



Polled cattle in the Roman Netherlands



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ABSTRACT

Most cattle in the Netherlands have been deliberately dehorned, which some people consider to be a cruel practice. But the breeding of genetically hornless (or polled) cattle is also regarded as unnatural and cruel to animals. Nevertheless, this is a practice which, like elsewhere in Europe, was also common here in the past. Unlike elsewhere in Europe, in the Netherlands polledness, a dominant trait, occurred mainly in the Roman period and disappeared again in the Middle Ages. Polled cattle were particularly common in the coastal area beyond the borders of the Roman Empire, where up to 40% of animals were hornless. By contrast, to the south of the border, polled cattle were rare. No polled animals have so far been found in Nijmegen, at the time the country's most important military and civilian centre. The question is why this is the case, and why polled cattle subsequently disappeared from the Netherlands.

There is little evidence to explain the presence of polled cattle on one side of the Roman border, their near absence on the other, and their total disappearance after the Roman period on the basis of natural selection. Nor do functional considerations – superiority as a source of food or supplier of tractive power – provide us with any conclusive answers. The most likely explanation is that it was mainly emotional and aesthetic considerations that led farmers and other users of cattle to decide what a 'good' cow was, and that was a cow with horns. The fact that polled cattle occurred in the coastal area during the Roman period may be associated with a different ideal, and possibly also with a lack of economic power that prevented farmers from being selective. After the Roman period, the desire for 'good' horned cattle will have caused the disappearance of the dominant polled cattle. A growing demand for horn as a raw material for the manufacture of objects might also have played a role. These factors should probably be viewed in the context of an influx of other breeds brought by new population groups that 'drove out' the old cattle populations. The current debate in the Netherlands as to the desirability of breeding polled cattle would appear to be nothing new, having already exercised the minds of farmers centuries ago.

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1. Introduction

The majority of cattle in the Netherlands have no horns. The cattle that graze the fields of the Netherlands are not naturally hornless (or polled), but animals that have been deliberately dehorned. Dutch dairy farmers dehorn calves or yearlings to prevent them from wounding each other. Animals that are tethered in a cowshed are also likely to have their horns removed to ensure the safety of the farmer. Neither the public nor farmers are particularly happy about this practice, which generally involves burning away the horn bud (Cozzi et al., 2015; Caray et al., 2015; Kling-Eveillard et al., 2015). On a European level alternatives are studied to the dehorning of cattle (Gaspa et al., 2015; Götz et al., 2015; Knierim et al., 2015; Mirabito et al., 2009; Windig et al., 2015). After all, genetically hornless, polled cattle do also exist. Completely polled breeds are even kept, mainly in Scandinavia and Britain, but also in

other parts of the world, although the numbers are small and some breeds are almost extinct (Felius, 1995). Examples include the Galloway, Aberdeen Angus and Red Poll breeds of Great Britain, the Icelandic Dairy Cattle (Íslandská Mjölkurkýrin), the Red Polled Eastland (Raukollu Østlandsfe) in Norway, the Swedish Mountain (Fjällras) and the West Finncattle (Länsi-Suomolainen Karja). Genetical hornlessness also occurs in very small numbers among modern Holstein cattle, too (Windig and Eggen, 2009; Windig et al., 2008).

Wageningen UR Livestock Research studied the desirability and feasibility of breeding polled cattle in the Netherlands, on behalf of the former Ministry of Agriculture, Nature and Food Quality and the Dutch Dairy Board (Windig et al., 2008, 2010). In a section about the history of polled cattle, their study states that polledness did occur among Frisian-Dutch cattle in the 19th century, but that it disappeared completely around 1900. An international review of the history of the occurrence of polled cattle is given by Schafberg and Swale, (2015).

Archaeological sources also provide information on this matter.

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Fig. 1. Animal remains from an archaeological site: fragmented by past human behaviour and taphonomic processes (photo BAAC).

