

# JET IN THE ANCIENT TIMES

*viladonga.xunta.gal*

*An approximation  
from Castro de  
Viladonga*



# Jet in the ancient times

The presence of jet in archaeological contexts can be traced back to the Upper Paleolithic, with samples over 19000 years old, like the ones found at "Las Caldas" cave. However, its use as a personal ornament or amulet is considerably increased during the Ancient Roman times, mainly since the 2nd century a. C.

The rise of its popularity could have been boosted when Rome gained access to the raw material once it controlled the Cantabrian Sea, due to the advantages that the extensive Roman trade network had; or even due to its undeniable symbolism, as it has been attributed magical properties—especially apotropaic ones—since very ancient times. Its value as a protective amulet made it fit perfectly among the many beliefs and superstitions of the ancient Galician-Roman world.

Known in ancient times as *succinum nigrum* or *lapis gagates*, jet takes its Latin name from the *Gages* river, where it originates according to Pliny the Elder. It is precisely Gaius Plinius Secundus who speaks of some of the properties that made jet so precious in ancient times in the book XXXVI of his work *Naturalis Historia* (ca.79).

## XXXVI

141 Gagates lapis nomen habet loci et amnis Gaxis Lyciae. aiunt et in Leucolla expelli mari atque intra XII stadia colligi. niger est, planus, pumicosus, levis, non multum a ligno differens, fragilis, odore, si teratur, gravis. fictilia ex eo inscripta non delentur; cum uritur, odorem sulphureum reddit; mirumque, accenditur aqua, oleo restinguitur.

142 fugat serpentes ita recreatque volvae strangulationes. deprendit sonticum morbum et virginitatem suffitus. idem ex vino decoctus dentibus medetur strumisque cerae permixtus. hoc dicuntur uti Magi inea, quam vocant axinomantiam, et peruri negant, si eventurum sit quod aliquis optet.

The stone of Gagates bears the name of the place and the river Gages, in Lycia. It is also said that these stones were thrown into the sea at Leucolla and picked up inside 12 stadiums.

Jet is black, flat, porous, light, not too different from wood, brittle, with a heavy scent. Anything written on pottery with it won't be erased; when it burns, it gives off a sulfurous smell and, amazingly, it lights up with water and is extinguished with oil. It scares away snakes and heals tightness in the vulva. Its smoke reveals epilepsy and virginity. If boiled with wine, it cures tooth ailments; and if mixed with wax, scrofula. It is said Magi use these stones in what they call axinomancy, and that they do not lie when they say jet burns up completely if someone's wish is going to come true.

# Geological origins of jet

Jet is a type of fossilised wood that underwent a formation process in which the dead wood was impregnated with bituminous substances. Petrological and chemical studies report that jet is a type of humid, perhydrogenated coal that is created by the absorption of hydrocarbons into its macromolecular structure during early stages of its diagenetic evolution. The absorption of these hydrocarbons provokes an anomalous carbonification process, giving jet a high stability and hardness (3-4 in the Mohs scale).

In the case of Asturian jet, which is the closest source of raw material to Viladonga, most of the analyzed wood samples point at the *Agathoxylon asturiensis* as their source.

Though we currently lack comparative physicochemical analyses, it is highly probable that the source of the jetstones recovered in Viladonga lies in the Asturian coast; to be more specific, in a 12 km long and 1 km wide strip that spans the towns of Oles, Argüero and Villaverde, the coast of Villaviciosa and even Lastres, in the council of Colunga, as can be seen by the veins that can still be observed nowadays at the coastal cliffs.

All these characteristics make the Asturian Jurassic jet a unique raw material. Its quality can only be compared with that of the Whitby jet (England) and the Lycian coast jet (Turkey).

# Extraction and trading

At first, provisioning must have occurred from materials taken in beaches and cliffs, sometimes also dragged by the river currents, as Pliny recounted in the case of jet of Anatolian origin. From the moment Rome, led by Augustus, controlled the territory of the Iberian Peninsula, Asturian jet would start to be collected in the same way. Though nowadays, jet mining in ancient times is not a certainty, the high demand and the economic value of this material make the beginning of its extraction from underground mines since the first moments of Roman dominion probable.

