
Revealing the Earliest Animal Engravings in Scotland: The Dunchraigaig Deer, Kilmartin[‡]

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The recent discovery of animal carvings in the Early Bronze Age burial cairn at Dunchraigaig (Kilmartin Glen, Scotland) prompts a re-evaluation of current knowledge of rock art in Britain. The deer and other quadrupeds represented in the monument are the first unambiguous depictions of prehistoric animals of prehistoric date in Scotland, and among the earliest identified in Britain and Ireland. This contrasts with the well-known abstract carvings of rock art in this region, characterized by cup-marks and cup-and-rings. The discovery also reinforces the special character of Kilmartin Glen as one of the most original and remarkable Neolithic–Bronze Age landscapes of monumentality and rock art in Britain. This article describes the process of authenticating the Dunchraigaig carvings as part of the Scotland’s Rock Art Project (ScRAP) and discusses their implications for our understanding of prehistoric rock art in Scotland, Britain and Atlantic Europe more widely.

Introduction

The recent discovery of animal carvings in Dunchraigaig cairn (Kilmartin, Mid-Argyll, Scotland), dating back to the Early Bronze Age (EBA hereafter) and possibly earlier, is an exceptional find that demands reconsideration of current knowledge of prehistoric rock art in Britain and its wider European connections. The engravings were first identified by independent researcher Hamish Fenton, who notified the Scotland’s Rock Art Project (ScRAP) team of his find in November 2020. This article discusses the

process of authenticating these important carvings and reflects on the implications raised by their discovery.

Prehistoric rock art in Britain and Ireland is mostly composed of circular motifs such as the iconic cup-and-rings, cup-marks, penannulars and rosettes, often connected by linear and wavy grooves. The same iconography can be found further south in northwest Portugal and Spain, and forms part of a carving tradition known as Atlantic Rock Art (hereafter ARA), characteristic of western Europe (e.g. Bradley 1997; 2020; Valdez-Tullett 2019). Although

[‡] The original version of this article included an image at figure 17 for which appropriate permission was not obtained. The image has been removed from the article and the online PDF and HTML versions updated. A correction notice has been prepared.



Figure 1. Deer carving alongside cup-and-rings at Laxe de Os Carballos (Pontevedra, Galicia). (Photograph: Joana Valdez-Tullett.)

its chronology is somewhat disputed and its development had regional variations, ARA is widely considered to have been created during the fourth and third millennia BCE (e.g. Alves 2003; Bradley 1997; 2020; Fábregas-Valcarce & Rodríguez-Rellán 2012; Jones *et al.* 2011; O'Connor 2006; Shee Twohig *et al.* 2010; for a detailed discussion on ARA chronology, see Valdez-Tullett 2019, 17–24). In Iberia the circular motifs are often accompanied by figurative representations of animals (notably horses and deer) (Fig. 1), weapons (e.g. halberds, short swords, daggers), occasional humans and 'idols' (see Valdez-Tullett 2019, table 1). Although these motifs are typically included in the Iberian strand of ARA, their chronological relationship with the abstract imagery is not fully understood, with diverging opinions (e.g. Alves 2003; 2009; 2021, 52, 53, 56–7; Fábregas-Valcarce & Rodríguez-Rellán 2012; Santos-Estévez 2013). In all regions, however, the carvings were mostly created on flat or gently sloping surfaces of boulders and outcrops in the landscape, with only a few exceptions of depictions within rock-shelters (e.g. Calderramos, Galicia, Spain and Ketley Crag, Northumberland, UK), or on vertical

faces of natural boulders (e.g. Derrynacoulagh, Co. Kerry, Ireland) or cliffs (e.g. Ballochmyle, Ayrshire, Scotland).

The scarcity of figurative imagery in Neolithic and EBA Britain and Ireland contrasts with markedly representative contemporary traditions of southern Europe and Scandinavia. Despite a few examples of incised chalk pendants, carved chalk and wooden figurines, phalli and balls with figurative representations, the generalized abstract character of British and Irish rock art is seemingly deliberate (Fowler 2021; Jones & Díaz-Guardamino 2019): an intentional choice which may be related to the potential of abstractionism for ritual and symbolic purposes, given the possibility of curating them according to multiple connotations and manipulation of meanings (Fowler 2021; Thomas 2005, 169).

There are only a few examples of prehistoric figurative rock art in Britain, the oldest being the Palaeolithic zoomorphs of Creswell Crags (Bahn & Pettitt 2009). Other examples include the representations of EBA weapons at Stonehenge (Atkinson 1956) and the cist slabs of EBA funerary monuments in

Table 1. Rock art traditions in Europe.

Tradition	Location	Main motifs	Deer	Main Style	Main Technique	Main Context	Date Range
Levantine Art	SE Iberia	Animals, artefacts, humans, scenes	✓	Naturalistic and Semi-Naturalistic	Painting	Shelters	11,000–8200 cal BP–5500 cal BP ¹
Tagus Rock Art	Central Portugal	Animals, humans, geometric	✓	Semi-Naturalistic and Schematic	Carving	Open-air	11,000–8200 cal BP–5500 cal BP ²
Schematic Rock Art	Whole of Iberia	Animals, humans, geometric	✓	Schematic	Painting & Carving	Carvings in open-air; paintings in shelters, overhang, cliffs	6th/5th millennia BCE–3rd millennium BCE ³
Atlantic Rock Art	NW Iberia (Galicia and NW Portugal), Britain, Ireland	Geometric motifs, animals, weapons and other figurative images only in Iberia	✓ (in Iberia)	Geometric, Abstract, Figurative Schematic, Stylized animals	Carvings	Open-air	4th millennium BCE–early 2nd millennium BCE ⁴
Northern Style	Scandinavia	Wild animals, sea creatures, human, hunting scenes, boats, composite images	✓	Stylized	Carvings	Open-air	5500–4000 BCE ⁵
Southern Style	Scandinavia	Ships, humans, animals, hunting and fighting scenes, weapons, tools, wheel crosses, ploughs, podomorphs	✓	Stylized	Carvings	Open-air	1st and 2nd millennia BCE–CE 550 ⁶
Painted Scandinavian Art	Finland and Norway and southern Sweden	Human figures, animals, (mostly elks and moose), boats, geometric motifs		Stylized	Paintings	Caves	5000–100 BCE ⁷
Alpine Rock Art – Mont Bégo	France (Maritime Alps)	Geometric images, weapons, humans, wild and domesticated animals (oxen), ploughs, podomorphs		Stylized and Schematic	Carvings	Open-air	4th–3rd millennia BCE ⁸
Alpine Rock Art	Alpine Italy, Central and Western Italy, Switzerland	Geometric, weapons (e.g. daggers), wild and domestic animals, ploughs, structures, anthropomorphs		Abstract and Stylized figures, Schematic	Carvings	Open-air	4th–1st millennia BCE ⁹

Notes. (1) Bradley 2020, 5; Domingo-Sanz 2014, 3643; Lillios 2020, 153–4; Ochoa *et al.* 2021. (2) Gameiro *et al.* 2020, 121–3; Martins *et al.* 2015. (3) Alves 2021, 51; Bradley 2020, 9; Martins 2020, 24. (4) Alves 2003; Fábregas-Valcarce & Rodríguez-Rellán 2012; Jones *et al.* 2011; O'Connor 2006; Valdez-Tullett 2019. (5) Goldhahn 2018, 7. (6) Bradley 2020; Goldhahn 2018. (7) Bradley *et al.* 2001. (8) Robb 2020. (9) Robb 2020.

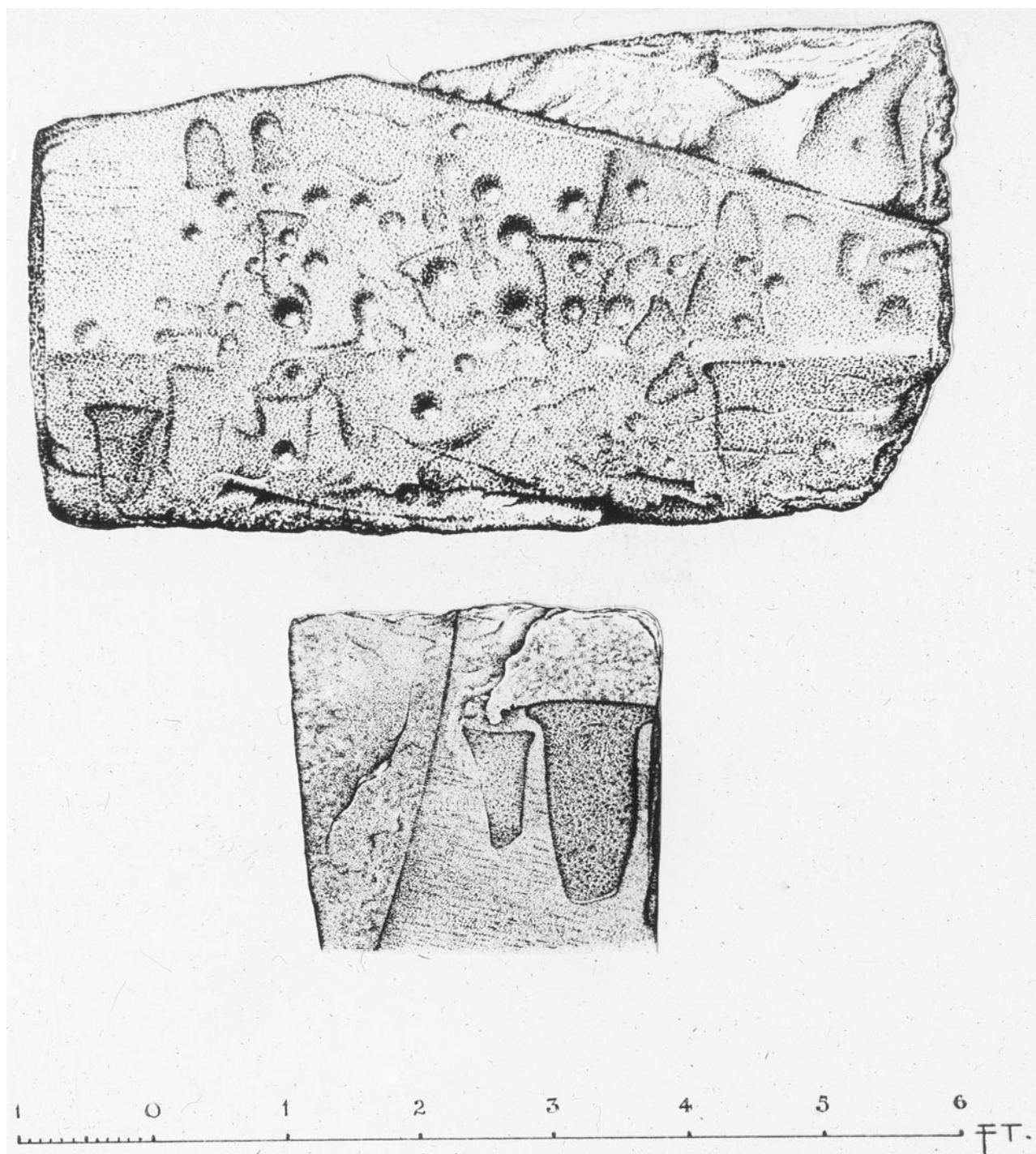


Figure 2. *Plan of cist cover decorated with carvings of axeheads in Nether Largie North. (Plan by RCAHMS, Crown Copyright: © HES)*

