



# Healed impact trauma to a Neolithic cattle frontal bone: A posthuman perspective

Emily Banfield<sup>a</sup>, Alexander Stoll<sup>b</sup>, Richard Thomas<sup>c,\*</sup>

<sup>a</sup> School of Archaeology and Ancient History, University of Leicester, University Road, Leicester, LE1 7RH, UK

<sup>b</sup> Veterinary Pathology Centre, School of Veterinary Medicine, Faculty of Health and Medical Sciences, University of Surrey, Francis Crick Road, Guildford, GU2 7AQ, UK

<sup>c</sup> School of Archaeology and Ancient History, University of Leicester, University Road, Leicester, LE1 7RH, UK

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## ABSTRACT

Trauma associated with slaughter is identified occasionally archaeologically in the cranial remains of domesticated animals, with evidence for pole-axing occurring in Europe, especially from the Roman period onwards. The injury typically extends through the frontal bone and sinuses to penetrate the braincase, causing haemorrhage, loss of consciousness, brain damage, and death. Evidence for slaughter methods in the British Neolithic, however, is lacking. We report such evidence from a healed blunt-force impact trauma to the frontal bone of a domestic cattle skull from Beckhampton Road Neolithic long barrow, Wiltshire. The injury suggests a failed attempt at slaughter. To our knowledge, this is the first such report for domestic cattle from the British Neolithic. We contextualise this discovery, drawing on research into the role and meaning of faunal remains from Neolithic long barrows in Wiltshire. This work has been undertaken from a posthuman perspective. Thus, we demonstrate the opportunities for paleopathologists to inform and engage within posthumanist interpretative frameworks.

## 1. Introduction

Trauma associated with slaughter practices is identified occasionally in the cranial remains of domesticated animals recovered archaeologically. For example, evidence for pole-axing can be found from the Roman period onward (Bartosiewicz and Gál, 2013: 177; Rixson, 2000). Pole-axing is blunt force with a heavy weapon, applied to the frontal bone of the cranium near the frontal suture. The trauma typically extends through the frontal bone and sinuses to penetrate the braincase, causing haemorrhage, loss of consciousness, brain damage, and death. Death can also occur by additive trauma after stunning caused by the blow. Archaeologically, evidence for pole-axing presents as a hole or unhealed depressed fracture to the affected area. Although a limited number of prehistoric examples have been identified (Evans, 2015: 111–112; Merewether, 1851: 105; Mortimer, 1905: 318; Schulting, 2008: 101), evidence for this practice in the Neolithic has been limited (Serjeantson, 2011: 58), with specimens from Skara Brae and an aurochs (*Bos primigenius* Bojanus, 1827) cranium from Cambridgeshire providing rare exceptions (Babington, 1863; Watson, 1931: 198). The latter is noteworthy because a stone axe was found embedded in the bone at the point of impact through the frontal bone (Legge, 2010: 33) (Fig. 1).

## 2. Materials and methods

Beckhampton Road long barrow near Avebury, Wiltshire, UK, is a multi-phase archaeological site encompassing a Neolithic long barrow that was remodeled during the Bronze Age, with a round barrow added to its north east end (Fig. 2). Primary Neolithic activity is dated to 3100–2580 cal BC (BM-506a) and 3500–2890 cal BC (BM506b) (Whittle et al., 2011: 107). The site is remarkable for its focus on the exclusive deposition of non-human animals: traditionally, long barrows were associated with burials of deceased humans and cattle crania. Three deposits of cattle crania, two of which were found associated with articulated vertebrae, were placed in a striking arrangement at intervals along the axial divide of the barrow mound (Ashbee et al., 1979: 228–250). Low numbers of other mammal bones were present, although most were highly fragmented. Zooarchaeological analysis undertaken at the time of excavation in 1964 by Ashbee et al. (1979: 228–250) resulted in publication of brief comments limited to numbers of specimens per species by broad context and a limited suite of metrical data (Carter and Higgs, 1979: 248–249). However, a recent re-analysis was undertaken by Banfield (2018) using the standards set forth by Historic England (Baker and Worley, 2014), as part of research into the role and meaning of faunal remains in the Neolithic long barrows of Wiltshire. It was during this new study that the specimen we

\* Corresponding author.

E-mail addresses: [ejb62@le.ac.uk](mailto:ejb62@le.ac.uk) (E. Banfield), [a.stoll@surrey.ac.uk](mailto:a.stoll@surrey.ac.uk) (A. Stoll), [rmt12@le.ac.uk](mailto:rmt12@le.ac.uk) (R. Thomas).