Asturian jet would soon enter the Roman trade routes both by land, using the network of Roman roads, and by sea, following the already established Atlantic routes.

# Production process: carving, decoration and finishes

The elaboration process starts with selecting the adequate fragments for each type of work.

Jet carving is performed with razors and very sharp gravers. It is conditioned by the jet's conchoidal fracture, which makes it harder to make clean lines in finer traces. Working with an iron file is also vital in order to carve certain figures.

Decorative themes encompass multiple forms and motives. Among the most common decorations, cuts are the most prominent. Some of the most striking cuts are those done in the shape of intertwined lines, found in beads located in several deposits of the Peninsular territory.

Mythical creatures, deities, portraits, animals, letters... There was also a high variety of iconographic motives, judging by the findings made in this and other deposits from Ancient Roman times.

The microscopic study of the prints that can be seen in some pieces confirms the use of bits and gimlets to pierce the stone, something vital for beads and pendants.

Decorations in the shape of concentric circles, which were very common in the late Ancient Era, were made with special three pointed punches. Some of these pieces could be game tokens or dice, and numbers would be identified by these circles.

Polishing (from Latin *politus*) would be the final touch. At first, it would be done with some abrasive material like fine grain sandstone or quartzite, and then it would be given shine with a cloth or leather piece.

# A workshop at Viladonga?

Several researchers theorize about the possibility of the existence of a jet jewelry and amulet workshop at Castro de Viladonga. Among the evidence that supports this hypothesis, aside to the proximity to one of the possible extraction sites, the recovery of several fragments of raw jet stands out. On the other hand, the existence of broken pieces that are compatible with production work confirm the hypothesis of their production in some of the castro's spaces. Jet working does not need very specialized tools, but the attention to detail observed in the recovered pieces shows the skill and the ample knowledge of the material.

The existence of pieces recovered in Viladonga that are identical to others from other spots of the peninsula would also support the possibility that this castro was the source of some productions. A good example of this would be the ring with the schematic figure that, despite its iconographic properties, presents an identical parallel at the Museu Nacional de Arqueologia de Lisboa.



# Variety in production

Jet production became considerably diverse from the 2nd century a. C. Among the objects that were made, we can see beads, rings, pendants, bracelets, hairpins, handles, pins, dice, and even some spindle whorls. Most of the pieces have quality decorations and finishes, which grants an already precious object even more value.

A type of production that is quite singular due to its apparently specific meaning are bear figures. These animal carvings appear quite frequently at child tombs at the British Isles. Hence, they are interpreted as protection for children in the afterlife.

# Rings

The four rings made entirely from jet that were found in Viladonga stand out due to the quality of their finishes and their very probable symbolism, expressed through diverse iconographic and decorative motives which not always have a single explanation.

For the following motive, there are several explanations; it could be an allegory, it could be imaginary or mythical, a plant, a symbol or letter represented in a simplified fashion...

Below, we can see what could be a symbol of Capricorn, identified by the spiral-shaped tail characteristic of this zodiac sign. The flying bird to its right also appears frequently in association to this creature. Capricorn was Augustus' zodiac sign, and the legions created by this emperor carried banners with this symbol, which could imply a relationship between one of those legions and the ring bearer.