Kilmartin (Nether Largie North, Nether Largie Mid and Rí Cruin), featuring depictions of flanged bronze axe-heads and a possible halberd (e.g. Mapleton 1871; Morris 1977; Needham & Cowie 2012; Watson & Bradley 2021) (Fig. 2). The growing use

of digital recording techniques in the last decade added to this inventory, revealing additional carvings of late EBA axe-heads and daggers on four trilithons at Stonehenge (Abbot & Anderson-Whymark 2012) and, more recently, a possible hafted object at

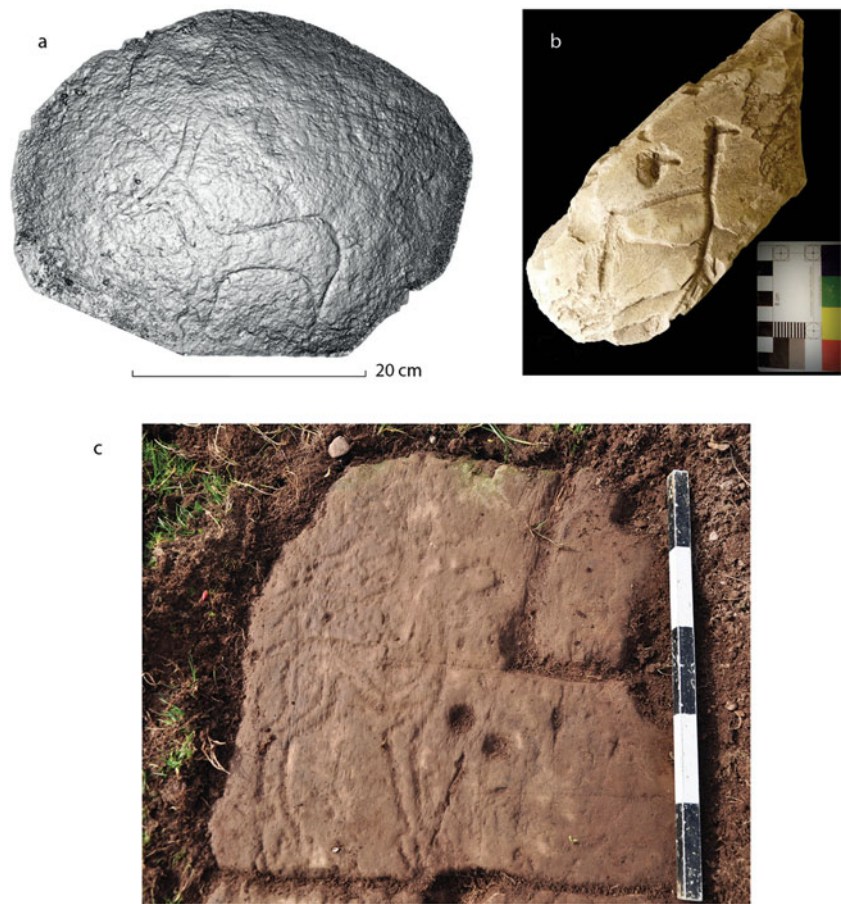


Figure 3. Other deer carvings from Britain: (a) 3D model of Glen Domhain boulder, Argyll (ScRAP); (b) Cissbury Mines, Sussex (Teather 2015); (c) Eggerness Stag, Dumfries and Galloway (photograph: Joana Valdez-Tullett).

Nether Largie Mid cairn (Watson & Bradley 2021, 225). Other EBA animal carvings include the Cronk yn How Stone associated with a round barrow near Ramsey (Isle of Man) (Darvill *et al.* 2005); Goats Crag rock-shelter in Northumberland (England) possibly related to a Beaker burial (Burgess 1972; van Hoek & Smith 1988); and a carved chalk block from the Neolithic flint mines of Cissbury, Sussex (England) (Teather 2015) (Fig. 3). The Cronk yn How and Cissbury carvings have been interpreted as representations of deer, but this identification has been contested due to their schematic design and lack of defining anatomical detail (Jones & Díaz-Guardamino 2019, 30, 190). Carvings of stags have also been noted in Scotland on an isolated boulder in Glen Domhain (Mid-Argyll) (Campbell & Sandeman 1962; RCAHMS 1992), on a vertical rock face at Ballochmyle (Ayrshire), and at Eggerness (Dumfries and Galloway). These three depictions have all been interpreted as dating to the Iron Age or later periods (e.g. Morris & van Hoek 1987; Stevenson 1994) (Fig. 4).

In summary, the few clear prehistoric figurative rock-art motifs reported so far in Britain are mainly

depictions of metal artefacts in EBA contexts, considering that the animal examples cited above are all problematic. In this context, the Dunchraigaig zoomorphs have no clear precedent, raising interesting questions regarding the carving practice, prehistoric inter-regional connections and relationship between these animal representations and the numerous cup-and-ring markings scattered in the local landscape. It also opens up the possibility that similar figurative carvings of this date exist in the Kilmartin area or elsewhere in Britain, potentially filling a gap in the lack of representational prehistoric rock art.

Dunchraigaig Cairn, Kilmartin: a brief context

Kilmartin Glen is famous for its prehistoric landscape, comprising numerous monuments from carved rocks to standing stones, stone circles, and funerary structures. These include the Linear Cemetery, a 2 km long alignment of EBA (c. 2200–1900 BCE) (RCAHMS 1992; Sheridan 2012, 175–6) burial cairns, incorporating the three Nether Largie Cairns of which Nether Largie South was re-configured from a Clyde-type Neolithic chambered tomb (Greenwell 1865; Henshall

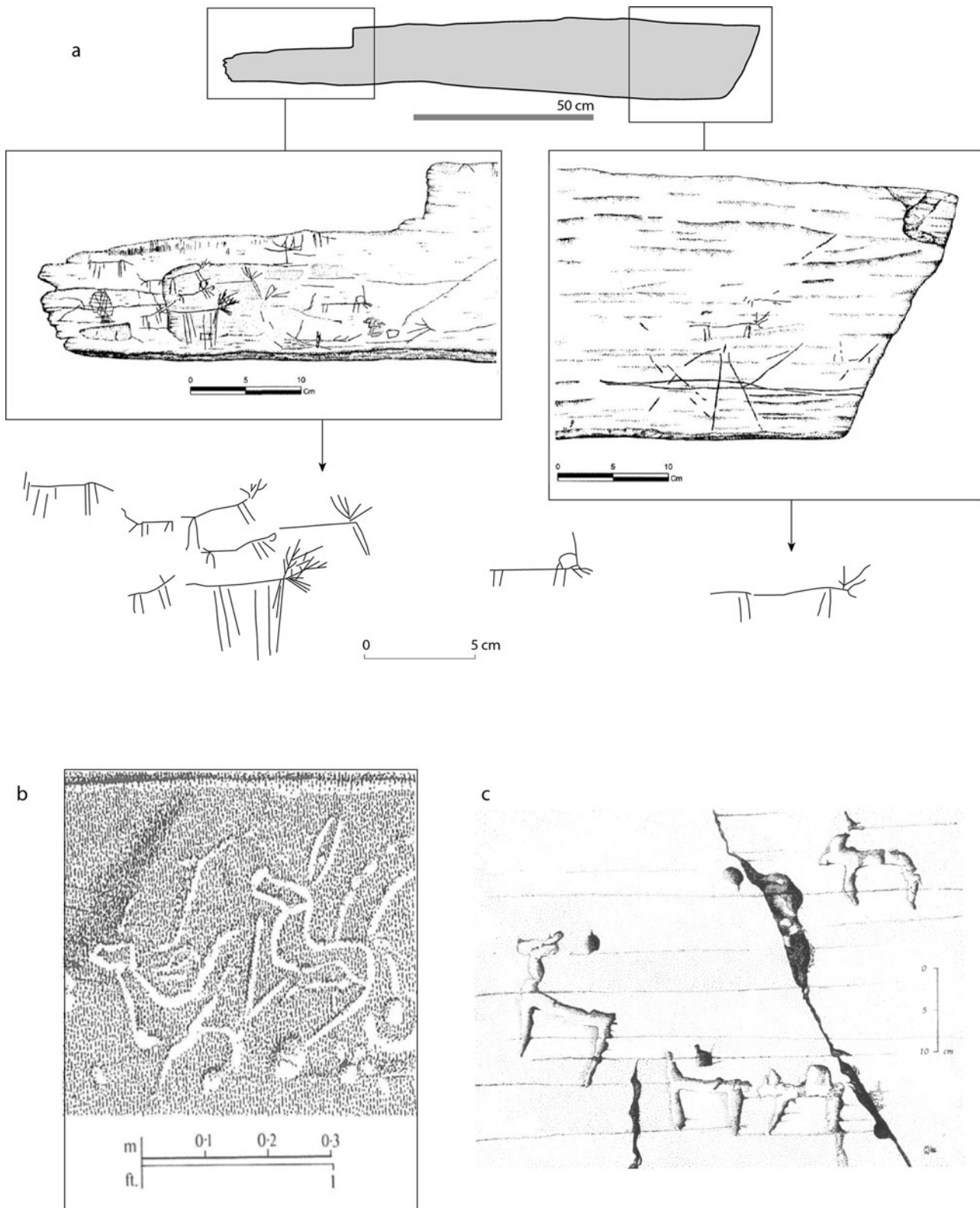


Figure 4. Other deer carvings from Britain: (a) Cronk yn How Stone, Isle of Man (after Darvill *et al.* 2005); (b) Ballochmyle rock face, Ayrshire (after Stevenson 1994); (c) Goatscrag rock-shelter, Northumberland (after van Hoek & Smith 1988).

