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**OPEN WARFARE OR THE ODD SKIRMISH? BELL BEAKER VIOLENCE IN THE
NORTHEASTERN IBERIAN PENINSULA**

ABSTRACT

Archaeological examples of violence in prehistory have increased in recent years. The evidence, methodology employed and interpretation of the data have been diverse. However there is coincidence in questioning the myth of the "peaceful past". This work provides new data on this issue from the northeastern Iberian Peninsula, associated with the Bell Beaker culture (c. 2800-2350 cal BC). Material from two megalithic tombs, Can Gol I and Can Gol II (Barcelona Province), particularly a set of flint arrowheads, has been re-visited. Use-wear analysis on the arrowheads confirmed the presence of impact fractures. This indicates that the arrowheads were not funeral offerings, but they reached the graves inserted in the buried bodies. The data from the only site with evidence of massive death by violence in the neighbouring region (Costa de Can Martorell) reinforces the hypothesis of episodes of conflicts and violence during prehistory. However the interpretation of the nature of such violence remains open to debate: was it an act of warfare or an occasional skirmish? And is the image of the Bell Beaker warrior identified in other European contexts also applicable to this area?

VIOLENCE, LATE NEOLITHIC AND BELL BEAKER CULTURE

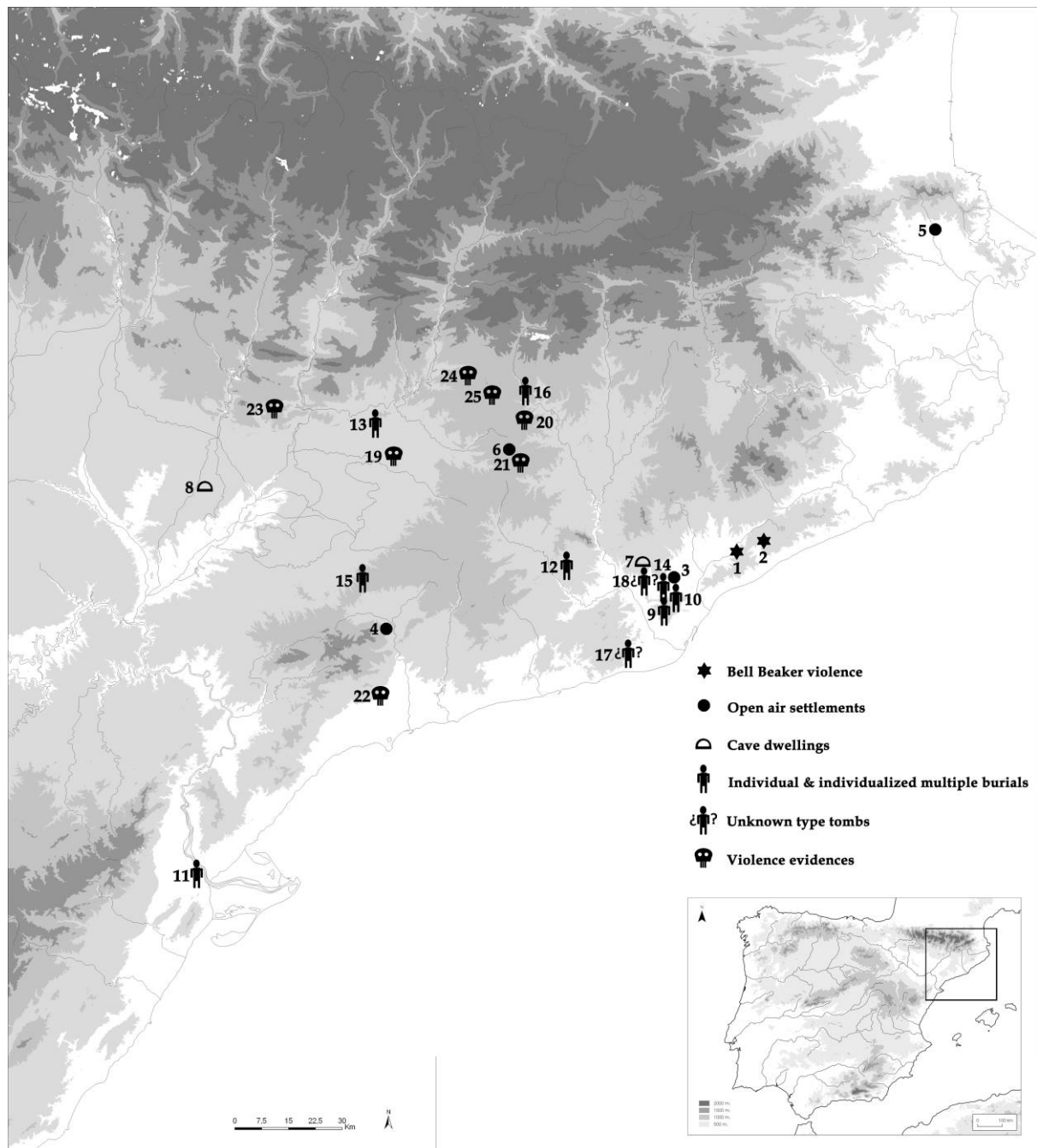
26 In recent years, numerous archaeological examples of violence and aggression in Prehistoric
27 Europe have been published. They cover a wide range of geographical areas and
28 chronological periods; from the Mesolithic (Roksandic 2004; Schulting 2006), Neolithic
29 (Christensen 2004; Golitko & Keeley 2007; Schulting & Wysocki 2005; Wild et al. 2004) and
30 Late Neolithic/Chalcolithic (Beyneix 2007; Meyer et al. 2009) to the Bronze Age (Aranda-
31 Jiménez et al. 2009; Harding 2007; Jantzen et al. 2011). Together with the evidence, new
32 theoretical and methodological approaches and interpretations of conflict and war have
33 appeared (Ferguson 1999; Haas 2001; Lull et al. 2006). Aspects such as the reasons for its
34 appearance, its scale, the weapons used, combat tactics, and methods of identification have
35 been studied through archaeological and ethnographic data (Judd 2008; Parkinson & Duffy
36 2007; Thorpe 2003). At the same time, some collections of studies have examined one or
37 several of these points (Carman & Harding 1999; Pearson & Thorpe 2005; Schulting &
38 Fibiger 2012, among others). The debate remains open and major points of disagreement still
39 exist. However, one of the main conclusions shared by the vast majority of researchers is that
40 the myth of the “peaceful past” should be questioned. Keeley (1996) in his classic and
41 controversial book *War Before Civilization*, was one of the first scholars to draw attention to
42 the high level of violence documented in past societies. Rather than peaceful communities,
43 these societies would fight frequently and violently when the situation required (Keeley 1996,
44 174).

45 This paper will contribute new data to this debate, through a description of two tombs located
46 in north-east Iberia: Can Gol I and Can Gol II (La Roca del Vallès, Barcelona) (Figure 1).
47 Both sites reflect different phases of use, although the phase linked with violence is
48 associated with the Bell Beaker culture in both cases. In the area of study, the Bell Beaker
49 culture is partially contemporary with the Véraza culture, and both are situated in the same
50 chronological period: the Late Neolithic (Castro et al. 1996, 99-109). The characterisation of

51 these two groups is based on mainly artefactual criteria. The Véraza group or Verazian was
52 identified some years ago by a certain pottery type (cylindrical ware with superimposed lugs)
53 and the comparison with an equivalent group in southern France of which it must have been
54 an integral part (Martín 1980, 2003). A set of C14 dates for both cultures has recently been
55 reviewed, with a total of 11 dates for the Bell Beaker, 23 for the Verazian and seven that
56 might belong to either group. The chronological range obtained was 2800-2350 cal BC for
57 the former and 3350-2250 cal BC for the latter (Soriano 2013, 20-22) (Table 1).

58 The interpretation of the Bell Beaker culture has generated a long discussion in European
59 prehistory which has still not been resolved. The various hypotheses put forward include
60 those that see it as a single population group (Childe 1930; Sangmeister 1963); a set of
61 prestige objects exchanged among elites over long-distance networks (Clarke 1976; Harrison
62 1977); an ideological “koiné” that homogenised or unified local groups and created a space
63 for exchange and circulation (Vander Linden 2006); or a synthesis of several of these
64 proposals (Benz et al. 1998). In our opinion, based on the data available in the present area of
65 study, the Bell Beaker culture cannot be regarded as independent of the Verazian
66 communities. The synchronicity seen in the C14 dates is also visible in other archaeological
67 contexts, both settlements and funerary sites. Bell Beaker settlements are frankly rare
68 although they have been documented both in the open air and in caves and rock-shelters. The
69 former type of site includes Vapor Gorina (Roig et al. 2009), Molins de la Vila (Adserias et al.
70 2003), Camí dels Banys de la Mercè (Palomo 2006) and Collet de Brics d’Ardèvol (Castany
71 et al. 1992, 35). The best documented deposits of the latter type are Level 3 in Cova del Frare
72 (Martín et al. 1985) and Roques del Sarró (Equip Sarró 2000). At all of these, pottery with
73 Bell Beaker decoration is associated with Véraza ware. To date, no settlement is known with
74 exclusively Bell Beaker decorated pottery. In contrast, burials have been documented solely
75 with decorated pottery of this type: Can Fatjó dels Aurons (Roig et al. 2009), Carrer París

76 (Francès et al. 2007), Cova del Calvari (Esteve 1966), Cova de la Ventosa (Llongueras et al.
77 1981), Reguers de Seró (López et al. 2010), Torrent de Sant Oleguer (Cuesta 1985), etc.
78 These burials are practically all located in the same kind of structures as those where only
79 Véraza ware is found (caves, rock-shelters, megaliths, hypogea, chambers with access shafts).
80 However, the main difference lies in them being individual or individualised multiple burials.
81 That is to say, the graves contain a single individual, or several where each one maintains its
82 individuality regarding space and grave goods. In contrast, the characteristic Verazian
83 funerary practice is collective and multiple: the individuals share a single space and grave
84 goods, and are moved when it is necessary to bury a new body or for ideological reasons
85 (manipulation of the bones). The contrast between the conception of death of an individual
86 (Bell Beaker) or the collective type (Verazian) is highly significant. In our opinion, this points
87 towards the change from a non-asymmetric society to one with social inequalities, in the
88 middle of the Late Neolithic. In this way, the Bell Beaker culture should be interpreted as
89 reflecting the existence of a specific and privileged social group within the Verazian
90 communities. This group would accumulate, both in life and in death, the decorated pottery
91 and the set of objects associated with it. These objects (copper daggers and Palmela points,
92 gold ornaments, archer's wrist guards, and pyramidal buttons with "V"-shaped perforations)
93 are similar to those found among other privileged groups in the rest of Europe. The economic
94 base for subsistence and social reproduction was possibly the appropriation of the main
95 source of food in the community: the livestock and/or pastures (Soriano 2013, 46).