# Mountings

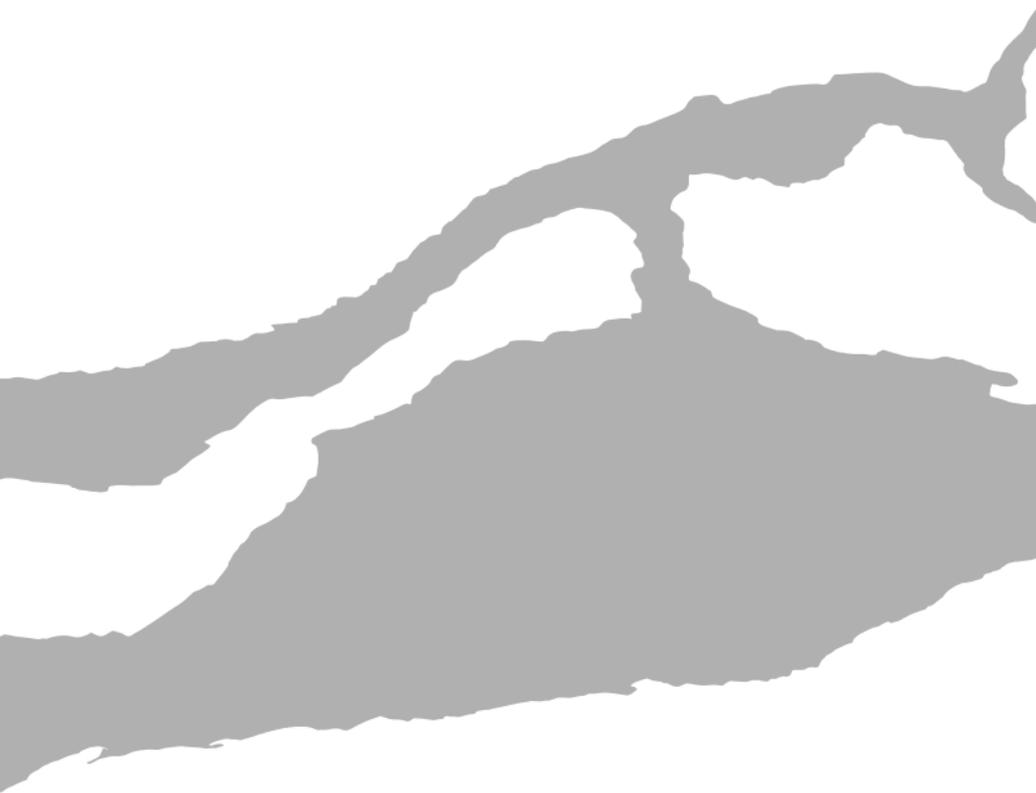
Aside from the rings made completely up from jet, small, decorated fragments used as mountings in rings made from other materials can also be found. In Viladonga's case, an iron ring with a jet mounting that represents a lion stands out. Mounting making was precision work, due to the frailty and the size of the piece. Resin was used to affix the jet piece to the ring.

Since ancient times, lions have been symbols of strength, dignity and victory, so they are usually associated to militaristic environments. The possibly late dating of this lion could also frame it inside the iconographical evolution of Christianity, as the "Lion of Judah", thus becoming an allegory of Jesus.

# Beads

Be it for necklaces, bracelets or dress-up ornaments, beads have been the most abundant productions in the archaeological record for millennia. In Ancient Roman times, at least in ancient Gallaecia, beads decorated with cuts in the shape of intertwined lines were very common. There are samples found in deposits like Santa Tegra and Proendos which are almost identical to one of the Viladonga pieces.

This is another bead with parallels in the Galician territory. It has a parallelepipedal shape and it is decorated with six concentric circles. Even the distribution of said circles is very similar to its twin from Ourense.