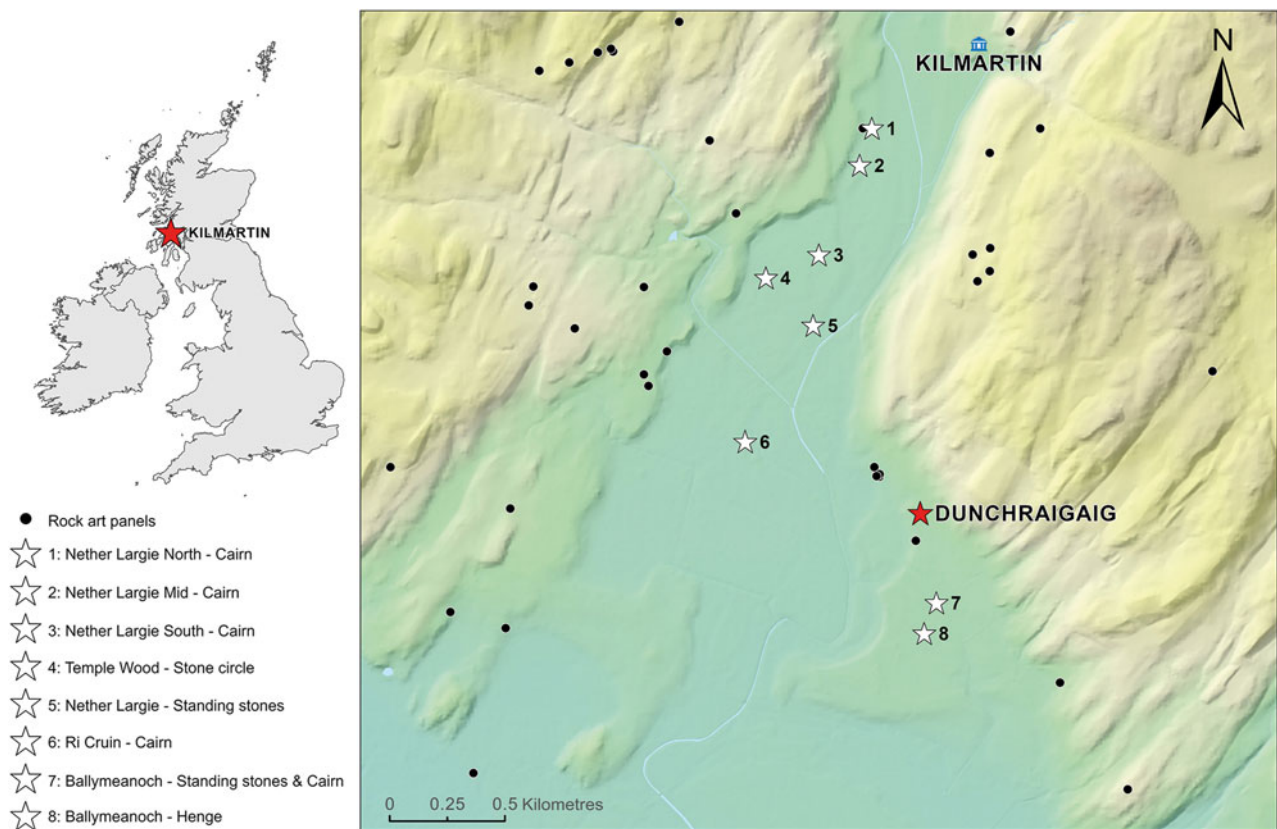


Figure 5. Kilmartin Glen and Dunchraigaig Cairn in the context of Britain and Ireland. (Map: Linda Bjerketvedt.)

1972; Sheridan 2012, 176). Located to the southeast of the Linear Cemetery, Dunchraigaig Cairn sits on an elevated position in a raised river terrace overlooking the surrounding landscape (Fig. 5).

Dunchraigaig is a large, round cairn of cobbles, currently 30 m in diameter by 2.5 m high at its centre, covering three separate stone-built chambers or 'cists' (Campbell & Sandeman 1962, 118) (Fig. 6). Three large stones on the edge of the monument suggest that the cairn may have been contained by a kerb (Greenwell 1865). Archaeological excavations were undertaken by Rev. Mapleton (1870) and Canon Greenwell (1865) in the 1860s, and the site was re-evaluated in the 1920s by J. Craw (1930). The resulting reports and publications contain limited details, making it difficult to assess the extent of the interventions. Literature suggests that the central part of the cairn had been disturbed prior to the first excavation, with stone cobbles being removed for field walls (Greenwell 1865; Mapleton 1870). However, Mapleton's descriptions of finding and retrieving grave goods and human remains suggest that these had not been exposed previously. Only one trench is reported to have been opened by Mapleton on the south side of the cairn (Greenwell

1865, 348; Mapleton 1870). The excavations identified two short cists, one in the centre of the cairn (1.37×0.76×0.76 m) and a second towards its northern edge (0.46×0.38×0.38 m) (Fig. 7). A third, larger cist (2.54×0.97×1.07 m) with different characteristics was found on the southeastern side of the monument. The two short cists were constructed of stone slabs and contained two Irish-style Bipartite Food Vessels, dated to 2160–2080 BCE (A. Sheridan, pers. comm. 2021), alongside cremated bone and charcoal, flint chippings and a mixture of sand, gravel and clay (Greenwell 1865; Mapleton 1870; 1871). According to Greenwell, remains of three individuals, featuring three different funerary treatments, were recovered from the central cist: a crouched burial with the head to the northeast was found beneath a clay pavement, while cremated bones were associated with a Food Vessel, and 'an unburnt body, gone almost entirely to decay, lying east and west' was found on top of the capstone (Greenwell 1865, 347; RCAHMS 1988). Although rare, this combination of an extended skeleton laid on a stone slab with a crouched burial inside the cist was also found at the EBA Groundstone Law tumulus (Northumberland, England) (Fowler 2013, 165; Greenwell & Embleton 1862, 32).

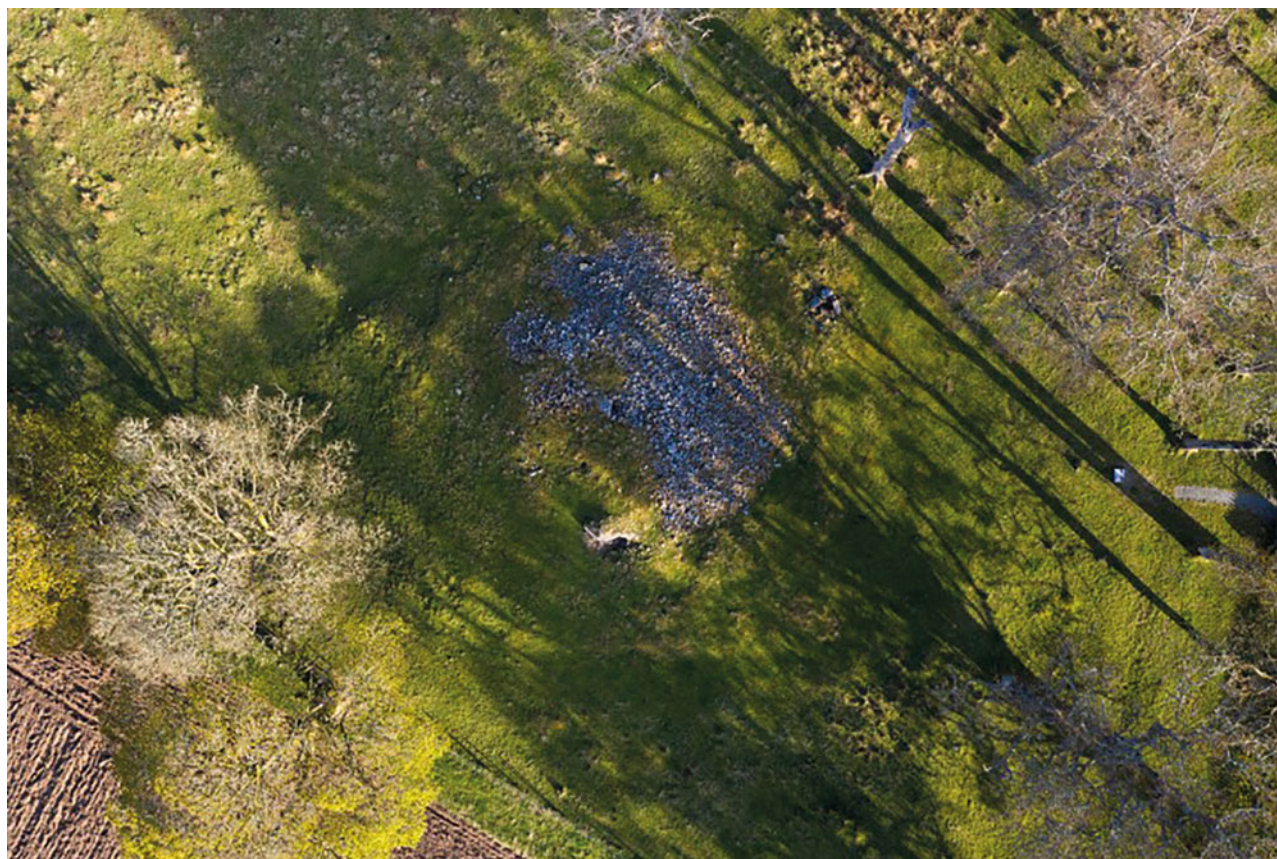


Figure 6. Aerial photograph of Dunchraigaig Cairn. (Crown Copyright: © Historic Environment Scotland.)

The third and larger cist is more remarkable, and it is here that the animal carvings are located. The grave was dug into the old ground surface, its sides constructed in dry-stone masonry (rather than upright slabs) from an assortment of cobbles and boulders, potentially collected from the neighbouring raised river terraces. The cist was sealed with an unusually large capstone of fine-grained metabasite (metamorphosed basalt), a locally quarried rock type common to other Neolithic and Bronze Age structures in Mid-Argyll. Geological assessment of the capstone concluded that it would originally have been near vertical and orientated north-northeast–south-southwest, forming part of an outcrop prior to extraction. It may have been sourced close to Dunchraigaig, as there are rocks of similar geological formation and orientation exposed on higher ground to the east of the site (Anderton 2021). The slab, partly exposed today, measures about 4 m in length, and Craw (1930, 135) speculated it weighed at least 5 tons (Fig. 8). Our investigation into the biography of this monument suggested that, probably due to its proportions, the capstone was not removed during the excavations and the cist was instead opened laterally by

dismantling the stones forming its eastern wall. No artefacts were recovered from this cist, but the chamber contained the cremated and inhumed remains of 8–10 individuals. There are conflicting reports about how these burials were organized within the cist. RCAHMS (1988) describes the use of stone fragments on the floor of the cist to divide the human remains into separate clusters, while Craw (1930, 135) observes that burnt bodies were placed on and beneath stone slabs at the west end of the cist. A separate account claims that there were cremated bones at one end of the burial cist and an inhumation in the centre (Ritchie & Harman 1985, 138).

