



## Characterizing prehistoric archery: technical and functional analyses of the Neolithic bows from La Draga (NE Iberian Peninsula)



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### ABSTRACT

The discovery in 2012 of a complete yew bow (*Taxus baccata*) in the lakeside Neolithic site of La Draga, together with two more fragmented bows from previous field seasons, are the oldest evidence of archery among farming communities in Europe. This group of bows has allowed different aspects of prehistoric archery to be considered. Firstly with regard to the manufacturing processes of these weapons, which show great uniformity in terms of the raw material used, but some variety in shapes and sizes. Secondly about the socioeconomic significance of weapons in societies which no longer based their economy on hunting and gathering.

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### 1. Introduction

Studies of archery in archaeology are dominated by the experimental and technological focus and little is known about the social role of archery in prehistory. Wooden bows were a crucial component of hunting and warfare equipment but, being made of organic matter, their preservation in archaeological deposits is difficult, which has impacted on research into their function and significance. Vital implements in the subsistence of hunter–gatherer societies, in the early Bronze Age they became objects with great ideological value. Little is currently known about the role wooden bows might have played in the Neolithic, when the economic value of hunting diminished significantly and the evidence of frequent warfare or conflicts is quite scarce.

In Europe more than one hundred remains of Mesolithic and Neolithic bows have been recovered, with the most abundant and best documented being of Neolithic chronology. Most come from peat or lacustrine deposits in central and northern Europe. The circum-Alpine region has provided most of the evidence, all from

lacustrine deposits except the bows of Hauslabjoch (Ötzi) (Grosjean et al., 2007) and Schnidejoch (Sutter 2006) located in two glaciers, or others coming from high altitude snowfields (Callanan 2013). Many of these bows are not dated. The oldest dated bows correspond to the Mesolithic of Holmegaard (Denmark) (7000 cal BC) and Vis I (Russia) (7300–6300 cal BC) (Junkmanns 2006). However dates of the Neolithic bows are concentrated mainly around the fourth millennium cal BC, and there are virtually no dates from the fifth and sixth millennium cal BC. In fact the bows from La Draga (5300–5000 cal BC) together with the Linearbandkeramik bow from Kückhoven-Erkelenz, dated to 5090 BC (Weiner 1994), are the only ones dating back to the sixth millennium cal BC. The bows from La Draga are the only ones recovered in the Mediterranean context to date.

The site of La Draga is located in the north-east of Iberia, on the eastern shore of Lake Banyoles, a small lake 50 km from the Mediterranean coast and 40 km south of the Pyrenees, 172 m a.s.l. (Fig. 1). One part of the site lies beneath the waters of the lake, but the most extensive area of the village is still on dry land. The site must originally have occupied over 8,000 m<sup>2</sup>.

Archaeological work began in 1990, and it is currently the only Early Neolithic lakeshore site in the western Mediterranean being

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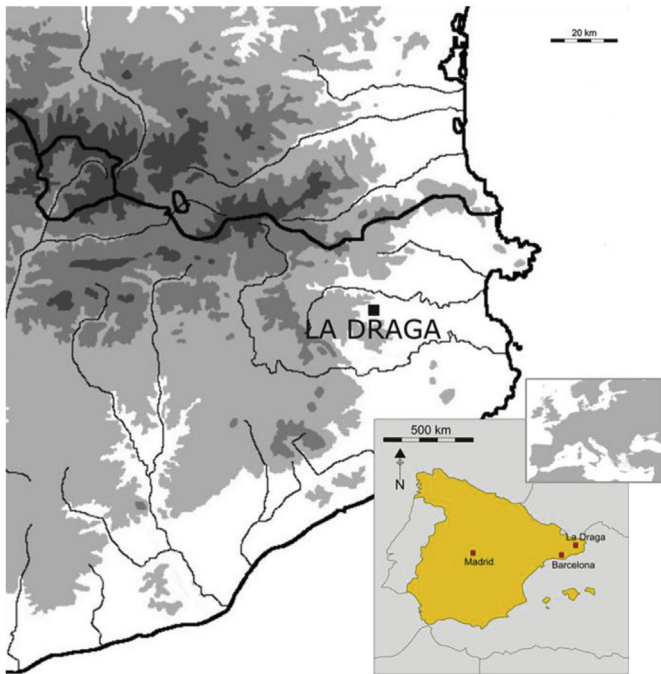