# Imitations and counterfeit

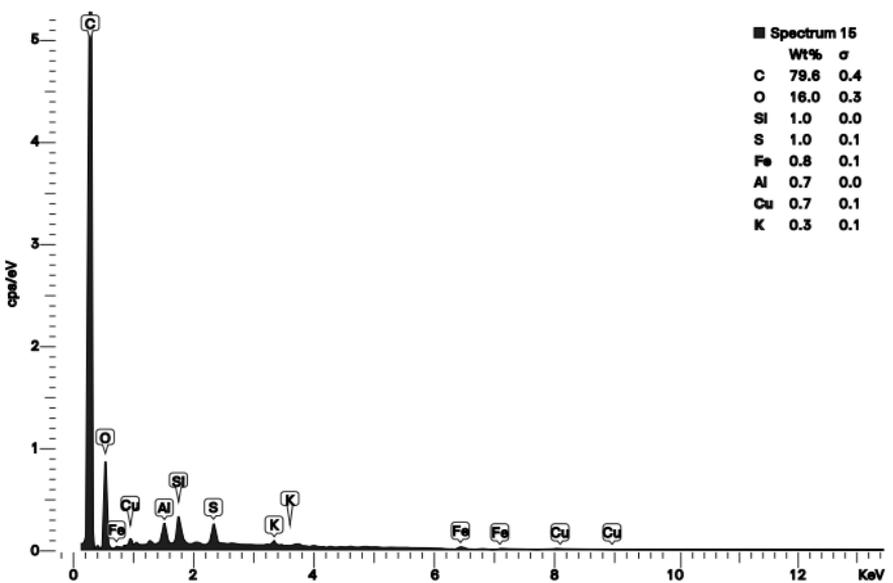
The high demand and low availability of jet causes the problem of imitations and counterfeit. Already in the 1st century, Pliny detailed the use of coloured glass paste to imitate some gemstones. In the case of jet, besides glass paste, different varieties of lignite could be used. They have a very similar look, but their chemical structure and composition is very different, and therefore it is a lot less durable and resilient.

At Castro de Viladonga, we have some samples of possible imitations made using glass paste and different coal varieties as raw materials.

# Jet from Castro de Viladonga under an electron microscope

Recent studies performed at the Museo do Castro de Viladonga brought forth the possible identification of ichnofossils present at an Ancient Roman jet ring recovered during the excavations made during the decade of the 70s of the last century. Ichnofossils or trace fossils are structures or prints that reflect the vital activity or behavioural pattern of organisms. In this case, paleo-xylophagus —small animals from the late Jurassic period (155 million years ago) that would feed on wood that would later become jet— were found.

The use of an electron microscope also allowed us to learn the chemical composition of some of the jet pieces that were recovered at Castro de Viladonga. These data will help us discern, in the future, the origin of the provisioning sources, since the percentage of some components like sulphur (S) seems to vary significantly among several areas. In the case of the jet that was recovered at Castro de Viladonga, it remains at a mean value of 1.12 Wt%.



# Jet in the ancient times. An approximation from Castro de Viladonga

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Reconstruction of a Jurassic beach by Marta Cancio



"La Griega" beach



Jet deposit found at the cliffs of the beach



Bronze chisel found at the Castro de Viladonga



Reconstruction of a craftsman carving jet



Trace left by an ancient drill bit on a jet bead



Raw jet



Hairpiece with hairpins from the coffin of a Roman girl. In the Yorkshire Museum



Knife handle



Medusa pendant. In the Yorkshire Museum



Jet bears from two child's graves. In the Colchester & Ipswich Museums



Ring with a carved "A". In the Castro de Viladonga. The carved "A" could be the first letter of the owner's name



Ring with a schematic figure. In the Castro de Viladonga



Ring with Capricorn and a flying bird. In the Castro de Viladonga



Iron ring with an engraved jet stone depicting a lion



Close up of the lion



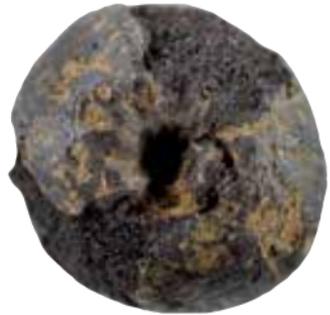
Bead decorated with incised lines linked with each other.  
In the Castro de Viladonga



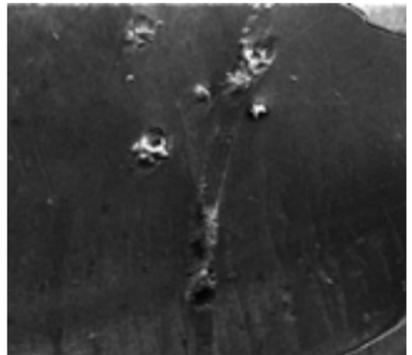
Bead decorated with concentric circles. In the Castro de Viladonga



Glass paste beads



Coal bead



Trace fossils of paleo-xylophagous in a jet ring. In the Castro de Viladonga