The unusual characteristics of the larger cist, notably its size, structure, collective burial and internal configuration, have certain parallels with the re-modelled Neolithic chambered tomb nearby at Nether Largie South cairn, leading Mapleton, Greenwell and Henshall to suggest that it could have been the primary tomb at Dunchraigaig, with the two short cists added in the EBA (Greenwell 1865, 348; Henshall 1972; Mapleton 1870). Re-use of Neolithic burial monuments by Beaker and EBA people was not uncommon and, like the Nether Largie

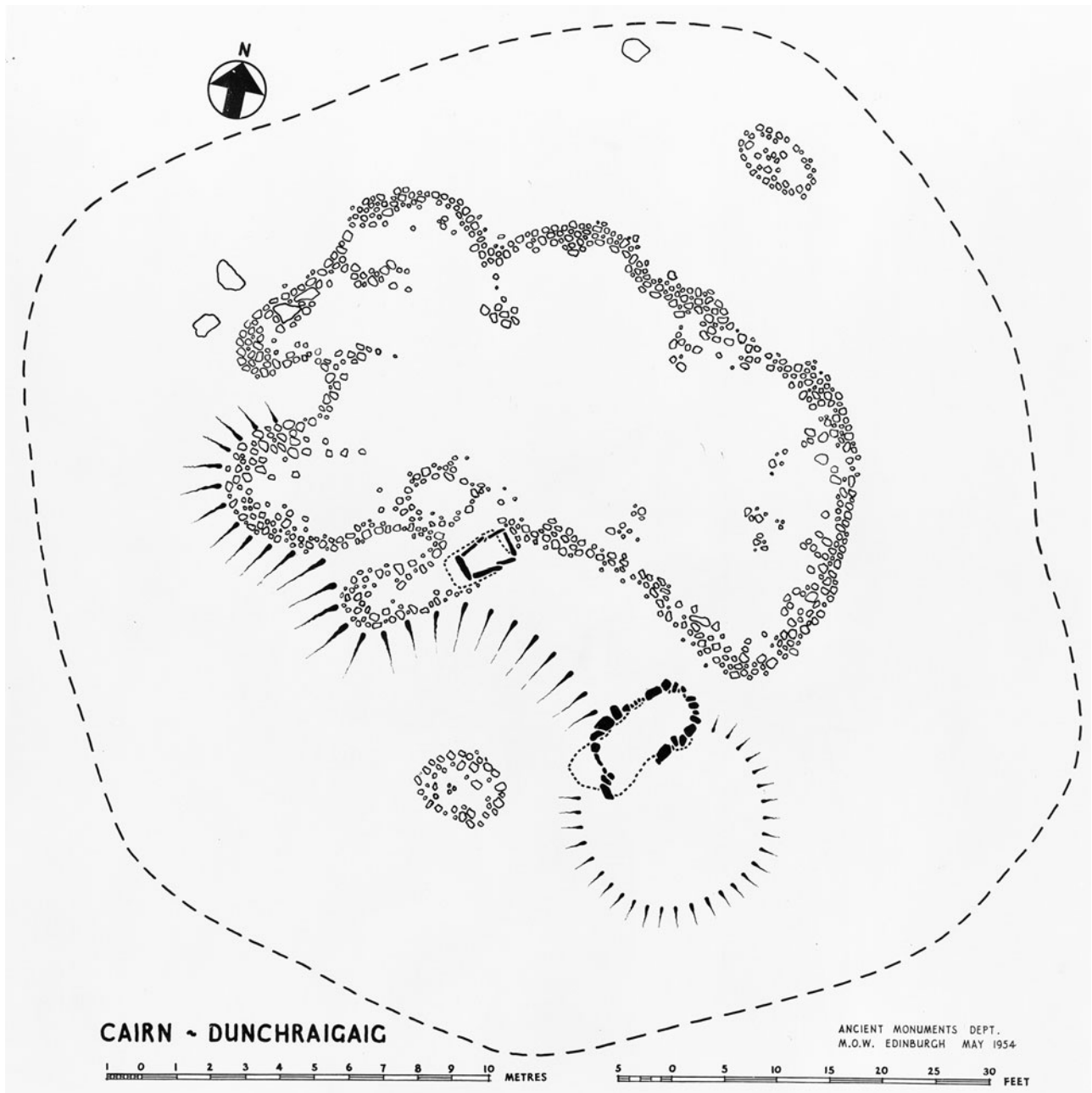


Figure 7. Plan of Dunchraigaig Cairn, showing location of the large cist to the southeast and the central short cist. The third cist was not visible at the time the drawing was produced, and therefore does not feature the plan. (RCAHMS; Crown Copyright: © Historic Environment Scotland.)

South cairn, this cist could have been originally part of an earlier funerary structure that was modified and re-used during the EBA, although Henshall (1972, 368) considers that this ‘curious large cist in which a number of cremations were found [...] cannot satisfactorily be classified as a chamber’. Despite the different characteristics of the cist, this proposal is entirely plausible, as the lack of consistency in the way funerary contexts were constructed and used

in this period suggests there could have been overlapping ontologies or cosmologies (Bickle 2020; Fowler 2021, 10). Furthermore, a whetstone, a greenstone axe and a flint knife, indicating Neolithic activity, were recovered from the cairn material near the large cist, although we can only speculate on whether these artefacts were originally deposited within the cist and later displaced when the monument was re-used (Greenwell 1865; Mapleton 1870).



Figure 8. Dunchraigaig Cairn and eastern entrance to the large cist. (Photograph: Joana Valdez-Tullett.)

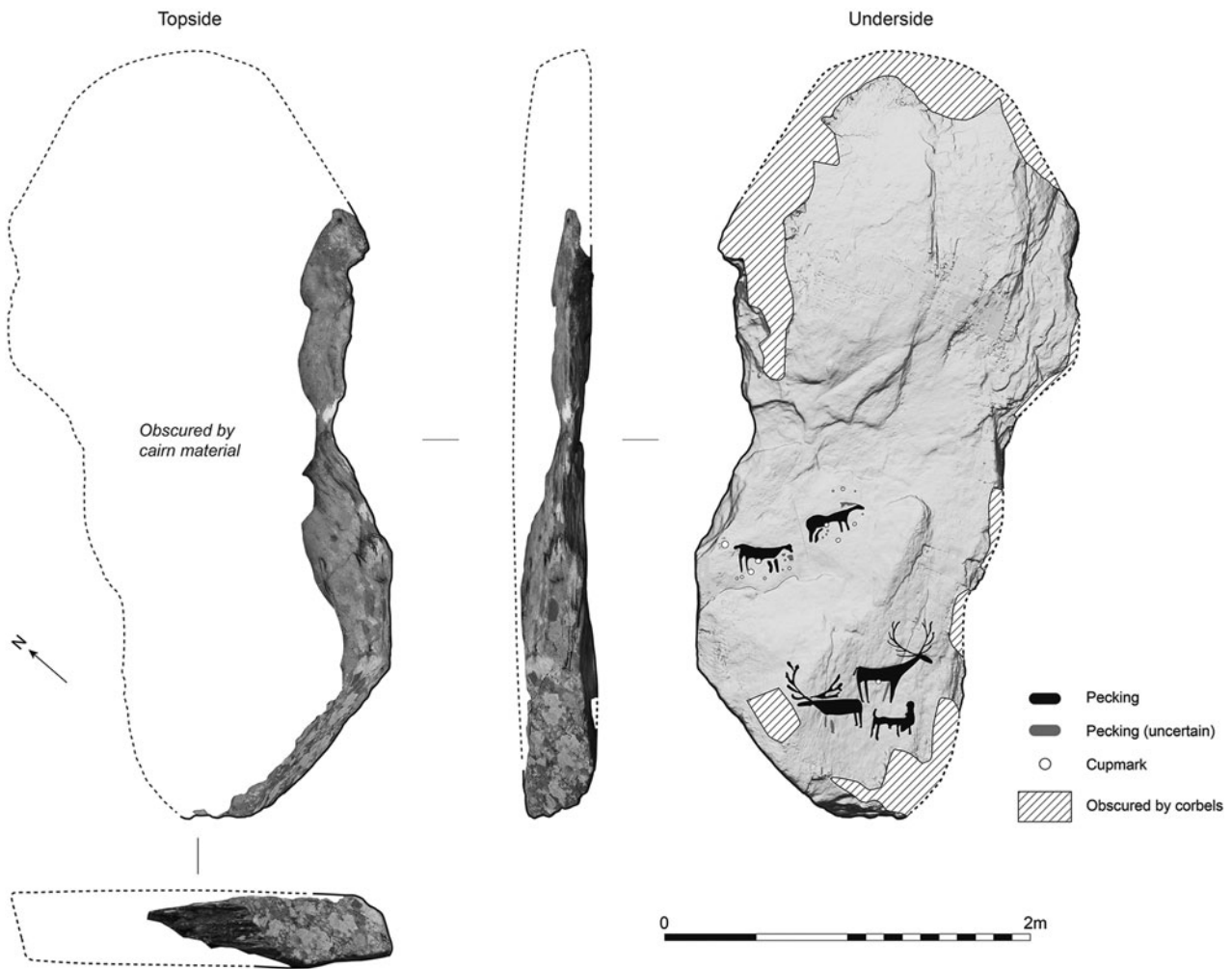


Figure 9. The large cist capstone at of Dunchraigaig Cairn, with drawings and interpretation of the animal carvings. (Photogrammetry and drawing: Guillaume Robin.)