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Figure 1. Distribution of Bell Beaker sites mentioned in the text: 1. Can Gol I and Can Gol II (La Roca del Vallès, B.); 2. Costa de Can Martorell (Dosrius, B.). *Open air settlements*: 3. Vapor Gorina (Sabadell, B.); 4. Molins de la Vila (Montblanc, T.); 5. Camí dels Banys de la Mercé (Capmany, G.); 6. Collet de Brics d’Ardèvol (Pinós, L.). *Cave dwellings*: 7. Cova del Frare (Matadepera, B.); 8. Roques del Sarró (Lleida, L.). *Individual and individualized multiple burials*: 9. Can Fatjó dels Aurons (Sant Cugat del Vallès, B.); 10. Carrer París (Cerdanyola del Vallès, B.); 11. Cova del Calvari (Ampostà, T.); 12. Cova de la Ventosa (Piera, B.); 13. Reguers de Seró (Artesa de Segre, L.); 14. Torrent de Sant Oleguer (Sabadell, B.); 15. Rocallaura (Vallbona de les Monges, L.); 16. Travès (Clariana del Cardener, B.). *Unknown type tombs*: 17. Cova de Can Sadurní (Begues, B.); 18. Can Bosc de Basea (Terrassa, B.). *Violence evidences*: 19. Balma Sargantana (Oliola, L.); 20. Cova de Sant Bartomeu (Pinós, L.); 21. Collet de Su (Pinós, L.); 22. Cova H del Cingle Blanc (Arbolí, T.); 23. Forat de la Conquesta (Avellanès i Sta. Linya, L.); 24. Dolmen de Clarà (Castellar de la Ribera, L.); 25. Cova d’Aigües Vives (Olius, L.). Provinces: B = Barcelona, T = Tarragona, L = Lleida, G = Girona.

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Table 1. Radiocarbon dates (calibrated with Calib rev. 6.0). BB = Bell Beaker; VZ = Véraza (after Soriano 2013, appendix 1).

Site	Cultural adscription	Lab code	Sample	Radiocarbon age (BP)	Calibrated date (68.3% confidence)
El Coll	VZ	MC-1242	Charcoal, hearth	4775 ± 80	3644 - 3383
El Coll	VZ	MC-2143	Charcoal, hearth	4640 ± 90	3628 - 3141
Can Piteu	VZ	UBAR-685	Charcoal, hearth CPR-763	4540 ± 60	3363 - 3106
C/ Riereta	VZ	Rome-1768	Charcoal, hearth E-33	4515 ± 80	3355 - 3099
Ca l'Estrada	VZ	Poz-11265	Charcoal, hearth EC-409	4505 ± 40	3339 - 3105
Ca l'Estrada	VZ	Poz-10384	Charcoal, hearth EC-2	4500 ± 40	3336 - 3104
Cova de la Guineu	VZ	OxA-10800	Human bone, layer Ic interior	4500 ± 40	3336 - 3104
Cova Colomera	VZ	OxA-17731	Seed, layer CE-10	4500 ± 32	3336 - 3152
Forat de la Conqueta	VZ	Ua-34290	Human bone	4475 ± 60	3335 - 3031
Ca l'Estrada	VZ	UBAR-854	Charcoal, hearth EC-410	4460 ± 50	3329 - 3027
Cova del Frare	VZ	MC-2297	Charcoal, layer 4	4450 ± 100	3336 - 2944
Cova de Can Sadurní	VZ	UBAR-1074	Charcoal, layer 9b, heart 7	4425 ± 50	3309 - 2928
La Prunera	VZ	Beta-144301	Charcoal, layer 2	4360 ± 80	3095 - 2894
Mas d'en Boixos	VZ	UBOX-20	Charcoal, dug-pit E-1	4355 ± 45	3016 - 2912
Cova de la Pesseta	VZ	LTL-3893A	Human bone, layer S1-III A2	4249 ± 45	2912 - 2762
Cova de Can Sadurní	BB (AOC, LZM, Pyrenaean), VZ	I-11533	Human bone, layer 9	4225 ± 90	2915 - 2639
Cova de Can Sadurní	BB (AOC, LZM, Pyrenaean), VZ	I-13313	Charcoal, layer 9, hearth 2	4160 ± 160	2911 - 2491
Reguers de Seró	BB (GZM, Pyrenaean)	Beta-230406	Human bone	4150 ± 40	2871 - 2640
Forat de la Conqueta	BB, VZ	Ua-34289	Human bone	4140 ± 45	2866 - 2632
Cova de Can Sadurní	BB (AOC, LZM, Pyrenaean), VZ	I-13315	Charcoal, layer 9	4130 ± 110	2872 - 2581
Espina C	VZ	Beta-247384	Animal bone, dug-pit 2	4120 ± 40	2859 - 2589
Carrer París	¿VZ?	UBAR-817	Charcoal, layer UE-15	4110 ± 60	2859 - 2578
Cova de la Pesseta	VZ	LTL-3892A	Human bone, layer S1-II A2	4090 ± 40	2849 - 2573
Cova de Can Sadurní	BB (AOC, LZM, Pyrenaean), VZ	I-12717	Charcoal, layer 9 hearth 2	4080 ± 100	2860 - 2491
Can Vinyalets II	VZ	UBAR-744	Charcoal, hearth CV-2	4075 ± 50	2847 - 2496
Forat de la Conqueta	BB, VZ	Beta-243284	Human bone	4060 ± 35	2832 - 2495

Cova de les Portes	VZ	UBAR-361	Charcoal, layer VI, hearth	4050 ± 70	2836 - 2475
Roques del Sarró	BB (Pyrenaean)	Beta-92206	Charcoal, hearth EC-27	4040 ± 60	2832 - 2474
Bòbila Madurell	VZ	UBAR-399	Charcoal, hearth C.11.H3	4020 ± 130	2858 - 2349
Cova del Frare	BB (Pyrenaean)	MC-2296	Charcoal, layer 3	3990 ± 100	2833 - 2310
Collet de Brics d'Ardèvol	BB	UBAR-89	Charcoal, hearths F1 & F2	3960 ± 60	2570 - 2348
Roques del Sarró	BB (Pyrenaean)	Beta-92205	Charcoal, hearth EC-25	3950 ± 90	2573 - 2299
Costa de Can Martorell	BB (GZM)	UBAR-696	Animal bone, upper level	3920 ± 80	2561 - 2290
Forat de la Conqueta	BB, VZ	Ua-34294	Human bone	3900 ± 40	2465 - 2343
Costa de Can Martorell	BB (GZM)	UBAR-695	Human bone, lower level	3875 ± 50	2457 - 2295
Carrer París	BB (Pyrenaean)	UBAR-860	Human bone, layer UE-1	3870 ± 45	2457 - 2292
Bòbila Madurell	VZ	UBAR-398	Charcoal, hearth C.11.7	3850 ± 100	2466 - 2153
La Prunera	VZ	UBAR-684	Charcoal, layer 1	3830 ± 130	2470 - 2060
Costa de Can Martorell	BB (GZM)	LY-7837	Human bone, lower level	3810 ± 55	2343 - 2143
Costa de Can Martorell	BB (GZM)	LY-7838	Human bone, lower level	3795 ± 55	2335 - 2138
Cova del Frare	BB (Pyrenaean)	I-13052	Charcoal, layer 3	3720 ± 100	2283 - 1975

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THE SITES: FINDS AND CHRONOLOGY

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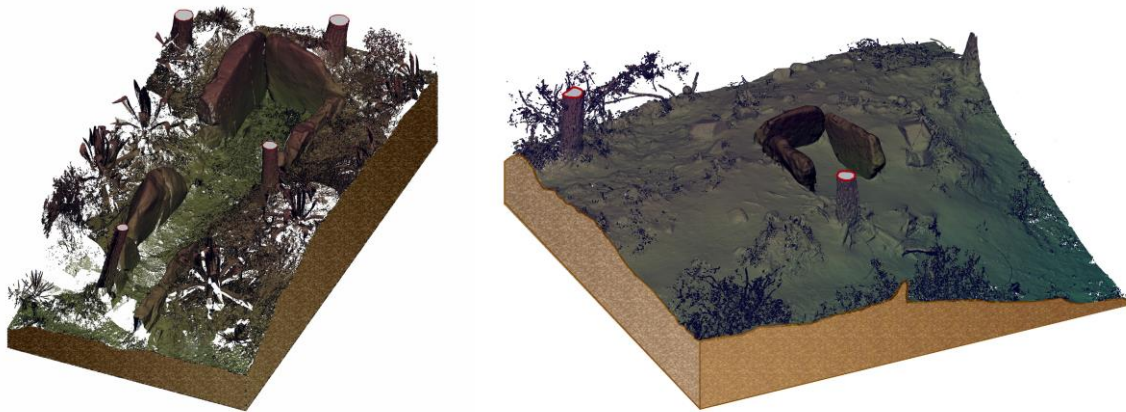
120 The sites of Can Gol I and Can Gol II are two megalithic tombs located less than 500m from
 121 each other. They both consist of a rectangular chamber with a passage of the same width as
 122 the chamber, the type known as “Catalan passages” (Figure 2). The first of the tombs is one
 123 of the largest in the whole north-east of the Iberian Peninsula. Its state of conservation is
 124 good, as most of the side stones have been conserved and the covering tumulus is partially
 125 visible. The second, in contrast, only conserves some of the side stones and currently has the
 126 appearance of a cist. Both tombs have lost their capstones. They are located on the Roca del
 127 Vallès Prehistoric Trail, an area with a high concentration of megalithic prehistoric sites. A
 128 further two megalithic tombs of the same type are known (Dolmen of Céllecs and Dolmen of

129 Can Planas), two hypogea excavated in the rock (Roca Foradada and Pedra Foradada de Can
130 Planes), two blocks with inscribed sculptures (Pedra de les Creus and Plat del Molí), and a
131 rock-shelter with Levantine and Schematic rock art (Pedra de les Orenetes). The study of
132 morphological characteristics, artistic motifs and materials enables these sites to be dated in
133 the Late Neolithic and Early Bronze Age. In turn, the “Catalan Passage” type of tombs was
134 built specifically in the Late Neolithic (Soriano and Vila 2013).