Fig. 1. Location of the site of La Draga (Banyoles, Spain).

regularly excavated. A total of 818 m<sup>2</sup> have been excavated in terrestrial and underwater sectors (Bosch et al., 2000, 2006, 2011; Tarrús 2008). From 2008 to 2012 systematic surveys have been conducted around the lake, which have allowed the verification of the absence of settlements prior to the Neolithic Age. Two phases of occupation have been documented at the site (Caruso and Piqué 2014; Palomo et al., 2014). The earliest occupation C-14 dates are in the range between 5324 and 5000 cal BC (Fig. 2). During this phase, wooden huts were built with oak, of which some structural and architectural remains are still preserved. It is in this level that most of the wooden objects have been recovered, including the

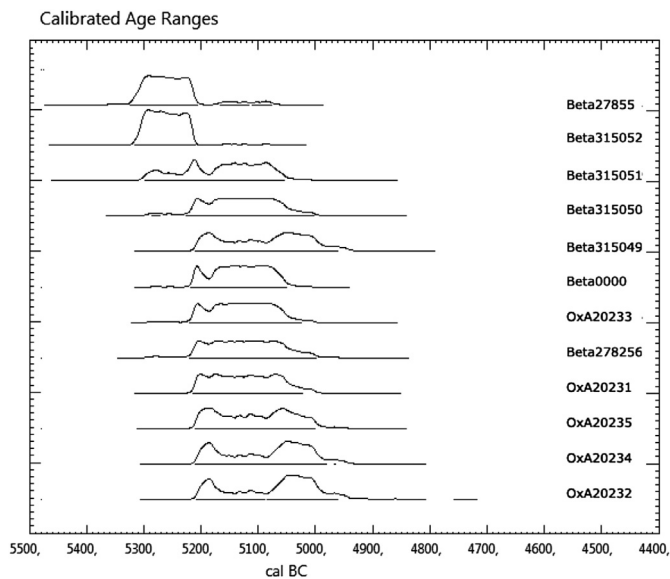


Fig. 2. Plot of the calibrated C14 dates on short life samples from La Draga (CALIB RADIOCARBON CALIBRATION PROGRAM. Calibration data set: intcal09.14c. Turney et al., 2009).

three bows that are the object of study in this paper. The second phase of the site has provided a range of C-14 dates between 5210 and 4980 cal BC. This phase incorporates stone as a building material, highlighted by an area paved with blocks of travertine and numerous hearths. In this phase, organic matter is preserved only in charred form, because it has been out of the groundwater for long periods of time.

Among the most remarkable archaeological remains recovered corresponding to Phase I are a range of wooden instruments (Fig. 3) related to agricultural work, domestic activities, woodworking and weapons, as well as other objects of undetermined function (Bosch et al., 2006; Palomo et al., 2011). The three wooden bows constitute a singular discovery due to their antiquity and good preservation. They also enable the question about the role and specific socio-economic implications of these weapons in early farming societies to be addressed. Consequently, this paper correlates the technical and formal characteristic of wooden bows with available data about hunting practices and their importance in the early Neolithic. The aim is to assess the role that this weapon may have played in economic specialization and social differentiation.



Fig. 3. Sample of wooden instruments from La Draga: (1) oak paddle (*Quercus* sp deciduous), (2) pine adze handle (*Pinus* sp.), (3) elderberry sickle (*Sambucus* sp.), (4) boxwood digging stick (*Buxus sempervirens*), (5) oak ladle, (6) boxwood sickle handle, (7) small oak paddle, (8) boxwood comb, (9) oak cutting instrument, (10) lime fiber string (*Tilia* sp.).

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