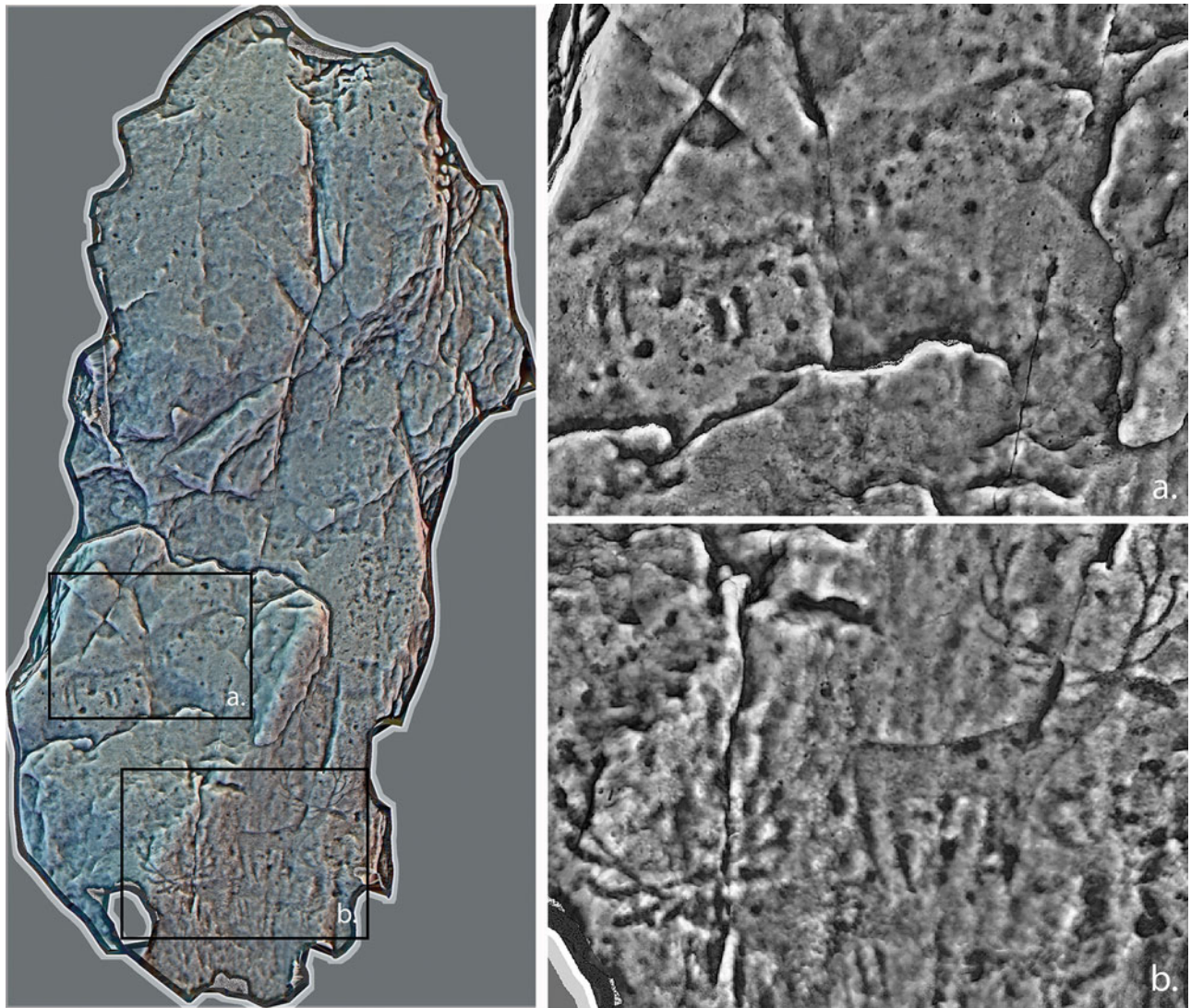


Figure 10. Rendering of the high-resolution 3D model of the Dunchraigaig capstone with LiDAR tools. Details of the juvenile deer (a) and the stags (b) on the right. (3D Model: © Historic Environment Scotland. Rendering: Łukasz Banaszek.)

As the artefacts and human remains are now lost, there is no opportunity for further scientific analysis. It is worth noting that little is known about Late Neolithic funerary rites in areas of Britain where Grooved Ware was not prevalent (Parker Pearson *et al.* 2019, 457), and Dunchraigaig has not been subjected to more in-depth archaeological investigations in recent times, limiting our understanding of this prominent and rather atypical, multi-phased monument.

The 'Fabulous Stag' and other animals at Dunchraigaig Cairn

The animal carvings identified in Dunchraigaig Cairn are located on the underside of the capstone

covering the large cist. The topside of this slab, currently covered by cairn material, has not been investigated. The motifs were discovered by Hamish Fenton (2021), who first noted a few grooves that were later confirmed by his 3D model created with Structure from Motion (SfM) photogrammetry. Five animals were revealed, two of which are distinctive stags with clear anatomical features (see Figure 9). Following this discovery and a notification to Scotland's Rock Art Project (ScRAP) in December 2020, Historic Environment Scotland's (HES) Digital Documentation and Innovation team produced a sub-millimetre high-resolution digital 3D model, using a portable Artec Leo structured light scanner inserted in the small gap between the capstone and

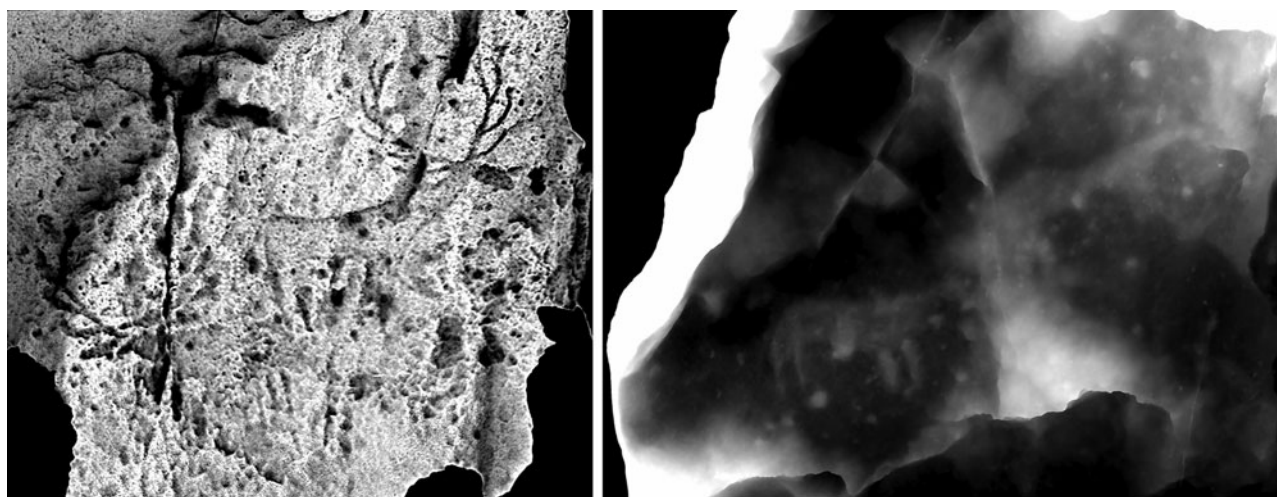


Figure 11. Details of the Dunchraigaig carvings: (left) grey-scale PCV image of the Fabulous Stag(s); (right) distance mapping of the juvenile deer. (3D Model: © Historic Environment Scotland. Rendering: Tom Goskar.)

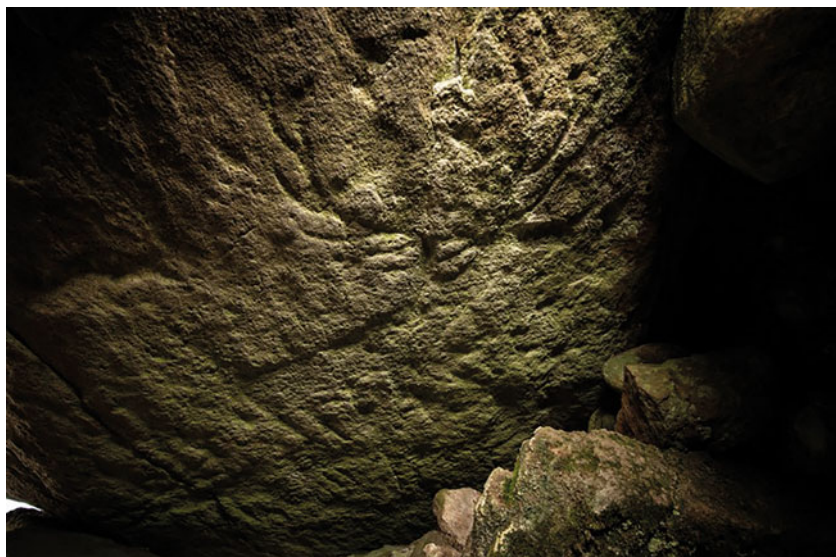


Figure 12. Detail of the Fabulous Stag at Dunchraigaig. (Crown Copyright: © Historic Environment Scotland.)

the ground underneath it (0.5 m on the northeast end of the chamber, 0.54 m on the southeast—under the stags, 0.6 m in the central part of the cist).

In situ observations confirmed the extremely weathered condition of the carvings, making the 3D model an essential tool for in-depth analysis of the motifs and authentication of the find. Digital manipulation of surface textures and lighting on the model provided accurate details of the animals' morphology, relationship with the rock surface, carving techniques and potential phasing of creation. A range of digital enhancement tools were used to interrogate the 3D model including Meshlab's Radiance Scaling (Vergne *et al.* 2010); multiple shadings with LiDAR tools (Fig. 10); variations in Depth Colouring; Surface Distance Imaging; PCV (Portion de Ciel

Visible) analysis (Duguet & Girardeau-Montaut 2004) (Fig. 11); Alternative Ambient Occlusion images; Surface Deviation; and Hill Shading, as well as a Virtual Reflectance Transformation Imaging (RTI) (Malzbender *et al.* 2000).