Animal bones are frequently found during excavations. In rare cases, entire skeletons are found, when the animals were sacrificed, for example. The majority of animal bone consists of butchering waste and remains of food preparation and meals, however. This bone, which is generally fragmented by butchering axes, and bears traces of hacking, cutting and sawing, is found in occupation layers often concentrated in waste layers, cess pits or in disused ditches and wells (Fig. 1). Polled cattle have been found among this archaeological material at sites with remains dating from the Neolithic to the Early Modern Times, in a range of countries including Slovakia, Romania, Poland, Germany, Britain and Iceland (e.g. Ambros, 1988; Behrens, 1964; Fridriksson et al., 2004; Hambrecht, 2009; Harcourt, 1979; Lucas and McGovern, 2008; Müller, 1963; Weaver and Ford, 2004). Sometimes also deliberately dehorned cattle have been found such as in Early Modern Iceland (Hambrecht 2009) and England (Sykes pers. comm.). In the earliest Dutch archaeological publications from the beginning of the last century Broekema (1908) and Van Giffen (1913) demonstrated on the basis of archaeological finds that polledness occurred in the Netherlands at the beginning of the Common Era. After reviewing the evidence, Clason and Knol (1994) came to the conclusion that such animals were typical of the coastal area of the Netherlands in the Roman period.

In Roman times the border of the Roman Empire ran across the Netherlands (Fig. 2). In contrast to the southern part of the Netherlands the northern area was no part of the Empire. Interestingly, the study of Clason and Knol (1994) states that almost all those polled animals were found outside the border of the Roman Empire. The aim of this paper is to test this observation on the basis of the archaeozoological data of the many excavations of the last twenty years and to examine the factors that could explain this phenomenon, focusing on the questions: Why do we not find polled cattle everywhere in the Netherlands, and in all periods? What genetic, economic, aesthetic, emotional or other factors play a role in this? Before turning to these questions, however, we shall look at whether any new finds have been made since 1994. Earlier versions of this paper appeared in Vitruvius (Lauwerier, 2011) and in a commemorative volume for Wietske Prummel (Lauwerier & Laarman, 2012).

2. Horns and hornlessness

Horns are part of the typical Dutch image of a cow, which is based on the horned cattle of yesteryear, the offspring of the two icons of Dutch cattle breeding, the statue of *Us Mem* ('Our Mother') in 1954 erected by Frisian farmers and Paulus Potter's 17th century painting 'The Bull'. You need to be able to grab a bull by the horns. The extent to which this is ingrained in the imagination of the average Dutchman became clear in a survey of the Dutch public on perceptions of de-horning and hornlessness (Windig et al., 2008). People associate horned cows with animal-friendly practices more readily than cows without horns. Cows without horns are seen as unnatural, the product of human intervention. On this issue, people do not distinguish between polled and dehorned cattle.

The fact that horns, protuberances or 'horn cores' (bone tissue) that grow from the frontal bone of the skull, are a natural part of a cow is evident. The wild predecessor of the domesticated cow, the auroch (*Bos primigenius*), had an impressive set of horns. One of the last aurochs in the Netherlands, found at an excavation in Roman Nijmegen, had horns over 50 cm long. One almost complete horn core is around 54 cm long, and has a circumference at its base, close to the head, of more than 30 cm (Fig. 3) (Lauwerier, 1988). The horns of domesticated cattle in that period were considerably smaller. For example, horn cores from the same period found in Roman Nijmegen had circumferences of only 9–13 cm.

Hornlessness is also natural, however. It is a natural mutation determined by a single gene (polled-gene). The alleles code for polled (P) or horned (p). Polled is dominant over horned. Polled cattle are therefore always homozygote dominant (PP) or heterozygote (Pp). Horned cattle are always homozygote recessive (pp). Only one of the parents needs to pass on the 'hornlessness' characteristic to its offspring for a polled calf to be born. Sometimes polled cattle do have horn-like growths on their heads, but they are not connected to the skull via a horn core (Kyselý, 2010; Long and Gregory, 1978; Philips and Coventry, 2005). These 'scurs', which are determined by other genes, can ossify and become attached to the skull, thus forming protuberances at the point where the horn cores would normally be. Such bony horn-like growths are also described as a separate phenomenon with their own genetic origins, and are referred to as 'bumps' (Hullegie, 2012;

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