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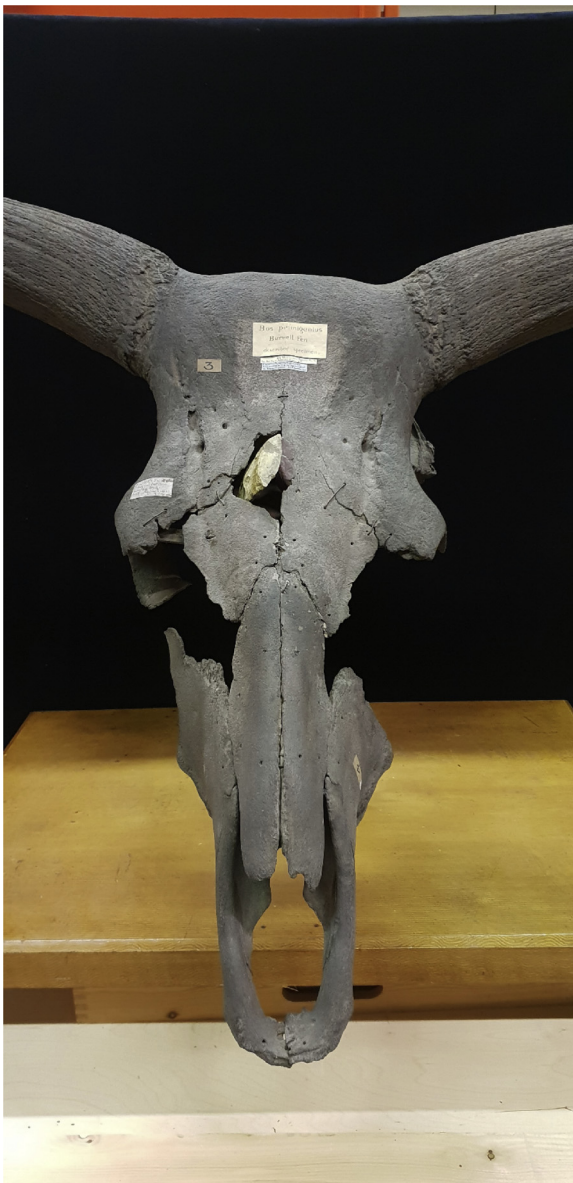


Fig. 1. Aurochs cranium with Neolithic axe, Burwell Fen, Cambridgeshire. With permission Sedgwick Museum, Cambridge.

describe was identified. Pathologies were recorded macroscopically, following the general recommendations of Vann and Thomas (2006) and Thomas and Worley (2014: 34–35).

### 3. Results

The specimen (cranium B4), a fragment of the frontal bones identified as domestic cattle (*Bos taurus* L., 1758), occupied a central position in the mound structure and was central among the three cranial deposits. Reanalysis to contemporary standards revealed a depressed fracture of the left frontal bone, affecting an area measuring 30 mm x 50 mm and reaching 25 mm in depth at the rostral end of the fragment. The fracture involves only the outer table of the bone. The margins of the depressed fracture of the outer table appear smooth and remodeled. Radiating from the center, in the surrounding depressed bone, are three to four roughly linear fractures in a stellate pattern. The small, rounded structure at the base of the depression was a residual piece of chalk originating from the specimen's depositional context and is unrelated to the cause of the fracture. No mention of this pathology was made in the original excavation report or in archived documents

associated with the site.

### 4. Discussion

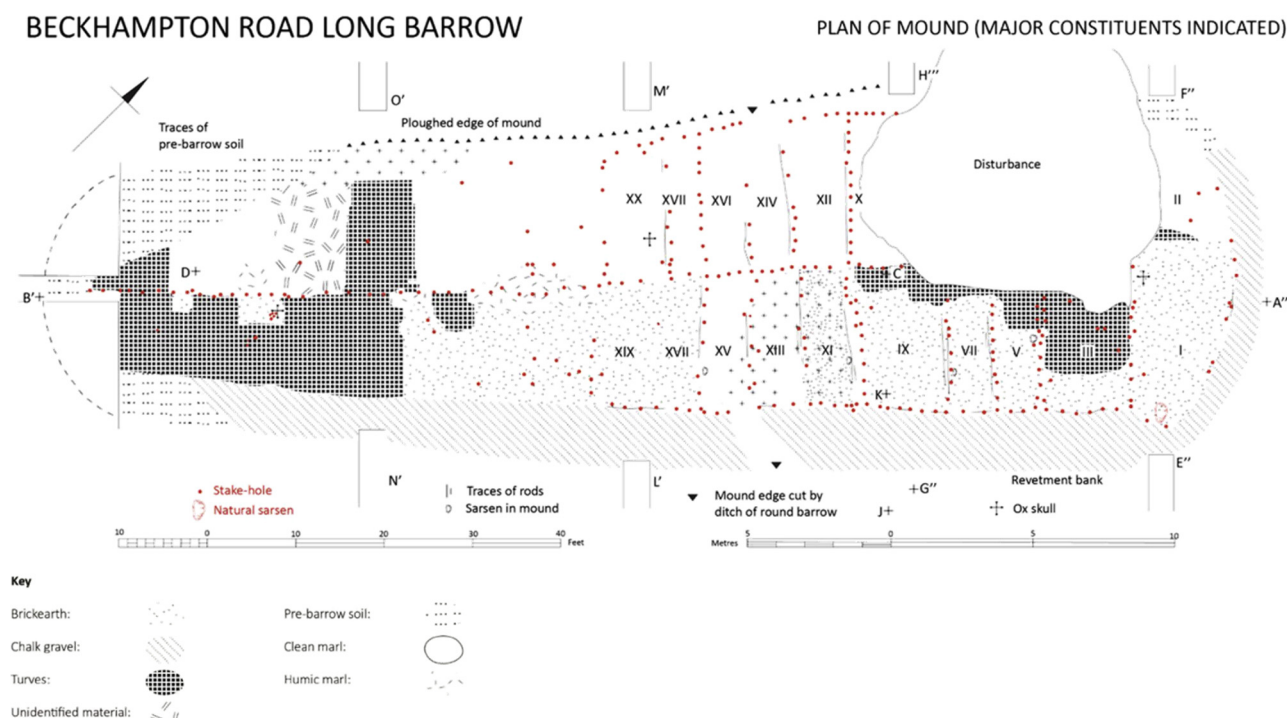
The size and location of the wound strongly suggests blunt force injury resulting from pole-axing (Fig. 3). Its presence is remarkable not only for its early date, but also for the healing in evidence. The potential effects of such an injury could have included temporary stunning or concussion, risk of infection (not evidenced here), severe epistaxis and possibly longer-term neurological impairment.