All five animals carved on the Dunchraigaig cist capstone are quadrupeds. Two are clear examples of red deer (*Cervus elaphus*), a large mammal species indigenous to Britain. The remaining three animals are more difficult to identify. The 'Fabulous Stag' (after Tom Goskar) (Fig. 12) is the eye-catcher of the assemblage. It is depicted in a semi-naturalistic style, with a powerful posture and detailed anatomical features that show a pronounced set of well-developed, branching antlers, long stretched neck, defined rump, short tail, and a small cupmark

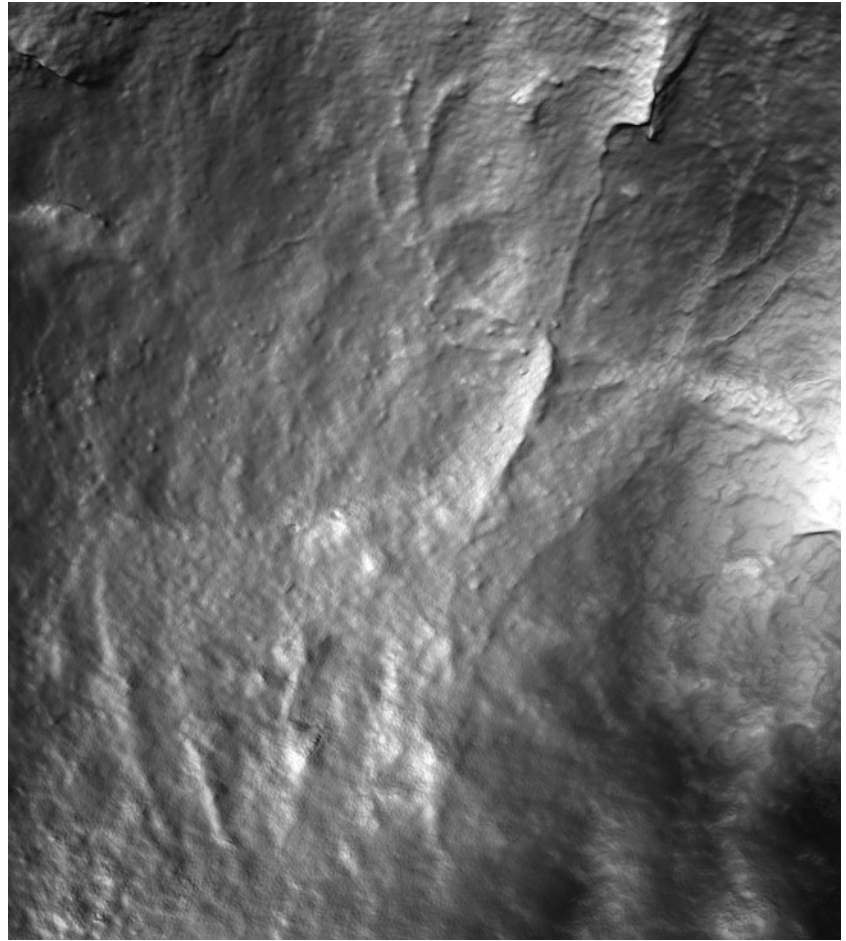


Figure 13. Detail of the Fabulous Stag's high-resolution 3D model, rendered with a localized light source and grey depth colouring, clearly showing the peckmarks. (3D Model: © Historic Environment Scotland. Rendering: Tom Goskar.)

possibly marking its sex. The legs are quite thin, straight and tapering to points. From muzzle to tail the stag measures 45 cm, and is 18 cm high topped by 21 cm of branching antlers. This stag is located on the southwestern end of the capstone, near the dry-stone wall, facing right towards the cairn centre. Tucked into the edge of the capstone, this animal is quite hard to reach and visualize as a whole, hence the importance of the 3D model. Its body is well defined and in proportion, except for the muzzle, which resembles that of an elk and is rather large in relation to the neck. This feature was carved with a slightly deeper groove, suggesting a later addition or a cover up for an unwanted area of pecking. Interestingly, the natural fissure that runs parallel to the top line of the deer's neck gives the illusion of a much larger neck that appears more in proportion with the muzzle.

Further to the western side of the capstone, and very close to the Fabulous Stag, is a second male deer. This animal faces the opposite direction to the former, looking towards the eastern side of the cist, outwards in relation to the centre of the cairn.

Weathering is more accentuated in this motif and its body is less detailed, although also featuring a prominent set of antlers crowning a relatively small and sub-triangular muzzle. The stag's neck is shorter and the body fades sharply, disappearing into the texture of the rock surface towards its back. Only the two hind legs are visible. These are straight and thin, similar to the legs of the larger deer. The Fabulous Stag looks slightly superimposed on the hindquarters of this animal. The bodies of both these zoomorphs were completely pecked out and tool marks are still visible. The peckmarks are regular and precise, suggesting a controlled execution of the motifs (Fig. 13). This technique of pecking on the inside of their bodies without a well-defined exterior line is similar to that observed in the axeheads depicted on the nearby cists of Rí Cruin and Nether Largie Mid and North (see Figure 2).

In a more central position of the capstone, a few centimetres from the stags, two very faded and smaller animals (0.15×0.12 m each) face the middle of the cairn. These two zoomorphs lack anatomical detail, although small cupmarks may be marking their sex



Figure 14. Detail of a juvenile deer at Dunchraigaig, showing the accentuated weathering, shallow grooves and cupmarks potentially marking its sex. (Photograph: Joana Valdez-Tullett.)

and one of them has a possible antler identified from the 3D model (Fig. 14). These features suggest that they are juvenile male deer. Their legs, represented by straight lines, are closely comparable to the stags described above. Their stylized bodies are simple and seem to have been created with regard to the micro-topography of the rock surface to produce a relatively undulating shape. Positioned alongside each other and with necks slightly extending diagonally, these animals appear to be in motion, climbing up a slope.

Finally, below the two mature stags is a fifth quadruped (0.15×0.12 m), a very weathered (or damaged?) and difficult to visualize animal. The chipped edges and visible scratches on this part of the stone suggest that it may have been broken during quarrying or transportation to the monument. The animal has no recognizable anatomical details, apart from the back legs, short tail and pecked rectangular body, and it is not possible to identify the animal species. Given the theme of the panel, however, it is possibly another deer.

The degree of erosion of the carvings indicates a prolonged exposure to the elements, should they have been created *in situ* when the stone was attached to its original outcrop, as proposed by Anderton (2021). The current position of the deer on the capstone also suggests an *in situ* carving. If originally created on a vertical outcrop, the animals would have been in a standing position with their hooves towards the ground surface; whereas when viewed from within the cist, the larger stags appear upside down (with a southeast–northwest orientation) and partly obscured

by the tomb structure. The differential weathering observed between the larger stags and the juvenile deer could indicate different moments of carving. In this scenario, the Fabulous Stag would have been the last animal of the assemblage to be created. Not only is it the least weathered of the five, but it also overlaps slightly with the second stag, and one of its legs seems to be superimposed on grooves of the quadruped below it. This may explain its prominence on the panel.

We also considered the moisture and mineralogical conditions within the cist, which may have affected the differential weathering and preservation of the carvings after the stone was used to seal the burial. A weathering/decay survey conducted by Historic Environment Scotland's Conservation Team concluded that, although there are no obvious differences in the mineralogical composition across the rock, its matrix exhibits evidence of instability. Firstly, the top and bottom surfaces of the capstone are cleavage planes, which may provide points of weakness within the rock due to the presence of vulnerable minerals (Anderton 2021; Graham 2021) (Fig. 15). The chemical decay of these minerals is partly responsible for the rough and pitted texture of the stone, possibly combined with other physical stresses such as freeze-thaw cycles. It is interesting to note that a large central section of the capstone, coinciding with the location of the juvenile deer, displays a convexity that may be related to an inherent weakness or fracture in the rock. Furthermore, the study revealed that the edges of the capstone are more likely to accumulate moisture. Biological growth



Figure 15. High magnification of a decayed mineral through chemical dissolution and leaching of iron from within the rock matrix of Dunchraigaig capstone. (Photograph: Callum Graham.)

was distributed across the whole surface but was more substantial along the edges (Graham 2021).

Although these considerations do not provide dating details to the carvings, they help us understand their natural weathering processes and reinforce the view that the zoomorphs were created in the EBA, when the monument was closed, or before.

Authentication of a unique find

There are currently no parallels in Britain for the deer carvings in Dunchraigaig Cairn, so before making any assumptions about their origin and archaeological relevance, we carried out a careful evaluation to assess their authenticity. We compared the motifs with other representations of deer found across Scotland dating from the Iron Age up to the present day, which vary significantly from the Dunchraigaig carvings in both style and technique (e.g. Laing 1996; Laing & Laing 1992; Morris & van Hoek 1987). Carvings such as the deer at Glen Domhain, also in Kilmartin (Campbell & Sandeman 1962; Childe 1941), or that in Eggerness (Morris & van Hoek 1987; Stevenson 1994), could be relevant comparisons, given that both represent animals in profile, are spatially related to other cup-and-ring marks and are located on flat rock surfaces in the open landscape. However, an *in situ* close inspection of the former revealed very sharp, 'V'-shaped incised grooves, indicating the use of a metal tool in its execution, and the latter was created with very undulating lines, unlike known Neolithic and Bronze Age representations, but similar to later depictions.

We also considered the possibility that the animals could have been carved after the opening of the cist in the nineteenth century, since stags are the emblem of the Malcolm family, owners of large swathes of Argyll, including Kilmartin Glen. With the exception of two naturalistic stone statues flanking the entrance to the Malcolm seat at Duntrune Castle, however, stag depictions for this family are exclusively painted, and linked to other emblematic devices on the Malcolm coat of arms.

Fortunately, archival research demonstrated that the large capstone had never been lifted, probably due to its large dimensions. Illustrations of the monument in drawings by Craw (dated to the 1920s) show the capstone in its original position, and it is also displayed *in situ* in the oldest known photograph of the site (Fig. 16), captured with a silver gelatin dry plate negative (a technique used between 1871 and 1920). Our site visit confirmed that the carvings could not have been created from inside the cist with the capstone in its current position as there is very restricted space between its inner surface and the ground, and the larger stags appear upside down on the edge of the cist, partly obscured by the cobbled wall. To carve them in this position would have been technically and physically implausible. These finds strengthen the argument that the carvings were produced before the cist was completed rather than being historical or modern additions. The weathered conditions of the motifs also denote their antiquity, especially considering that they have been protected from the elements for 4000 years inside the cist. Other examples of carved



Figure 16. Photograph dating to the nineteenth/early twentieth century, showing the capstone in place. (Crown Copyright: © Historic Environment Scotland.)

stones excavated from prehistoric funerary monuments, such as Dalladies Neolithic Long Barrow (Kincardineshire, Scotland: Piggott 1974, 30) and the probable Beaker burial cairn at Wester Yardhouses (Lanarkshire, Scotland: Rankin 1874), display far better preservation and sharper markings than the Dunchraigaig deer. Based on carving and contextual evidence, we are therefore confident that the Dunchraigaig motifs are genuinely prehistoric and date to at least the latest construction phase of the cairn in the EBA, or earlier.

Dunchraigaig Cairn is integral to the prehistoric landscape of Kilmartin Glen, and one of HES' Properties in Care. It is easily accessible and frequently visited, so it is perhaps surprising that these animal carvings had not been identified since the cist was opened in the nineteenth century. This is not an isolated situation, considering that

additional carvings of weapons at Stonehenge were only found in 2012 when the trilithons were laser-scanned (Abbot & Anderson-Whymark 2012), and carvings of feet on a BA cist stone from Pool Farm (West Harptree, England) were not identified until 1958, three decades after its excavation in 1930 (Coles *et al.* 2000). On the other hand, prehistoric rock-art research in Scotland and more widely was relatively recent at the time of the Dunchraigaig excavations, and studies of cup-and-ring markings were in their infancy (e.g. Currie 1830; Greenwell 1865; Simpson 1867; Tate 1853). The existence of animal carvings in Scotland was probably not considered in the nineteenth century. Dunchraigaig and other recent finds clearly illustrate the importance of digital recording techniques, and how these methods have revolutionized rock-art studies in general.