135 Can Gol I and Can Gol II were discovered in the mid-twentieth century, in the course of
136 archaeological surveying carried out by the Museum of Granollers (Estrada 1947). The first
137 tomb was excavated in 1946, when it was found that the archaeological artefacts had been
138 mixed by old disturbances (Panyella 1947). The study of these artefacts has shown that the
139 site was used at three different times: Late Neolithic (Bell Beaker culture), Early Bronze Age
140 and the Iberian Period. Associated with the first phase were fragments of two beakers
141 belonging to the AOO or GZM Epimaritime type¹ and three of the regional Pyrenean type;
142 abundant sherds of undecorated bowls; four tanged and barbed arrowheads (one of which is
143 currently missing) and a flint trapeze; and a *Glycimeris* sp. shell pendant (Figure 3). In the
144 area of study, identical objects have been found at other sites unmistakably linked with the
145 Bell Beaker culture. This is the case of the arrow-heads at Can Fatjó dels Aurons (Roig et al.
146 2009), Carrer París (Gibaja et al. 2006), Costa de Can Martorell (Palomo & Gibaja 2003) and
147 Reguers de Seró (López et al. 2010). Similarly, the flint trapezes at Collet de Brics d'Ardèvol
148 (Castany et al. 1992, 35) and the pierced shell pendants from Tomb II at Torrent de Sant
149 Oleguer and Can Bosc de Basea (Harrison 1977, 224; Palet 1915-1920) can be associated
150 with the Bell Beaker culture. All these materials have also been found at Late Neolithic
151 Véraza sites. However, in the early Bronze Age and later, they are totally absent from the
152 archaeological record in north-east Iberia (Martín 2003). The Bronze Age materials were

¹ We are grateful to Araceli Martín (Archaeology and Palaeontology Bureau of the Government of Catalonia) for the assistance given in identifying this type of beaker.

153 restricted to two fragments of carinated ware. This pottery type is widespread in this period
154 and is one of the most common types. Some objects could be associated with either the Bell
155 Beaker culture or the Early Bronze Age. These are four flint blades and eighteen pieces of
156 knapping waste; a triangular pendant made of polished stone; and several fragments of human
157 remains. At the time when this grave was excavated, human bones were not usually gathered
158 up, except occasionally the skulls. It is therefore not surprising that so few bones were
159 documented. Finally, corresponding to the Iberian Period are some sherds of hand-made
160 pottery with finger-marked bands, a fragment of amphora or dolia, and six iron remains.



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Figure 2. 3D model of Can Gol I and Can Gol II megalithic tombs.

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164 Can Gol II was also excavated in 1946. The objects found, again outside any archaeological
165 context, were only a blade, a trapeze, a borer, and six pieces of knapping waste in flint, and a
166 possible arrowhead in jasper (Estrada 1946). At some unknown time, the tomb was excavated
167 again by members of the Vilassar de Dalt Archaeological Group, without any kind of
168 archaeological methodology. During this dig, which lasted a single morning, three tanged and
169 barbed arrowheads were found, as well as flint knapping waste and pottery sherds (Ubach
170 1994, 164). A revision of these objects has found that the pottery is missing and one of the
171 arrowheads had been classified as found at a different site (Can Nadal I). This can be
172 determined from the description of the find, the form of the arrowhead and the raw material.

173 These objects are not chronologically diagnostic. However, because of the typology of the
174 megalithic structure, and the similarity of the objects with those from Can Gol I, we can
175 equally classify them as belonging to the Bell Beaker culture.



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177 Figure 3. Most relevant archaeological artefacts from Can Gol I megalithic tomb: 1 to 3. Pyrenean type pottery;
178 4 and 5. AOO or GZM type pottery; 6. Triangular polished stone pendant; 7. *Glycimerys sp.* shell pendant (after
179 Museu d'Arqueologia de Catalunya Photographic Archives).
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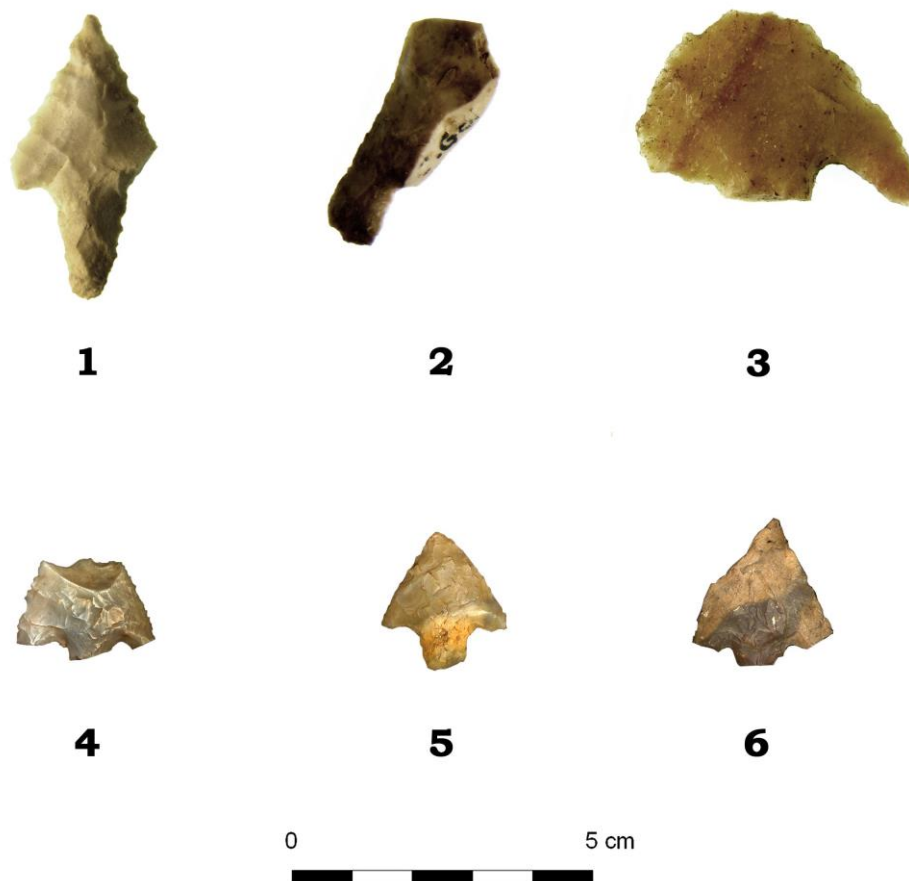
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THE CAN GOL ARROWHEADS

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184 In general, little attention has been paid to the lithic industry of this period by researchers. Its
185 study has not usually gone beyond a mere description of the objects, when they were found
186 inside a tomb (in other domestic contexts, their presence is often not even cited). Fortunately,
187 this situation has changed in recent years. The present paper is a clear example of the current
188 interest in studying lithic industry and the interpretative inferences that can be drawn about
189 the human communities of the time. Thus, the tanged and barbed arrowheads are being
190 studied in depth, because of the conclusions that can be reached, particularly when they are
191 found at funerary sites.



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193 Figure 4. Flint arrowheads from Can Gol I and Can Gol II megalithic tombs: 1 to 3. Can Gol I No. 46957, 46956
194 and 46955 (after Museu d'Arqueologia de Catalunya Photographic Archives); 4 to 6. Can Gol II No. 265, 266
195 and 243.
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197 A total of six arrowheads have been studied; three from Can Gol I and the other three from

198 Can Gol II. They all enter within the class of “tanged and barbed arrowheads”, although
199 certain differences can be observed in their size and shape. They vary from elongated narrow
200 points with well-developed tangs and barbs (Figure 4: 1 and probably 2) to wide points with
201 long barbs (Figure 4: 3) and shorter, wider points with incipient tangs and barbs (Figure 4: 4,
202 5 and 6).

