

## Fossil Amber in Artistic and Cultural Representations

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**Abstract:** Fossil amber is a key reference for the study of human cultures across history and to advance in the study of multiple evolutionary processes. As presented in this article, fossil amber has been used in multiple artistic representations. These representations include symbols associated with cultural values, beliefs, decorations and practices that approach animal and plant representations, jewelry designs with amber nuggets, artistic representations, and cultural-religious symbols. The characterization of the connection between fossil amber and artistic representations provides information relevant for the study of multiculturalism across history.

**Keywords:** amber; art; culture; fossil; paleoart

### 1. INTRODUCTION

The characterization of fossil amber inclusions advances the study of the evolution of arthropod-host interactions, holobiont and vector-borne diseases [1-5]. Furthermore, the connection between fossil inclusions and artistic representations, known as paleoart, can be applied to address scientific questions [6, 7]. However, before approaching scientific questions, amber was used in artistic and cultural representations with the oldest piece representing a hewn bead was dated to ca. 11,000-9000 B.C. (<https://www.amberpieces.com/amber-in-arts.html>).

To further advance in the connection between fossil amber and art and culture, this article focuses on fossil amber without inclusions used in multiple artistic representations. These representations include not only animal and plant forms, but also jewelry designs with amber nuggets, paintings, bottles, pitchers and spoons, and cultural-religious symbols. The artistic representations included in the study cover amber of different origins (Sumatra, Baltic, Burma) and Era, Periods/EPOCHS (Table 1).

**Table1.** Data for dating amber pieces according to their origin.

ERA	PERIOD/EPOCH (Origin)	AGE (ca. million years ago)
Paleozoic	Cambrian	510-543
	Ordovician	438-510
	Silurian	395-438
	Devonian	345-395
	Carboniferous (Mississippian)	320-345
	Carboniferous (Pennsylvanian)	280-320
	Permian	250-280
Mesozoic	Triassic	208-250
	Jurassic	146-208
	Cretaceous (Burma)	65-146
Cenozoic	Paleocene	54-65
	Eocene (Baltic)	38-54
	Oligocene	24.5-38

	(Sumatra and Mexico)	
	Miocene	5-24.5
	(Sumatra and Mexico)	
	Pliocene	1.6-5
	Pleistocene	Recent-1.6

### 2. ANIMAL AND PLANT REPRESENTATIONS

Animal and plant symbolism are key in mythology and folklore in different cultures throughout history. The use of animal and plant symbols represent cultural values, beliefs, and practices, and some are considered sacred and significant or associated with negative connotations [8]. For example, in Hinduism cows are considered sacred and represent wealth, strength, and abundance. In Buddhism, the lotus flower represents enlightenment and purity, while dinosaurs represented as dragons are associated with power and good luck. For Christians, doves are associated with peace and love, but serpents constitute a symbol of evil. In Native American cultures, eagles, bears and wolves are commonly used in rituals and ceremonies. In cultures such as Aztec, various sculpted animal forms including fleas, frogs and serpents had a special significance [9]. Referring to an example in amber, in Sumatran culture, frogs and turtles are commonly represented and carved in ambers produced by the extinct 20 to 40 million years ago (mya) prehistoric leguminous tree species, *Hymenaea protera* [10].

**Representation 1. Hand-carved frog.** Sumatra. Bali, Indonesia. Cenozoic era (Miocene-Oligocene). Dimensions: 4.1 x 3.0 x 2.0 cm, 8.6 g. Special combination of colors with "fire" inside when put against the direct sunlight.



**Representation 2. Hand-carved miniature turtles.** Sumatra. Bali, Indonesia. Cenozoic era (Miocene-Oligocene). Dimensions: 3.5 x 3.2 x 2.1 cm, 7.8 g, 4.0 x 2.7 x 1.7 cm, 5.6 g, 5.0 x 3.7 x 2.2 cm, 9.2 g.



**Representation 3. Elephants.** Baltic. Cenozoic (Eocene). From Poland. Dimensions: variable.



**Representation 4. Hand-crafted bonsai tree.** Baltic. Cenozoic (Eocene). Dimensions: ca. 18 x 15 x 17 cm, 505 g. Each leaf has hand-picked amber pieces which are hand casted and attached, leaf by leaf, in the most pleasing to the eye shapes. According to cultural traditions, these bonsai recreate the tree of life and may bring you luck.