Differential diagnoses that we considered included trepanation, impact from another animal and a pathological fracture. A recent description of trepanation of a Neolithic domestic cattle skull from France reveals cut marks made through the periosteum on the exterior surface of the outer table (Ramirez Rossi and Froment, 2018). There is no evidence of cut marks on the specimen from Beckhampton Road. A wound caused by another animal would likely lack the precision of a perpendicular pole-ax strike and not generate the delicate stellate fracture pattern observed. There is no overt evidence of an underlying lesion or osteolytic change to suggest a pathological fracture secondary to infectious, neoplastic, or nutritional disease, or the osteolytic-proliferative changes that would suggest osteomyelitis.

Survival of this trauma may have reflected stochastic good fortune, or special individual qualities such as extraordinary resilience and strength. Considered in the context and detail of the site, and with its anthropological understanding, the pathological evidence adds meaning to the central position of B4 within the mound structure. Thus, a platform is created for reconsidering the absence of human remains from this and other nearby Neolithic structures. Beckhampton Road long barrow is located in a very active Early-Middle Neolithic landscape, with significant evidence for monumentalizing practices (Gillings et al., 2008). Focus on cattle appears widespread, with exclusion of human remains from primary cattle deposits, a feature of two other long barrows in the immediate environs (Ashbee et al., 1979; Banfield, 2018; Smith and Evans, 1968). These observations have raised questions since the excavation of the sites, with suggestions that animal remains may have functioned as replacements for human absence, which has flavoured subsequent discourse (Kinnes, 1975: 17). Too often, physical and biological sciences have been anthropocentric, whether explicitly or implicitly. Animals have been viewed either as resources for human exploitation, or as symbols in human cosmologies. Posthuman perspectives question the human-oriented hierarchy and encourage new ways of thinking within a flattened ontology. Certainly, the evidence presented in this report suggests that cattle may have been celebrated in their own right. Although radiocarbon dates suggest that Beckhampton Road was constructed somewhat late in the Neolithic long barrow sequence of the north Wiltshire region (Whittle 2011, 107), domestic cattle would have still been a recent introduction, quite possibly having novel or prestige value. This may be a further important factor in considering the significance of B4, as well as cattle in the local environs in which B4 lived and died (twice).

### 5. Conclusions

Cattle cranium B4 from Beckhampton Road Neolithic long barrow provides an interesting addition to our knowledge of paleopathology from this period in Britain, potentially extending the evidence base for pole-axing as a cultural practice. It informs on the life of a remarkable individual while providing opportunities for rethinking the meaning of observations from local archaeological records. The outcome thus highlights the benefit of revisiting and reanalyzing archived faunal remains, rather than relying solely on published accounts. Further analyses could be instructive, given the failure of the original excavators to record this obvious pathology. Additionally, this example stresses the merit of going beyond thinking about palaeopathology in purely descriptive terms and interpretations that are limited to the



**Fig. 2.** Plan of Beckhampton Road long barrow. Banfield (2018), adapted from Ashbee et al. (1979: 235, Fig. 14) © The Prehistoric Society 1979. With permission Cambridge University Press. This figure cannot be reproduced, shared, altered, or exploited commercially in any way without the permission of Cambridge University Press, as it is copyrighted material and therefore not subject to the allowances permitted by a CC-BY licence.



**Fig. 3.** Healed depression fracture to left frontal, cattle skull deposit B4 (DZSWS.1965.13. 83a), Beckhampton Road long barrow. With permission Wiltshire Museum, Devizes.

spheres of the functional and economic. Paleopathology is well-placed to engage with theoretical approaches that emphasize the interpretative aspect of all scientific practices.

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None

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#### Contributions

EB performed the original analysis, with subsequent discussions with RT and AS. All authors contributed to the final version and approved the manuscript.

#### Ethical concern

None.

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