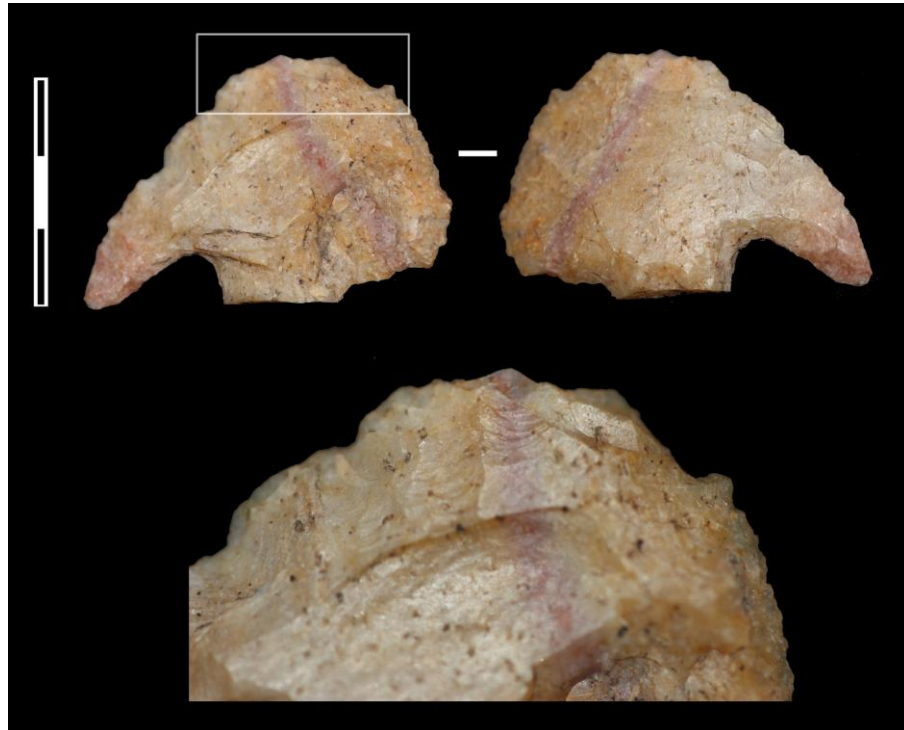
203 Although made in different kinds of flint, they are all similar in one aspect: they are all
204 broken in one or several places. The study of the use-wear marks was aimed at determining
205 which of these fractures can be related to the use of these arrowheads in projectiles. The study
206 has been carried out with an Olympus stereo microscope with 10-90X magnification and an
207 Olympus BH2 metallographic microscope with 50-400X magnification. The first step in this
208 kind of study is usually to detect and record all the possible organic and inorganic residues
209 adhered to the surface of the objects. To be able to observe and examine such residues it is
210 necessary not to clean the artefacts in any way, as this would remove them. However, in this
211 case, the arrowheads were found at sites excavated in the mid-twentieth century, which is a
212 major handicap as nothing at all is known about the cleaning and storage processes these
213 arrowheads have undergone in the intervening decades.

214 Most of the pieces were studied mainly with the stereo microscope as a first observation, with
215 the microscope showing that the surfaces were badly affected by gloss, rounding and
216 striations in all directions (Sosna 2012). The use of projectiles may also generate impact
217 striations, which are diagnostic in the case of artefacts recovered correctly and not cleaned. In
218 the present case, the striations cannot be used as a criterion to determine the function of the
219 arrowheads as their cause is unknown and they may have been produced in multiple ways.
220 For example, in the precise case of the striations, we cannot differentiate between those
221 caused by impact and those generated by the handling and cleaning of the pieces or by their
222 storage together with other lithic items.

223 The results of the use-wear analysis shows that four of the six arrowheads exhibit highly
224 probable impact fractures, as well as other modifications connected with hafting and storing
225 inside a quiver.

226 - **Arrowhead 46955** (Can Gol I: Figure 5). It is 16 x 24 x 3 mm in size and the tip
227 exhibits a small step and hinge-terminating bending fracture, possibly caused by its
228 use in a projectile. The tang also displays a hinge-terminating bending fracture, caused
229 by the counter-impact suffered at the time of the impact or when the arrowhead was
230 removed from the shaft. This arrowhead has suffered significant thermal alterations.
231 The cause of this thermal effect is unknown, as the materials found in the grave are
232 practically all missing. Intentionally burnt points are not usually found in similar
233 kinds of graves, and it is therefore thought that perhaps some kind of ritual involving
234 fire was performed.

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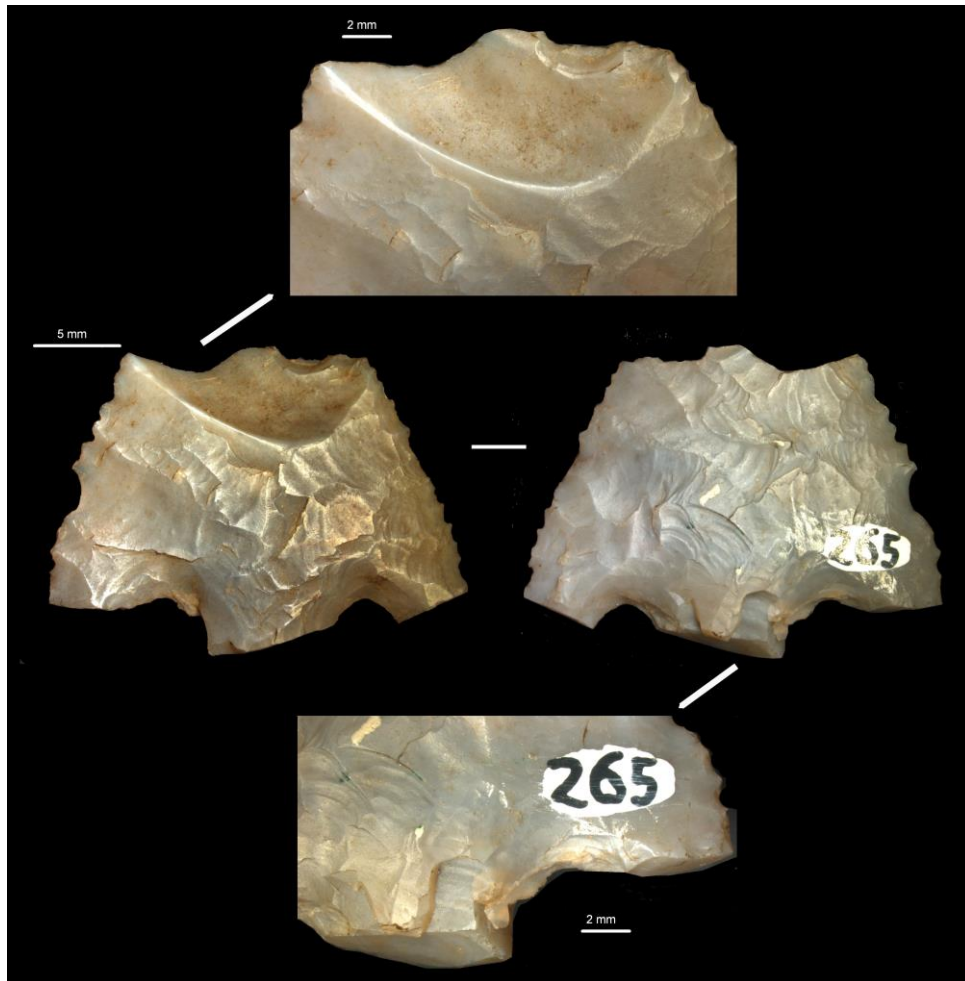
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Figure 5. Can Gol I, flint arrowhead n° 46955. Fracture at the tip.

- 239 - **Arrowhead 265** (Can Gol II: Figure 6). An arrowhead 18 x 23 x 4 mm in size which
240 must have been considerably larger, as much of the tip and the tang have disappeared.
241 Indeed, a large part of the tip suffered a step and slight hinge-terminating bending
242 fracture, possibly as a result of the use of the arrowhead in a projectile. This has
243 caused the loss of over a third of the arrowhead. Both barbs display 90° snap fractures
244 and the tang a counter-impact that has produced a step fracture and fissuration.
- 245 - **Arrowhead 266** (Can Gol II: Figure 7). With a size of 22 x 20 x 5 mm, it displays a
246 small step-terminating bending fracture at the tip, probably caused by an impact with
247 a hard substance. One of the barbs exhibits a fracture in a vertical direction, which
248 suggests it was caused on being pulled out of a body or object. In turn, the tang
249 exhibits a step and hinge-terminating bending fracture on one of its faces as a result of
250 a counter-impact or bending the shaft while removing it from the body or substance in
251 which it had penetrated. In addition, this arrowhead has possible remains of mastic on
252 the tang and similar pronounced rounding on the barbs, perhaps caused by rubbing
253 against dry hide. This rounding can only be explained by the outer parts of the
254 arrowhead, in this case the barbs, rubbing against the inner face of a container, such as
255 a quiver. It may be concluded that this arrowhead exhibits fractures caused by its use
256 in a projectile.
- 257 - **Arrowhead 243** (Can Gol II: Figure 8). This arrowhead's dimensions are 25 x 23 x 4
258 mm. It displays a series of fractures, some of which are as a result of impacts. At the
259 tip, a fissuration fracture (or lateral spin-off) possesses a possible abrupt termination
260 as it is located in a part of the object where the surface is calcareous. Consequently the
261 fracture exhibits an irregular surface. Both barbs display 90° snap fractures although
262 one of them possesses a feather-terminating fracture, possibly caused by bending. The
263 tang is clearly broken by a counter-impact which is reflected in hinge and step-

264 terminating fractures. In conclusion, this arrowhead with possible impact fractures has
265 suffered a hard counter-impact that fractured the tang.



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Figure 6. Can Gol II, flint arrowhead No. 265. Fractures at the tip and tang.

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270 - **Arrowhead 46957** (Can Gol I). Its size is 21 x 12 x 3 mm, with a 90° snap fracture of
271 one of the barbs. This type of fracture may be caused by several factors, which are
272 usually non-functional. Therefore, no criteria are available to confirm or deny that this
273 point was used in a projectile.

274 - **Arrowhead 46956** (Can Gol I). This is a fragment of a barb made from flint. The
275 different fractures it exhibits are 90° snap fractures, which does not allow any
276 conclusion about whether it was used or not.

