also crafted weapons such as bows, spears, and shields from wood. The Viking shields and Greek bows are prime examples of wooden artifacts that served both functional and symbolic purposes (Kumar & Dixit, 2019).

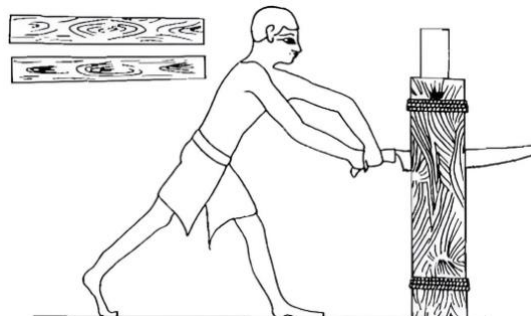


Fig. 5 - Ancient Egyptians for their woodworking achievements, <https://www.woodworkersnw.org.au/articles/they-came-pulled-sawed-and-conquered-the-ancient-egyptians-/2025>

3.2 Wood Selection and Preservation

The durability of wooden artifacts often depended on the type of wood used and how it was treated.

3.2.1 Wood Types

Hardwoods like oak, walnut, and teak were favored for their strength and durability, while softer woods were often used for decorative items or objects that did not require long-lasting strength (Shelach-Lavi, 2015). For example, the Egyptian coffins were made of cedar due to its pleasant aroma and resistance to decay.

3.2.2 Treatment and Preservation

Ancient artisans applied various techniques to enhance the durability of their wood, such as smoke-curing, oiling, and resin application. These treatments slowed down the natural degradation of wood (Betjeman, 2012). In addition, wood was sometimes burned or charred to make it more resistant to environmental damage.

4. Preservation and Restoration Techniques

The preservation of wooden artifacts has always been challenging due to the material's vulnerability to biological decay, moisture, and environmental factors. The development of modern conservation techniques has improved the longevity of these artifacts.



Fig. 6 - Preservation and Restoration Techniques of Archaeological Wooden Collectibles

4.1 Chemical Treatments

To prevent wood from shrinking or cracking, conservators use polyethylene glycol (PEG) to replace water in the cells of the wood. This chemical stabilizes the wood structure, preventing further degradation (Stamm, 1971).

4.2 Controlled Environments

Today, many museums and archaeological sites use climate-controlled environments to protect wooden artifacts from excessive moisture or extreme temperature fluctuations, both of which can accelerate decay (Luciani, 2013).

4.3 Digital Reconstruction and 3D Scanning

In addition to physical restoration, 3D scanning technology has allowed conservators to digitally reconstruct and model damaged or incomplete wooden objects. This technology enables researchers to study artifacts in unprecedented detail without risking further harm to the original items (Mazzetto, 2024).

5. Conclusion

Wooden artifacts provide a unique and invaluable perspective on the lives and cultures of ancient civilizations. Through their artistic craftsmanship and functional design, these objects tell the stories of the people who created them. Despite the challenges of preservation, modern techniques in conservation science have enabled the study and restoration of these objects, ensuring that future generations can continue to appreciate their historical, artistic, and cultural significance. By continuing to explore the intersection of art, function, and preservation, scholars and conservators can gain deeper insights into the past and enhance our understanding of the role that wood played in shaping ancient societies.

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Conflict of Interest

The authors declare no conflict of interest.

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