### 3. JEWELRY DESIGNS WITH AMBER NUGGETS

Jewelry designs are based on amber nuggets and are common in the market (e.g., [https://www.etsy.com/market/amber\\_nugget\\_jewelry](https://www.etsy.com/market/amber_nugget_jewelry)). However, some pieces may be associated with human wellness [11]. For all amber pieces but particularly for jewelry, it is important to certify the authenticity of the nuggets used for design [12] by trusting the provider/expert and validation using UV light, saltwater floating, sinks in fresh water, acetone resistance, heat – smell of pine resin.

**Representation 5.** Cameo in white amber set on darker amber. Baltic. Cenozoic (Eocene). From Poland. Dimensions: 2.8 x 2.5 cm.





**Representation 6.** Amber jewelry in sterling silver 925. Baltic. Cenozoic (Eocene). From Lithuania and Poland. Dimensions: variable. Pendant with fossil acari and insect Inclusions Baltic (Lithuania). Cenozoic (Paleogene, Eocene). Dimensions: 17 x 12 x 3 mm.



**Representation 7.** Dragonfly brooch. Baltic. Cenozoic (Eocene). From Lithuania. Dimensions: 80 x 75 mm, 10.4 g. Although fossil arthropod inclusions are common in amber (e.g. Representation 6), jewelry designs of arthropods with fossil amber are less common.



**Representation 8.** Amber nuggets. Baltic (from former German Democratic Republic, GDR). Cenozoic (Eocene). Dimensions: 14 - 42 mm, 1.0 – 4.1 g (total weight, 115 g, N = 44). Amber nugget on bronze frog. Baltic (Lithuania). Cenozoic (Eocene). Dimensions: ca. 5.7 x 3.2 cm.



#### 4. ARTISTIC REPRESENTATIONS

Amber has been widely used for different artistic representations including landscapes, bottles and silver pitchers and spoons. These artistic representations have been used not only for decorations but also to promote collaboration between art and science in research projects [13].

**Representation 9.** Painting with amber chips to give a three-dimensional effect. Baltic (Lithuania). Cenozoic (Eocene). Dimensions: 29 x 20 cm.



**Representation 10.** Landscape carved in amber. Baltic (Lithuania). Cenozoic (Eocene). Dimensions: ca. 2.3 x 2.5 cm.



**Representation 11.** Chinese snuff bottles. Burma. Mesozoic (Cretaceous). From Shanghai, China. The first two from Qing Dynasty, ca. 1900. Dimensions: variable.





**Representation 12.** Silver 925 pitcher and spoon with amber ball. Baltic. Cenozoic (Eocene). From Poland (pitcher) and Lithuania (spoon). Dimensions: ca. 5.0 x 2.6 cm (pitcher) and ca. 13.3 x 2.5 cm (spoon).



### 5. CULTURAL-RELIGIOUS SYMBOLS

Amber has been considered a sacred compound and image of divinity, awareness, and protection across different cultures and civilization [14]. For Christians, amber symbolizes the divinity and the glory of God's presence. In Greek and Roman mythology, amber was related to Apollo, the leader of the Muses and good of healing, medicine and sun among other things, and regularly depicted carrying an amber necklace or sporting workers with amber ornaments. In many cultures, amber was perceived as exotic materials associated with symbolism, therapeutic benefits and decorative qualities [15, 16]. Accordingly, amber use in the Iberian Peninsula has been documented since the Palaeolithic [17].

**Representation 13.** Chinese Buddha. Burma. Mesozoic (Cretaceous). From Shanghai, China. Qing Dynasty, ca. 1900. Dimensions: ca. 14 x 8 cm.



**Representation 14.** Polish Greek scene carved on reverse. Baltic. Cenozoic (Eocene). From Poland. Dimensions: ca. 6.3 x 6.1 x 0.5 cm.



## 6. CONCLUSIONS

The study of the use of fossil amber in artistic and cultural representations provides information on the coexistence and evolution of multiple cultures and religions. This insights may be also relevant to approach the interactions with paleoart.

## ACKNOWLEDGMENTS

Amber pieces were certified as authentic and tested with UV light, saltwater floating, sinks in fresh water, acetone resistant, heat – smell of pine resin smell. The amber pieces included in the study are from KGJ Collection (Ciudad Real, Spain).

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**Citation:** José de la Fuente, "Fossil Amber in Artistic and Cultural Representations" *International Journal of Humanities Social Sciences and Education (IJHSSE)*, vol 12, no. 3, 2025, pp. 38-45. DOI: <https://doi.org/10.20431/2349-0381.1203004>.

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