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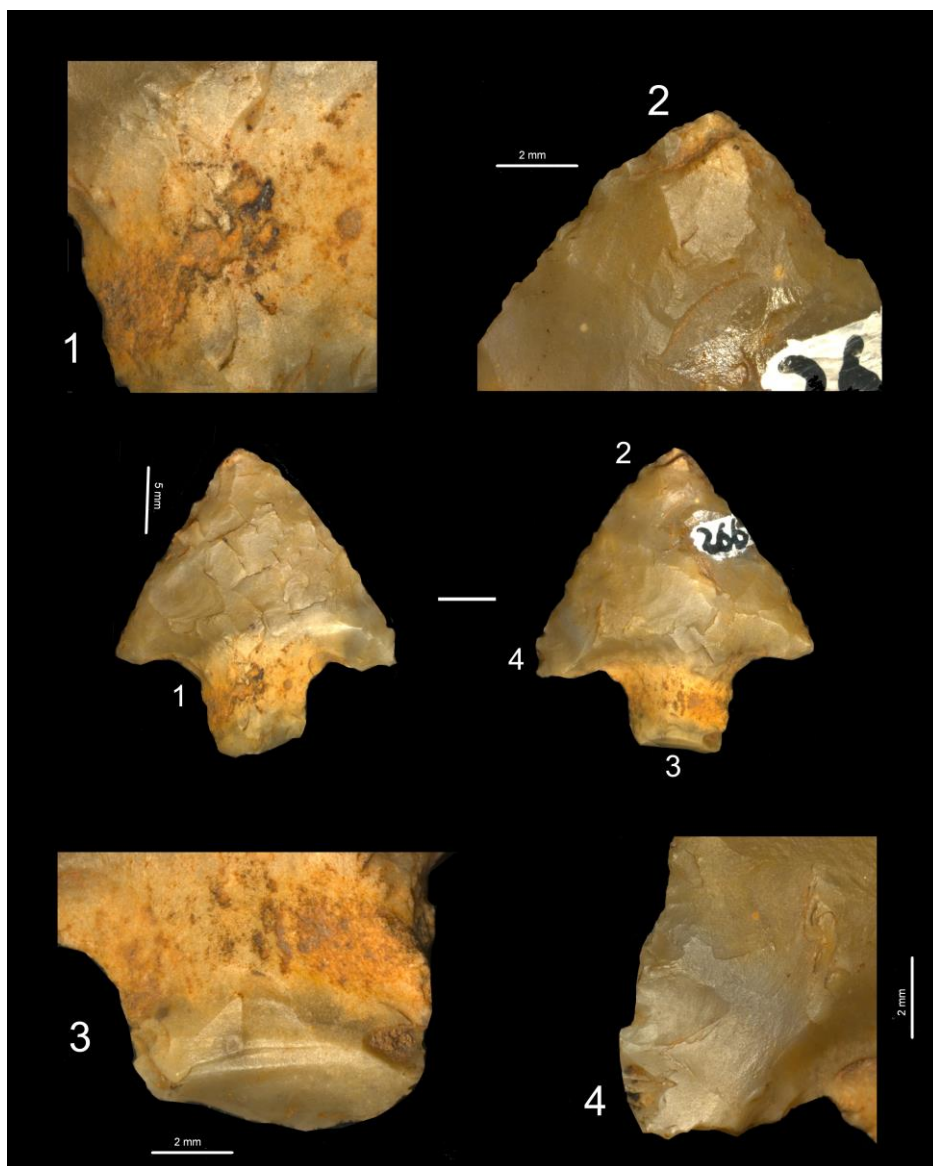


Figure 7. Can Gol II, flint arrowhead No. 266. Fracture and possible remains of mastic at the tang.

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281 In short, most of these arrowheads display highly probable impact fractures. Although it is
282 not always easy to determine which fractures observed on arrowheads are caused by their use
283 as projectiles, in the case of Can Gol I and Can Gol II, the hypothesis that four points display
284 impact fractures is based on the morphology of the fractures (hinge-terminating bending
285 fracture, lateral spin-off, step fracture and fissuration in the tang) and on the fact that they do
286 not normally appear alone, but together in several places, especially in the tip and the tang. In
287 those cases where the points display 90° snap fractures, these have not been considered

288 diagnostic, as experimentation has shown that such fractures can be caused in other ways:
289 during the fabrication of the arrowhead, by trampling, etc. By comparing these weapons with
290 those from other funerary contexts to be described below, they may have reached the deposits
291 lodged in the bodies of the deceased, as a consequence of violent acts, as occurred at the
292 nearby site of Costa de Can Martorell (Palomo & Gibaja 2003).

293

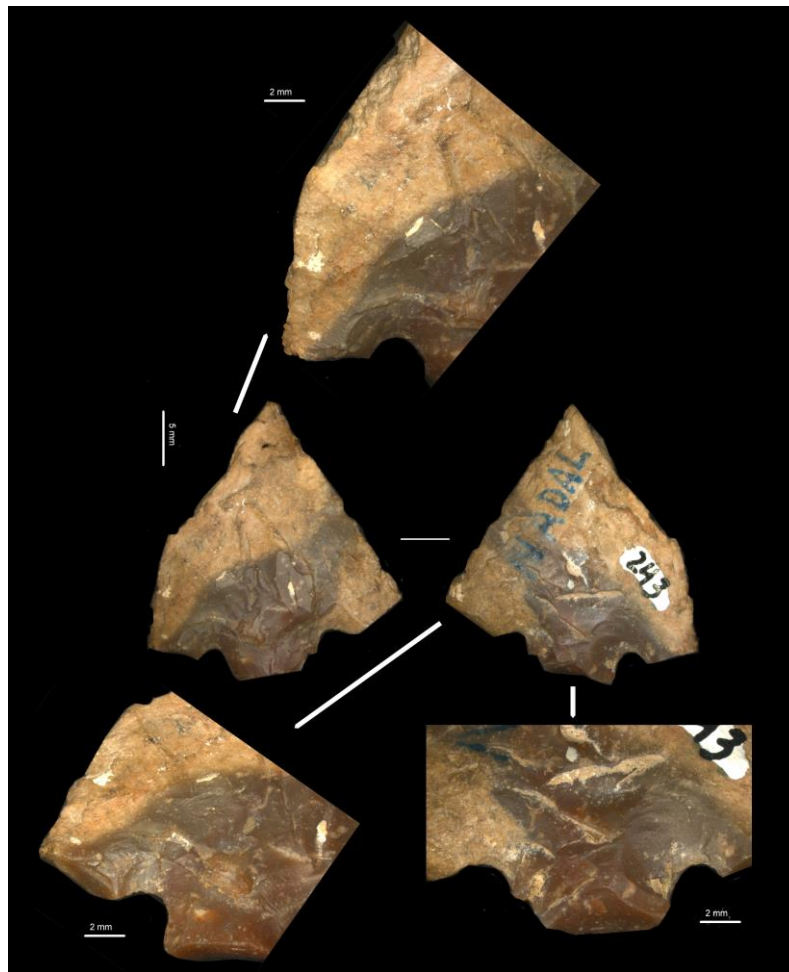
294

DISCUSSION

295

296 The first question to be asked is: Can we be sure that these weapons reflect an episode of
297 violence?

298 The results of the use-wear analysis of the six arrowheads can be summarised in the
299 following points:



300

301

302

Figure 8. Can Gol II, flint arrowhead No. 243. Fractures at the tip, tang and barb.

303

– Four of the six arrowheads (one from Can Gol I and three from Can Gol II) exhibit highly probable impact fractures linked with their use as projectiles. These macroscopic fractures are diagnostic, and are located in the tip and the tang.

304

305

306

– The other two arrowheads from Can Gol I exhibit non-diagnostic macroscopic fractures. Their causes cannot be determined, which does not mean that they were not used in projectiles, only that this use cannot be demonstrated. The fractures are located in the barbs and/or in the body of the arrowhead.

307

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310

– All of the arrowheads display fractures.

311

We consider that these results are sufficient to confirm the existence of an episode of violence

312

linked to the Bell Beaker culture. This affirmation is based on three reasons. First, we think it

313 is unlikely that the arrowheads were used against animals (hunting wild animals or protecting
314 livestock against predators) instead of against humans. Several researchers have shown that
315 the technical characteristics of arrowheads do not constitute good criteria to distinguish
316 between both types of uses. This is because both cases require a projectile with the
317 appropriate symmetry and weight for flight, optimal penetration capacity and which is
318 difficult to extract (Fischer 1989; Pétrequin & Pétrequin 1990). One significant argument
319 comes from the role played by hunting within these communities. Recent reappraisals of
320 archaeobotanic and archaeozoological data suggest that hunting was not a major activity
321 (Soriano 2013, 39-43).² Archaeotanical studies indicate that cereal-growing, especially barley
322 (*Hordeum vulgare*), was quite important. The habitual finds of storage silos at settlements, as
323 well as tools used in agricultural tasks, can corroborate this evidence. In turn,
324 archaeozoological research show that domestic animals, mainly ovicaprines (*Ovis/Capra*) but
325 also cattle (*Bos taurus*) and pigs (*Sus domesticus*) were as important in the diet as agriculture.
326 However, predators capable of attacking livestock (wolf, fox, bear) are practically absent
327 from the archaeological record. The most common wild species in faunal assemblages are
328 rabbits and hares (*Oryctolagus cuniculus* / *Lepus capensis*), while red deer (*Cervus*
329 *elaphus*), boar (*Sus scropha*), horse (*Equus caballus*) and fox (*Canis vulpes*) are also found
330 but in much smaller numbers. Other evidence that might indicate the glorification of hunting
331 and/or hunters is completely missing. This is such evidence as deposits of specific parts or
332 “trophies” of hunted animals or the representation of hunting scenes found in the rock art of
333 other prehistoric groups (Menéndez & Quesada 2008).

334 It is therefore quite impossible to explain the large number of lithic arrowheads dated in the
335 Late Neolithic without alluding to a certain situation of violence. Arrowheads are, after

² The literature consulted, including references for specific sites and more general works summarising the data, is: Alonso 2000; Andúgar & Saña 2004; Boquer *et al.* 1995; Buxó 1997; Castany *et al.* 1992; Edo *et al.* 2002; Equip Sarró 2000; Martín *et al.* 1985; Nadal *et al.* 1999; Piera *et al.* 2008; Roig *et al.* 2009; Vicente & Gutiérrez 2004.

336 pottery, among the most common objects in the sites. Flint is the main raw material although
337 quartz is used sporadically. The typological variety is enormous: leaf-shaped points,
338 diamond-shaped, tanged with incipient barbs, tanged with full barbs and, less frequently,
339 asymmetrical points (Martín 2003). Although few technological studies have been carried out
340 to date, a wide range of treatments and fabrication processes suggest a heterogeneous, non-
341 standardised production (Gibaja et al. 2006; Palomo & Gibaja 2003). This imbalance between
342 the plentiful arrowheads and the scarce evidence of hunting has been interpreted in other
343 archaeological cases as a clear sign of their use in violence (Honegger et al. 2011; Underhill
344 1989).