Animal representations in European rock art

Deer played an important practical and symbolic role in past societies (e.g. Clarke *et al.* 2017; Conneller 2004; Sharples 2000). Their cyclical transformation, visible in the annual cast and re-growth of their antlers (Mitchell *et al.* 1977), could have resonated with prehistoric communities as a metaphor for the seasonality of the natural world and, by association, for fertility and the human cycle of life, death and afterlife (e.g. Tilley 1996).

There is evidence from prehistoric sites for the importance of resources and raw materials that deer provide. In Britain, this is illustrated in various contexts, from the use of postcranial deer bones as headdresses at Mesolithic Star Carr (Conneller 2004; Little *et al.* 2016), to the transformation of bones and antlers into pins and other functional and/or ritual objects, such as the famous Middle Neolithic Garboldisham macehead decorated with spirals (Jones *et al.* 2017). Antler picks were particularly important during the Neolithic, extensively used in the construction of monumental earthworks, and often deliberately deposited in pits, ditches and mine shafts (e.g. Jones & Díaz-Guardamino 2019; Little *et al.* 2016; Teather 2015; Worley & Serjeantson 2014), while antlers were sometimes placed within EBA burials (Barclay & Halpin 1999). Although few organic remains survive, deer hides and sinews could have had multiple practical uses. The significance of deer is further highlighted by their representation on prehistoric artefacts, from Upper Palaeolithic mobiliary art to third-millennium BCE loom plaques of Vila Nova de São Pedro settlement (Portugal) (Martins 2020), ivory figurines of Perdigões (Reguengos de Monsaraz, Portugal) (Valera *et al.* 2014, 25) and Beaker vessels from Tholos 7 and 15 of Los Millares (Almeria, Spain) (Leisner & Leisner 1943). Deer depictions are famous in European Upper Palaeolithic rock art, both in caves (e.g. Lascaux Cave, France) and open-air contexts (e.g. Foz Côa, Portugal), and widespread in European rock-art traditions from the Neolithic to the Iron Age. The latter range from the naturalistic (e.g. Levantine art: Domingo-Sanz 2014), schematic and semi-schematic painted traditions of Iberia (e.g. Alves 2021) and southern Italy (e.g. Whitehouse 1992), to the stylized carvings of Alpine Europe (e.g. Bradley 2020), the French Maritime Alps and Scandinavia (e.g. Goldhahn 2018). In all these cases, deer are part of a much broader repertoire of figurative motifs, many of which date to later prehistoric periods (Table 1).

While we do not wish to establish direct comparisons with other carving tradition in Europe, it is useful to examine their styles, contexts and carving

techniques given the lack of other parallels in Britain, considering that many of these regions were connected since the Mesolithic (e.g. Anderson-Whymark *et al.* 2015). In this context, it can be acknowledged that the Dunchraigaig deer carvings are stylistically closer to examples from Iberia. Their semi-naturalistic depictions are reminiscent of Levantine paintings in the southeast of the peninsula, where deer are usually represented with detailed anatomical features and prominent branching antlers (e.g. Domingo-Sanz 2014). They also bear some similarities to the semi-naturalistic carved stags of the High Tagus Valley rock art in central Portugal, which are generally depicted with well-defined anatomical details (e.g. antlers), large bodies (30 to 60 cm in height) and twisted perspectives, with their antlers shown in frontal view and bodies in profile (e.g. Garcês 2017; Gomes 2010) (Fig. 17). The inception of both traditions has been dated to the Iberian Epipaleolithic/Mesolithic period (c. 11,000–8200 BP), lasting until the Neolithic (c. sixth–third millennia BCE) (Bradley 2020, 5; Domingo-Sanz 2014, 3643; Gameiro *et al.* 2020, 121–3; Lillios 2020, 153–4).

While Iberian ARA is notable for its representation of animals (mostly horses and deer) carved alongside circular motifs, within shared landscape contexts (see Figure 1), there is considerable stylistic variation in zoomorphic depictions. The animals range from sub-naturalistic or schematic to very schematic styles, and in general are quite different to the naturalism of the Dunchraigaig carvings. This diversity of representation complicates the matter of chronology further. Zoomorphs have often been considered to be contemporary with the cup-and-rings since they frequently share rock surfaces (e.g. Lorenzo-Ruza 1955; Obermaier 1923; Peña-Santos & Vázquez-Varela 1979), but equally they could be earlier creations or later additions. Recent reassessments have placed the animal carvings in both the third millennium BCE (e.g. Fábregas-Valcarce & Rodríguez-Rellán 2012) and the ninth century BCE (e.g. Santos-Estévez 2013).

Iberia offers one further interesting comparison for Dunchraigaig in its decorated funerary monuments. There are several examples of these in the northwest, such as the iconic Dombate Dolmen (e.g. Bello Diéguez 1994) but, interestingly, the featured designs are quite different from the ARA in the neighbouring landscape, and are instead comparable with the Schematic Art tradition found elsewhere in the territory (Table 1). It is further south, in the Portuguese region of Viseu, where ARA is absent, that we find the fourth-millennium BCE Orca dos Juncas passage tomb, a monument containing a



Figure 17. (Left) Painted Levantine deer from La Tenalla (Pobla de Benifassà, Castelló, Spain) (photograph: Inés Domingo-Sanz); (right) [This image has been removed due to copyright restrictions.]



Figure 18. Painted deer-hunting scene from Orca dos Juncals Passage Grave (Viseu, Portugal) (after Shee Twohig 1981).

painted deer-hunting scene, and where the animals were represented in a semi-naturalistic way, with branching antlers and some anatomic detail (Cruz 1998; Shee Twohig 1981) (Fig. 18). Like the Dunchraigaig deer carvings, these too have closer stylistically similarities to Levantine art and the Tagus Valley rock art which, as already discussed, are mostly associated with Mesolithic and Eneolithic chronologies (see Table 1).

In Scandinavia there are multiple examples of rock art created on roof slabs of megalithic monuments, or on small, portable carved rocks placed in individual inhumation burials. Although most of these depictions comprise cupmarks, there are also examples of figurative art (e.g. horses, ships, humans) used in the context of burials (e.g. Klinta on Öland, Sagaholm in Småland, Sweden) (Goldhahn 2018).

Rock art, rituals and connectivity

The discovery of animal carvings in Kilmartin is unexpected, but not entirely surprising. This find brings the region's carvings closer to those in other parts of Europe and changes the perspective on pre-historic rock art in Britain.

The dearth of zoomorphic imagery in Britain and Ireland has always been puzzling. To understand Dunchraigaig, we undertook two main lines of

enquiry: a) are the deer carvings a result of indigenous innovation? or b) are they evidence for prehistoric connectivity and external influences? It is tempting to emphasize the latter, considering the networks of connections that existed across the wider Atlantic seaboard since the Mesolithic (e.g. Anderson-Whymark *et al.* 2015; Gibson 2013; Sheridan 2012). Artefacts, rock carvings, funerary and ritual architecture, and burial practices demonstrate a system of exchange that intensified over time and reached a peak in the second half of the third millennium BCE (e.g. Booth *et al.* 2021; Bueno Ramírez 2015; Gibson 2013, 80; Parker Pearson *et al.* 2019; Pétrequin *et al.* 2017; Sheridan 2012; Valdez-Tullett 2019). Aside from the flow of commodities, knowledge and ideas, recent ancient DNA (aDNA) and stable isotope studies have confirmed the movement of people from the continent into Britain during the mid-late third millennium BCE associated with the Beaker phenomenon (e.g. Olalde *et al.* 2018). Recent research showed that these migrations were diasporic and therefore it is likely that innovations reached Britain gradually rather than *en masse* (Booth *et al.* 2021, 386; Parker Pearson *et al.* 2019).

Higher sea levels in the Neolithic and EBA placed Kilmartin in a more littoral situation than today, making it well suited to establish maritime connections (Gibson 2013; Wessex Archaeology 2019). The region appears to have been an important node in the Atlantic circulation network, especially during the latter part of the third millennium BCE, with strong links to Ireland, northeast Scotland and northeast England (Sheridan 2012). This is best illustrated by certain open-air rock carvings found almost exclusively in Kilmartin, such as the horned spiral at Achnabreck, the double spiral at Temple Wood, the multiple lozenge motifs at Carn Bán, which have parallels in Ireland's megalithic art (Shee Twohig 1981; Watson 2021), and the depictions of metal weapons in Nether Largie and Rí Cruin EBA cairns (Campbell *et al.* 1961; Needham & Cowie 2012, 98; Shee Twohig 1981; Sheridan 2012, 173, 177). Kilmartin's strategic maritime location and the presence of copper ores in the area are cited as mainstays of its centrality during this period, along with control of exchange in valuable commodities such as Irish copper and Yorkshire jet (Needham 2004; Sheridan 2012).

The Beaker phenomenon is attested in Kilmartin between the twenty-fifth and twenty-second centuries BCE. Two of the earliest Beaker burials known in Britain include a young woman from the continent buried on the Isle of Coll, off the coast of Kilmartin, around 2470–2210 BCE, and another at Upper Largie

quarry in Kilmartin (Cook *et al.* 2010; Henshall 1972; Olalde *et al.* 2018; Parker Pearson *et al.* 2019, 427; Sheridan 2012). In this context, can we speculate that the inspiration for Dunchraigaig's deer carvings arrived with other Beaker traits? Given Iberia's importance for the Beaker phenomenon (e.g. Gibson 2016), it is tempting to consider links with Kilmartin. The two regions clearly share cultural features, such as a common understanding of ARA (e.g. Bradley 1997; 2020; Valdez-Tullett 2019) and in both there are stylistic similarities between the carved stags with Levantine and the Tagus Valley rock art described above. There is currently no archaeological evidence to attest this relationship, but we can possibly turn to the specificities of the burial for more clues. While the cist with the deer carvings at Dunchraigaig has been interpreted as a re-used Neolithic tomb (e.g. Henshall 1972), it could perhaps be argued that its funerary rites share certain characteristics of some Beaker burial traditions in Iberia. These include the appropriation of Neolithic tombs (also common in British EBA), the addition of cists to the periphery of monuments, collective instead of individual burials and a limited selection of grave goods (Gibson 2013, 77–8, 2016). Multiple interments are also common to Beaker burials in northwest France, a region strongly connected with Iberia, and a possible provenance for large scale-immigration to Britain (Parker Pearson *et al.* 2019; Salanova 2016). In fact, the combination of aDNA and incremental isotope studies carried out to analyse the individuals found within a multiple Beaker burial grave at Boscombe Down (Wiltshire) suggested that they may have had an ancestral origin in Iberia, and later moved to possibly Brittany and finally Wessex (Fitzpatrick 2011). We should be careful, however, since the Beaker burial phenomenon in Iberia is highly heterogenous, with significant differences across the territory, different types of Beaker pots in use simultaneously, and a variety of contexts (e.g. megalithic monuments, cists, caves, *hypogea*, *tholoi*, most of which were re-used), clearly representing different traditions (e.g. Bettencourt 2011; Gibson 2013; 2016; Sanches & Barbosa 2018).