345 Secondly, similar arrowheads found at other Bell Beaker funerary sites in the area of study
346 are always intact. The absence of fractures indicates that the pieces were deposited in perfect
347 condition, ready to be used, and formed part of the grave goods. In contrast, the find of points
348 fractured by their use does not concord with the type of ritual that is normally documented
349 and requires an alternative explanation. One of these is that they were accidentally introduced
350 into the tomb, lodged in the individuals' bodies as a cause of wounds and/or their death. Intact
351 arrowheads have been found at the megalithic cist at Reguers de Seró, where one arrowhead
352 was documented (López et al. 2010), and the hypogeum at Carrer París, with eight specimens
353 (Gibaja et al. 2006). It is very likely that the arrows were deposited whole, with the shaft and
354 fletchings, and in some cases even inside a quiver, when the arrowheads are found grouped
355 together. This has been recorded at several European Bell Beaker sites in Great Britain
356 (Fitzpatrick 2002, 630) and Denmark (Sarauw 2007, 73). Other types of grave goods in Bell
357 Beaker tombs are equally usually found whole and/or in a good state of conservation, and not
358 fragmented as at Can Gol I and Can Gol II (Vander Linden 2006).

359 As a third point, is it possible that not all the arrowheads at Can Gol sites were used for
360 violence? It seems unlikely. Certainly, the use-wear study found that only 66% of them

361 display highly probable impact fractures linked with their use. However, both experimental
362 and archaeological data indicate that arrowheads do not always fracture during their use.
363 Experimental work has shown that the projectiles often hit the soft parts of the body and tend
364 to pass through the target without touching a bone (Schulting & Wysocki 2005, 108). In these
365 cases it is very unlikely that the arrowheads will suffer any breakage and, in addition, they
366 will be recovered outside the target's body. It has equally been shown that on the occasions
367 when the point hits a bone, it does not always fracture and very rarely becomes lodged in the
368 bone. The arrowhead will go through some bones, like scapulae and ribs, while in other cases
369 it simply bounces off without causing any damage to the point (Palomo & Gibaja 2003, 204).
370 An example of this is given in the study of Smith et al. (2007) which aimed to identify the
371 marks made in bones by lithic arrowheads. Out of a total of 32 impacted projectiles, only half
372 of them suffered any kind of fracture, and some of those were microscopic. Within the Iberian
373 Peninsula, several examples of violent episodes of this kind have been documented
374 osteologically (Esparza et al. 2008; Etxeberría & Herrasti 2007, 231-234; Etxeberría & Vegas
375 1992; Mercadal & Agustí 2006). The most significant sites are the rock-shelter of San Juan
376 ante Portam Latinam (Álava, Basque Country) and the hypogeum of Costa de Can Martorell
377 (Dosrius, Barcelona) and Longar (Viana, Navarre). However, at these sites, impact fractures
378 are not visible in all the arrowheads. At the first of them, 67% of the 61 arrowheads found are
379 incomplete (Armendáriz 2007, 130), whereas at the second site the proportion increases to
380 over 80% of the 68 points recovered (Márquez et al. 2008). Finds of arrowheads or fragments
381 of them lodged in bones are rare. At San Juan ante Portam Latinam, nine cases were
382 identified out of a total of 338 bodies (Etxeberría & Herrasti 2007, 208-220), at Costa de Can
383 Martorell no examples were found in 195 individuals (Márquez et al. 2008, 234) and at
384 Longar four cases were documented in 112 individuals (Armendáriz et al. 1994) (Figure 9.2).
385 For comparison, large numbers of examples of violence with projectiles are known in France

386 in the Late Neolithic, especially in the south of the country. Guilaine and Zammit (2002, 151-
387 152) study some 55 individuals with arrow wounds from 33 multiple burials (Figure 9.1). We
388 are unaware of any use-wear studies of these arrowheads. The researchers highlight the
389 possible under-representation of this type of evidence, which may have originally been much
390 greater. Among other reasons, they note the evidence of other osteological signs of violence
391 (contusions, dagger wounds) and the presence of arrowheads at the same sites that have been
392 interpreted as grave goods but which might have been lodged in the soft tissues of the bodies.
393 In short, with the minimal importance of hunting, high number of lithic arrowheads,
394 contemporary funerary sites and archaeological and experimental data on projectile impacts
395 enable the proposal that the arrowheads studied here are evidence of one or several acts of
396 violence associated with the Bell Beaker culture.



1



2

397
398 Figure 9. Flint arrowheads embedded in human bones: 1. Right tibia wound, Font-Rial megalithic tomb (Saint-

399 Rome-de-Tarn, Aveyron) (courtesy of A. Roussot, after Beyneix 2007: 84, fig. 4); 2. Eighth dorsal vertebra
400 wound, case 7 from San Juan Ante Portam Latinam (Álava, Basque Country) (courtesy of L. Herrasti, after
401 Etxeberria and Herrasti 2007: 213, fig. 66).
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403

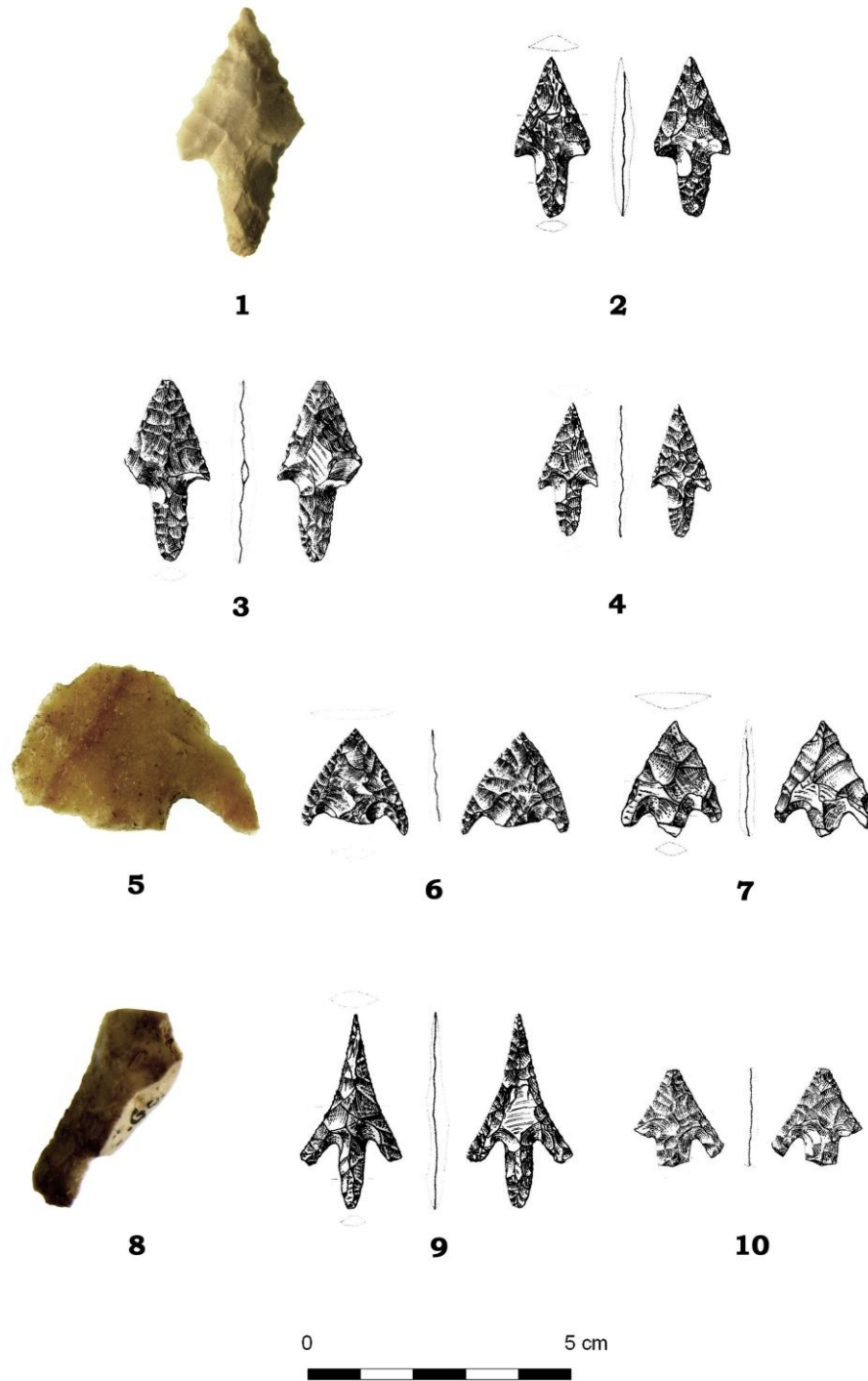
404 It is extremely interesting to highlight the similarities between Can Gol I and Can Gol II
405 megalithic tombs and the hypogeum of Costa de Can Martorell (Mercadal 2003), the only
406 example of massive death by violence currently known in the north-eastern Iberian Peninsula.
407 At Costa de Can Martorell, the stratigraphic data and the osteological study corroborate that a
408 large part of the individuals were buried simultaneously. Other isolated cases of violence have
409 been cited in the area of study, most of which are not dated very precisely (see below) and
410 none of them possesses the magnitude of this site. In the case of Can Gol I and II, the data
411 obtained about the arrowheads and particularly the characteristics of the sites suggests a
412 violent act of certain importance. These are two megalithic graves, a type of tomb whose re-
413 use (proven in the case of Can Gol I) and/or later violation by treasure-hunters and amateurs
414 has been widely documented throughout history. There can be no doubt, therefore, that the
415 original number of arrowheads may have been larger. Second, the three sites are associated
416 with Bell Beaker culture. An Epimaritime GZM bowl was found in the hypogeum, similar to
417 the one at Can Gol I. The C14 dates situate the burial between 2300 and 2200 cal BC (Table
418 1). Third, the 68 arrowheads that have been documented are all tanged and barbed, whilst
419 displaying great variability. The great typological similarities with the arrowheads studied
420 here are significant (Figure 10 and 11). Lastly, the sites are quite close to one another, as
421 Costa de Can Martorell is less than 10km from the two megalithic tombs and is one of the
422 nearest sites with Bell Beaker decorated pottery.

423

424 The second question is: What kind of violence was this?

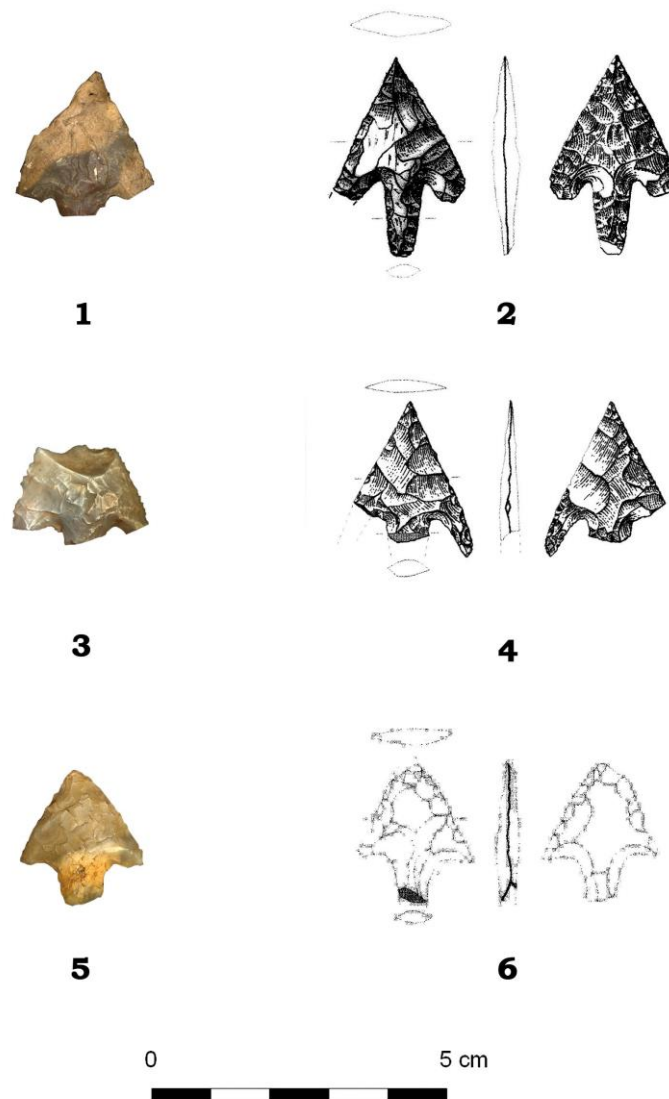
425 Evidence of violence can be interpreted in different ways, although it is normally understood

426 as being of two main kinds. The first kind includes all examples of individual and
427 spontaneous, impulsive or reactive acts: disputes, homicides, acts of vengeance, etc. The
428 second, called war or warfare, can be defined as the organised violence of one group or
429 society against another group, involving the use of physical force (Harding 2007, 17; Thorpe
430 2003, 146). This second kind has aroused most interest in archaeology, while it encompasses
431 a wide range of different situations: open warfare between organised armies; duels between
432 champions; rapid attacks in the form of razzias; sporadic and occasional skirmishes, and so
433 on. Making distinctions between them is extremely complex and it is often very difficult, if
434 not impossible, to determine clearly what kind of conflict it is. The verification in the
435 archaeological record of certain forms of evidence normally accepted as indicators of
436 violence (see below) is not enough. There is no single “recipe” that can be applied to all
437 societies. In each archaeological case, the relationship between the evidence, its intensity and
438 its frequency of recurrence in time and space should be assessed (Haas 2001, 331). It may be
439 supposed that in an extreme case of “total war”, the evidence of conflict will be more diverse,
440 intense and repeated, and vice versa.



441

442 Figure 10. Typological similarity between flint arrowheads from Can Gol I megalithic tomb and Costa de Can
443 Martorell hypogeum: 1, 5 and 8. Can Gol I No. 46957, 46955 and 46956; 2 to 4, 6, 7, 9 and 10. Costa de Can
444 Martorell No. 29, 66, 48, 61, 57, 11 and 33 (after Palomo and Gibaja 2003).
445
446



447
448 Figure 11. Typological similarity between flint arrowheads from Can Gol II megalithic tomb and Costa de Can
449 Martorell hypogeum: 1, 3 and 5. Can Gol II No. 243, 265 and 266; 2, 4 and 6. Costa de Can Martorell No. 22, 7
450 and 67 (after Palomo and Gibaja 2003).
451

452 The exercise of violence can be detected archaeologically through three types of evidence:
453 the effect violence has on the human body, the means used to exercise it, and the
454 representation of the violence (Lull et al. 2006, 101-103; Thorpe 2003, 150).

455 The first type is the most direct and certain proof. Human remains with lethal or healed
456 wounds or even with the weapon still lodged in the bone (arrowheads and daggers) are clear
457 indicators. However, the interpretation must be shown to be correct. Traumatic injuries may
458 have many causes, such as falls and fortuitous impacts, or hunting accidents totally unrelated

459 to violence (Judd 2008; Schulting & Wysocki 2005).

460 The second type includes all forms of structures connected with the defence of a settlement
461 and the objects used for fighting and aggression. Among the former are the strategic position
462 of settlements, walls, bastions, moats, *chevaux de frise*, “no-man's-land”, etc. While some of
463 these structures are clearly for military purposes, in other cases this has to be demonstrated
464 with evidence that eliminates other hypothetical functions (defence against predators,
465 protection against floods, ritual acts or display, etc) (Parkinson & Duffy 2007). The
466 nomenclature and classification of the latter has been debated more. The fact that the objects
467 can be used for more than one function means that some researchers have proposed two
468 categories (weapon, specialised weapon) (Lull et al. 2006, 102) or even three (tool-weapon,
469 weapon-tool, weapon) (Chapman 1999, 107-108). In our opinion, the dual division is more
470 clarifying, as it separates weapons from tools used offensively. The former are objects
471 produced specifically for aggression or for defence (swords, halberds, shields, greaves,
472 armour, etc.). Their existence corresponds to times when violence is a structural part of
473 society and not merely associated with isolated or uncontrolled incidents. The latter kind of
474 implements, used occasionally or repeatedly in violence (arrows, daggers, axes), are
475 originally intended for use in other ways within the community and should not be considered
476 weapons. However, it should be stressed that the distinction between these two categories is
477 dynamic and depends on the exact conditions in each historical moment. Thus, for example,
478 if it is seen that arrowheads were being produced specifically for warfare, or if the impact
479 marks of metal axes are found repeatedly on human remains, these should be regarded as
480 weapons.

481 The last type of evidence of violence is the representation of fighting on different kinds of
482 surfaces. Some widely known examples are the battle scenes, archers and “public executions”
483 in Spanish Levantine rock art (López-Montalvo 2011); the common representation of

484 weapons on the menhir-statues and anthropomorphic stelae in the Alpine Chalcolithic (Casini
485 & Fossati 2004); and the scenes of warriors and weapons in northern Europe in the Bronze
486 Age (Harding 2007, 115-118). The limitations to the assessment and interpretation of this
487 type of evidence are clear. We do not possess the keys to understanding the exact meaning,
488 symbolic content and/or motivation of the depictions. Hence it is not always easy to
489 discriminate between real actions and imaginary, symbolic or ritual battles (Guilaine &
490 Zammit 2002, 138). However, there is no doubt about the social significance of representing
491 weapons and/or implements used offensively on different kinds of artistic objects.

492 According to these three different types of evidence of violence, the case being studied here is
493 considered to be a clear example of warfare. Its main characteristics can be summarised as
494 typical of occasional or short-lived skirmishes; it is restricted to a very small area; but within
495 a society in which violence acquired certain significance. Several arguments can be put
496 forward to support this hypothesis.

497 First, evidence of violent death in north-east Iberia in the Late Neolithic is almost non-
498 existent. Apart from the Costa de Can Martorell hypogeum mentioned above, no other case
499 can be unmistakably associated with the Bell Beaker culture and only two are dated in the
500 same period (Late Neolithic), in association with the Verazian. These two sites contained
501 collective and multiple burials. The first is Balma Sargantana, a rock-shelter whose
502 osteological study has detected a significant frequency of cranial traumatism and erosion
503 that might have been caused by violence. One of the skulls exhibits a trepanation (Mercadal
504 & Agustí 2006, 46). The second is Cova de Sant Bartomeu, a cave where a human rib with a
505 perimortem incision produced by a sharp edge was found (Soriano 2013, 42). These sites are
506 over 100 and 80 km respectively from the Can Gol sites, and are apparently isolated cases
507 (Figure 1). Other examples, corresponding to perforations caused by arrows and traumatism,
508 lack a stratigraphic context, could equally belong to the Early Bronze Age or Late Bronze

509 Age and are similarly distant from the area of Can Gol I and Can Gol II. Two metal
510 arrowheads, both associated with skulls, were found at the megalithic tomb of Collet de Su
511 and in Cova H at Cingle Blanc. One was lodged in the left parietal and the other had
512 penetrated the maxillary sinus and the pterygomaxillary fossa (Etxeberría & Vegas 1992,
513 130). A flint arrowhead fragment was found in the bicipital tuberosity of a radius at Forat de
514 la Conqueta. The eleven C14 dates for this cave show it was used repeatedly from the Late
515 Neolithic to the Late Bronze Age (González et al. 2011). Four cranial traumatism, probably
516 caused by violence, were found out of a total of 14 individuals at Clarà Dolmen. In addition,
517 three trepanations and a skull with incisions in the frontal bone related with scalping were
518 found (Mercadal & Agustí 2008, 85). Finally, at Cova d'Aigües Vives, skull number 2 also
519 displayed signs of scalping and a further three exhibited trepanations (Campillo 2007, 167-
520 175).