The notion that the Dunchraigaig deer resulted from external influences is appealing, but we should not discard the possibility of an indigenous origin and an earlier chronology for their creation. As Henshall (1972) suggests, the large cist at Dunchraigaig Cairn may be the primary burial of the monument, with other elements added in the EBA. Late Neolithic funerary rites are poorly understood and recent studies, including aDNA research,

have demonstrated that dichotomies between individual/collective and cremation/inhumation practices are not adequate to establish chronologies, as they often co-existed for centuries (Gibson 2016; Parker Pearson *et al.* 2019). Instead, we need to consider a local origin for the deer carvings and their use or re-use within a Neolithic burial.

Dunchraigaig deer carvings: a Neolithic local innovation?

Archaeological evidence indicates that deer had an important symbolic and ceremonial role in prehistory. The use of antler frontlets at Star Carr suggests that red deer were important in ritual practices since *c.* 10,000 BP (e.g. Conneller 2004; Little *et al.* 2016). This significance did not disappear in subsequent periods, despite the introduction of other large domestic species (Sharples 2000, 109). In Scotland, the majority of Neolithic–Bronze Age red deer faunal assemblages come from Orkney and the Western Isles (e.g. Callander & Grant 1935; 1936; Clarke *et al.* 2017; Sharples 2000; Stanton *et al.* 2016), where a special human/animal relationship is clear. In the Links of Noltland, on the island of Westray (Orkney), the remains of 15 deer, some of which had been modified prior to or during deposition, were found in a heap dating to 2650–1950 BCE (Sharples 2000, 112). Similar large assemblages of deer were found within the Orcadian Neolithic Chambered Cairns of Rawsay (Knowe of Ramsay) and Knowe of Yarso (Callander & Grant 1935; 1936), two monuments particularly relevant to this discussion. Although their stone structures do not appear to have been carved, their contents indicate a probable symbolic importance of deer in Neolithic funerary rituals. Both cairns contained skeletal remains of multiple human individuals alongside fragments of deer bones, teeth and the occasional tine, one of which was worked. As with the Links of Noltland, young and older deer were laid side by side (Callander & Grant 1935; 1936). It can be argued that this is reminiscent of the situation in Dunchraigaig, where older and younger stags were carved on the same rock surface. Could the carvings of animals have replaced the deposition of their bodies in this burial?

The careful curation of the animals and their placement within the funerary monuments (e.g. Callander & Grant 1935; 1936) seems to agree with Tilley's (1996, 64) suggestion that deer held symbolic importance due to their annual rhythms of social behaviour and antler growth. The available evidence does not allow confirmation or rebuttal of this

notion, however, and it is not clear what kind of relationship was held between animals and people. Sharples infers one of tolerance and deliberate management, since deer would compete with other domesticated species and impact on crops, while still being involved with the human population (2000, 109, 112). The limited presence of red deer in domestic contexts, although intentional, was not associated with food processing, therefore reinforcing the idea of their special status (Mainland *et al.* 2020, 275). Perhaps deer were linked to some form of food taboo and a totemic worldview, in which the animals were 'a means of affirming and renewing (...) ancestral connections' (Fowler 2021, 6). While considering Viveiros de Castro's (1998) 'perspectivism' on the Amerindian relationships between human and animal bodies, Conneller (2004, 42) suggested that in Star Carr the act of wearing a 'deer mask' would 'bring about a 'social' or 'symbolic' change to the person. This view is based on the belief that human and animal spirits, and even objects, are indistinguishable and contain an essence that is immutable on the inside but can be transformed on the outside. Taking part of an animal's body would then facilitate an animal's perspective of the world and enable the person to adopt 'animal effects' (Conneller 2004, 43). Jones (2017, 176) warns against the temptation to slot prehistoric evidence 'into pre-existing and overarching, anthropological categories' but, while this worldview does not represent a direct analogy for Neolithic and EBA beliefs (Conneller 2004), it may be plausible to establish a link between the embodiment of deer and their regenerative 'powers' in a funerary context. The process of *becoming deer* through a multiplicity of relationships may indeed have been significant for certain sectors of Late Neolithic and EBA societies, but the variety of funerary rites known for these periods equally suggests wider ontological diversity (Bickle 2020; Conneller 2004; Fowler 2021).

Conclusion

The discovery of animal carvings in Dunchraigaig Cairn demands a re-assessment of current knowledge of rock art in Kilmartin, and elsewhere in Britain and Ireland. Along with the identification of additional figurative art at Stonehenge, it illustrates the value of digital recording and enhancement techniques. The growing application of laser scanning, image-based modelling and RTI in the last decade has enabled examination of rock art in ever greater detail, to address old questions and raise new enquiries. In this article we have investigated whether the Dunchraigaig carvings are genuinely prehistoric, and we have discussed their possible origins from two

different perspectives: external influence or indigenous innovation.

Although Kilmartin is already known for its rare figurative carvings of metal objects in burial monuments (e.g. Watson & Bradley 2021), the Dunchraigaig animals are unique, raising further questions of chronology and possible connectivity. While the carved axeheads within the Kilmartin EBA cairns can be relatively dated through typological resemblance to material counterparts, the deer motifs currently have no stylistic parallels in local datable artefacts or other contexts. Through detailed assessment of different features of the carvings, the cist, the cairn, and their relationship to one another, we concluded that these images have a *terminus ante quem* in the EBA, corresponding to the final construction phase of Dunchraigaig cairn, but were likely to have been created earlier.

With slight chronological variations, it is in the Neolithic that many rock-art traditions, as well as other representations such as pottery decoration and figurine making, became established across Europe, leading Robb (2015, 640) to suggest that farming ‘made us artists’. Robb also notes that Neolithic art rarely represents scenes, and motifs were generally added to the rock surface one at a time, avoiding superimpositions. Nevertheless, he argues that spatial organization patterns emerge in rock-art compositions from the third millennium BCE: motifs start to converge and be arranged thematically, becoming more obviously representational (Robb 2020, 15–16). All of these characteristics exist in Dunchraigaig. The rock art is themed, and motifs were added alongside each other with the two larger stags potentially overlapping slightly. If these characteristics are indeed typical of the third millennium BCE, this would also fit with the relative EBA date of Dunchraigaig cairn. However, the context of the carvings is significant. Furthermore, Neolithic rock art typically responds to material, light and location (Cochrane *et al.* 2014; Jones 2012; Jones *et al.* 2011; Robb 2020), and details like the use of cracks to enhance the Fabulous Stag’s muzzle, or the positioning of the juvenile deer moving upwards in the convexities of the stone surface, seem to fit well with this characteristic.

The Dunchraigaig deer carvings are currently on a capstone within a funerary context. However, Anderton’s geological assessment (2021) concluded that the slab would originally have been in a near-vertical position prior to being quarried. The *in situ* examination supported the idea that the carvings were probably created when the capstone was attached to its original outcrop, and therefore the deer would have been created the

right way up. This, in addition to the weathered condition of the carvings, suggests the images were initially in open landscape and then re-used, perhaps not initially destined for a dark funerary chamber. An open-air landscape context is typical of the ARA tradition. There are many examples where rocks carved with cup-and-ring motifs have been removed from their original locations and re-used in funerary monuments in Britain (e.g. Simpson & Thawley 1972). A good example comes from Cairnholy I (Dumfries and Galloway, Scotland), where a stone with a cup and six concentric rings was found in a secondary deposit alongside Food Vessel sherds (Piggott & Powell 1949, 118). A few metres away, a cup-and-ring motif was carved on a large flat stone which was probably originally the capstone of Cairnholy II, another Neolithic chambered tomb.

The move from open to secluded contexts is, therefore, a trend recognizable in ARA, as well as in Neolithic art more widely (Robb 2020; Valdez-Tullett 2019). If there was indeed a dramatic change in the setting of the Dunchraigaig animal carvings, then it is congruent with other known examples, associated with a shift in how the rock art was perceived, and a break with previous ontologies (Valdez-Tullett 2019, 161). Although all the other examples mentioned in this paper refer to the representation of weapons in other cists, the presence of deer in funerary contexts is not unusual, even if in other forms of material culture. The carvings in Dunchraigaig seemingly introduce another nuance to the mortuary transformation—the durable nature of images set in stone contrasting with the ephemeral character of burnt bones in the Knowes of Yarlo.

Robb (2020, 19) has argued that during the Neolithic there was little interest in the meaning of the rock art and, instead, that ‘petroglyphs acted not as a picture on a wall, but as electrical sockets and circuits, points of access to a hidden network of power [...], a material operation on the world, important for what it was or for what the act of making accomplished’. This idea brings us back to the process of *becoming deer* and acquiring ‘deer effects’, possibly related to the power of regeneration (Bickle 2020; Conneller 2004; Tilley 1996). Of course, as Layton (1991) notes, it is perfectly plausible for one society to use more than one type of art simultaneously, each serving different purposes. This hypothesis perhaps explains the different iconographic content of images in the landscape relative to those in funerary monuments in northwest Iberia (e.g. Alves 2003). A similar notion could also apply in Kilmartin, where landscape rock art is invariably abstract, whilst carvings in funerary monuments are, so far, predominately figurative.

Although clearly representational, the deer carvings at Dunchraigaig are nevertheless as ambiguous as the abstract cup-and-ring motifs in this area. Their meaning and purpose are as obscured and restricted to us as their physical location within the cist.

In this paper we have described the circumstances surrounding this fascinating discovery, some of the implications for local and wider archaeology, and offered considerations on specific lines of enquiry. Many questions remain unanswered, and many more were raised in the process of this investigation, some of which can only be addressed when, or if, further prehistoric animal carvings are found in Britain.

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