521 There is therefore some evidence of violence in north-east Iberia during recent Prehistory.
522 However, this is very little in comparison with the hundreds of human remains studied in the
523 region. It is even less if it is restricted to the Late Neolithic, the period to which Can Gol I
524 and Can Gol II are assigned. Numerous osteological studies on remains attributed to the
525 Verazian (Agustí 1998; Balaguer et al. 2013; Edo et al. 2002), Bell Beaker culture (Bubner
526 1976; Cuesta 1985; Esteve 1966; Llongueras et al. 1981) and the Bronze Age (Alesan &
527 Safont 2003-2004; Alfonso et al. 2004; Armentano & Malgosa 2002; Armentano et al. 2007;
528 Majó 2001) have failed to find evidence of violence. It is therefore not possible to propose
529 that a situation of repeated and generalised violence existed at that time. The data indicate
530 that it would have very occasional. In addition, the three cases in the Province of Barcelona
531 that are being cited (Can Gol I, Can Gol II and Costa de Can Martorell) are the only ones
532 proven to be grouped chronologically and spatially. This concentration in such a small area is
533 not thought to be due solely to chance.

534 Apart from the violent deaths, there is no other osteological evidence supporting the idea that
535 combat and conflict was constant amongst these groups. The osteological study for the site of
536 Costa de Can Martorell did not find any clear signs of violence followed by survival. In the
537 case of the three traumatismos documented, two to the skull and a “parry fracture”, it is not
538 possible to distinguish between accidental or induced causes. Contrasting examples are
539 known in the Late Neolithic in other parts of Europe, with a large number of signs of violence
540 followed by healing, both in southern France (Guilaine & Zammit 2002, 151-155) and
541 western Portugal (Silva et al. 2012). At the same time, although it is less conclusive evidence,
542 at Costa de Can Martorell no clear signs of enthesopathies of the elbows were identified. This
543 kind of pathology is related with archery, among many other forms of activity (Campillo et al.
544 2003). The osteological studies made of other contemporary sites are too limited to be able to
545 support or refute the tendency seen at Costa de Can Martorell (Castellana & Malgosa 1991).
546 Therefore we can only point out the scarcity of information indicating that the bow was a
547 weapon in repeated use, as would be expected if it was associated with warfare. The lack of
548 wounds with signs of healing is basically the reason suggesting the population buried at Costa
549 de Can Martorell suffered an unusual act of violence.

550 Second, no artistic representations can be related directly with warfare. In the whole of north-
551 east Iberia, we are only aware of one Levantine painting with battle scenes, archers or
552 executions: the rock-shelter of La Vall II in Sierra de Llaberia (Capçanés) (Sarrià et al. 2011,
553 73). Its location in the south of the area of study is distant from the burial sites and seems to
554 relate it with other Iberian rock art of this kind, which is concentrated further south in
555 Castellón, Teruel and Albacete. This is therefore not a typical theme in the north-east (López-
556 Montalvo 2011, 34). Equally, the steles and statue-menhirs documented in recent years differ
557 from similar monuments in southern France in that they lack any representation of weapons
558 or implements used for aggression (Moya et al. 2010). Representations of daggers, axes,

559 halberds, bows or similar objects do not exist. This may suggest that either the conflicts were
560 not deeply rooted or they did not possess enough social importance to be represented
561 artistically.

562 Finally, following the criteria described above to differentiate objects used in violence, only
563 one kind of item can be included within the category of weapon: lithic arrowheads. The
564 imbalance between their frequency in the archaeological record and the scarcity of evidence
565 of hunting has already been described. This is hard to explain without resorting to the
566 presence of a certain situation of violence. However, it is hard to define this situation of
567 conflict. The current data do not appear to indicate the existence of open warfare or constant
568 fighting. The variety of types and fabrication processes documented in the arrowheads
569 suggest the production was not standardised and is in accordance with small autonomous
570 family groups rather than full-time specialist weapon makers. The characteristic copper
571 implements in the Bell Beaker group (axes, daggers, Palmela points) would have been used
572 for many functions, all of them unconnected with violence. These would include wood-
573 working and house-building, processing meat and protecting livestock. Archaeological
574 evidence has proven the importance of all such tasks in these communities (Soriano 2013, 39-
575 43). Some daggers lack a point (Travès megalithic tomb) while others exhibit markedly
576 asymmetric edges (Cova de Can Sadurní) indicating they were used as knives and not for
577 stabbing. Similarly, the shape, size and weight of Palmela points suggest they were used as
578 spear or assegai heads. These points would have been of great use defending the flocks
579 against predators (op. cit.: 145-151). In the whole of the Iberian Peninsula, only the site of
580 Grajal de Campos (León) has revealed a possible, but doubtful, association between Palmela
581 points and violence. This is a skull with two points apparently lodged in it (Delibes 1977, 31-
582 32). The fact that the skull is missing and the points display no impact marks means that the
583 possibility it was really a burial with its grave goods cannot be ruled out. Finally, no

584 settlement in the whole area of study is defended by walls, moats, palisades, etc., nor is
585 situated in a strategic position for its defence.

586 In short, in the north-east of the Iberian Peninsula in the Late Neolithic, the osteological
587 evidence of violent deaths and signs of fighting and conflict are almost non-existent. One of
588 the two cases known is located very near the studied sites (Costa de Can Martorell) and the
589 other two are more distant (Balma Sargantana, Cova de Sant Bartomeu). No artistic
590 representations of violent acts nor settlements with defensive structures or located in strategic
591 places have been documented. All this suggests the violence was occasional and limited to
592 specific areas. However, flint arrowheads, which should be regarded as weapons and not as
593 tools, are found all over the region, indicating that violence must have been quite widespread
594 in these communities. How can this apparent contradiction be explained? Two possible
595 hypotheses should be tested in the future:

- 596 • Hypothesis 1. Violence is latent in the community but only breaks out in certain specific
597 situations when disagreements cannot be resolved any other way. The explanation for the
598 abundance of arrowheads is found in the communities in the south of France, with which
599 north-east Iberia was closely linked in the Late Neolithic (Martín 2003). In this area
600 violence was common and recurrent, as attested by the numerous arrowheads, death by
601 arrow wounds, settlements with defensive structures and menhir-statues depicting
602 weapons (Guilaine & Zammit 2002, 149-168). In this way, the production of arrowheads
603 in north-east Iberia reflected a response of dissuasion and/or a reminder of the situation of
604 war in the neighbouring territory on the other side of the Pyrenees.
- 605 • Hypothesis 2. Violence, while it was still occasional, was somewhat more widespread
606 than the current evidence suggests. There would have been more areas of fighting or this
607 would have been an order of magnitude more serious. Its apparent invisibility is due
608 partly to the constant reuse of graves in this period, which hinders osteological studies

609 and the identification of violent deaths. It should be borne in mind that most of the sites in
610 the Iberian Peninsula where osteological proof of violence has been detected were not
611 reused (Armendáriz 2007; Esparza et al. 2008; Etxeberría & Herrasti 2007; Etxeberría &
612 Vegas 1992; Márquez et al. 2008; Mercadal 2003). In addition, few systematic use-wear
613 studies have been performed on the flint arrowheads, most of which were found several
614 decades ago in excavations without archaeological methodology. While the first limitation
615 is almost impossible to overcome, the second can be solved.

616

617 **CONCLUSIONS: BELL BEAKER VIOLENCE ON THE NORTH-EAST COAST OF**
618 **THE IBERIAN PENINSULA**

619

620 This paper has presented the chronological, typological and context data of two megalithic
621 tombs, Can Gol I and Can Gol II. The use-wear analysis of the arrowheads found inside them
622 and the comparison with archaeological, ethnological and experimental data suggest that an
623 episode of violence took place. This event is linked with the Bell Beaker culture but cannot
624 be interpreted as reflecting a scenario of open warfare. The available information in the area
625 of study indicates it would have been a rare, short-lived skirmish; unplanned and restricted to
626 a very specific area, yet within a context that still remains to be defined, in which violence
627 was quite significant.

628 This situation contrasts with the image of Bell Beaker warrior proposed by some researchers
629 for other areas in the Iberian Peninsula and Europe (Garrido-Pena 2006; Lemerrier 2011). It
630 is true that in north-east Iberia individual tombs, or individualised graves within multiple
631 tombs, have been found in which the grave goods consist of flint arrowheads, copper daggers
632 and Palmela points. However, as has been reasoned here, only the arrowheads can be
633 considered weapons. The archaeological record suggests copper implements could be related

634 with pastoralism and the importance this activity held for Late Neolithic communities
635 (Soriano 2013, 39-43). The cited tombs seem to reflect the control exercised over livestock
636 and/or pastures by a specific privileged social group, identified with the Bell Beaker set. In
637 addition, the evidence of violence associated with the Bell Beaker culture at a European level
638 is really negligible (Guilaine & Zammit 2002, 151). The recent study of Bell Beaker
639 anthropological remains in the Czech Republic has shown that the presence of violent
640 traumas is minimal (Sosna 2012, 327). Similarly, for the rest of Europe we are only aware of
641 six individuals with clear evidence of violence. In England, a young man in the middle ditch
642 fill at Stonehenge with an arrowhead lodged in his rib; the Ring Ditch 201 at Barrow Hills
643 (Radley, Oxfordshire) in which a male individual was located with an arrowhead in the area
644 of the ribcage (Harding 2007, 52); and a cranium from the Thames (Syon Reach) with healed
645 trauma to parietals (Edwards et al. 2009, 43). In southern France, the individual in the grave
646 at La Fare (Forcalquier, Alpes-de-Haute-Provence) with a wound in an ulna caused by a flint
647 implement; and the Tumulus of the Gendarme (Plan d'Aups, Var) with a leaf-shaped flint
648 arrowhead lodged in an individual's femur (Lemercier 2011, 140). And in Germany, a
649 skeleton from Weimar (Thuringia) with fractures from a fatal blow to the left parietal bone
650 (Christensen 2004, 137). With this evidence, even supposing that the number of cases that we
651 are unaware of may be two or three times as large, should not the conception of the Bell
652 Beaker culture as a phenomenon linked with war and violence be seriously reconsidered?

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