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Archaeological evidences are still missing: a comment on Fariña *et al.* Arroyo del Vizcaíno site, Uruguay

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Fariña *et al.* [1] suggest the possibility of human presence *ca* 30 ka in the Arroyo del Vizcaíno site (AVS) (southern Uruguay). This is based mainly on the record of cutmarks made by human artefacts on Pleistocene animal bones. They also inform of the finding of a single tiny stone tool and few other possible lithic artefacts. Nevertheless, their research has serious methodological problems and important interpretative errors.

The context is a hydraulic bone concentration on muddy sediments, which is a physical association in the sense that its behavioural significance is not evident [2]. In a site like AVS, secondary, averaged deposits, are to be expected. Fluvial processes such as traction, friction, mixing, deposition and redeposition of different particles, including bones and lithics, should be considered.

It happens that 'Time intervals represented by fossils are not necessarily the same as those represented by sedimentary events in fluvial systems' [3, p. 211], and particles continue accumulating for long periods. This is why this kind of bone assemblage is normally averaged. It is true that '... many, if not most, multi-individual concentrations of disarticulated vertebrate skeletal elements preserved in ancient fluvial channels were derived from a preexisting concentrated source' [2, p. 25], but this does not equal single events. Despite the efforts by Fariña *et al.* to reduce AVS to a single event, it is difficult to escape the conclusion that it is an averaged sample. The selection of four *Lestodon* ribs for dating is not helpful in assuring that they produce independent dates. Under those conditions, it is not safe to pool the results. Fariña *et al.* accept that more than one taphonomic history is written in those bones, which is an honest way to admit its averaged nature. Indeed, they point out the little evidence for major hydraulic transport deduced from the fossil assemblage, but in the electronic supplementary material, they specify 'The presence of coarse grains must have been due to high-energy events... Those pebbles must have transported as bed load together with the transported bones, perhaps in more than one event'. It is very difficult to make compatible 'little evidence of major fluvial transport' with several events of 'high energy'. The authors include a significant taxonomic list, but from the way the taxonomic data are presented, they cannot be tested in any way because it is not possible to know what material was found in each level (bed 2a, 2b), and this precludes the identification of materials used for dating [1, table S1], besides preventing the taxonomy from being checked.

In the end, AVS is a time-averaged bonebed, resulting from a variety of events and processes. The presence of more than 1000 bones and 27 individuals does not fit models of differential transport of vertebrate bones by humans [4], despite the fact that selection by humans is supposed to be the cause of the accumulation. It is not true that San hunter-gatherers 'schlep entire carcasses with masses in excess of several hundred kilograms to more permanent camps' [1, p. 4]. This is supported with reference to the work of Bunn, whose claims were never substantiated with data [5, p. 172]. The bone collection

from AVS, including many from one species and few from many others, makes absolutely no sense in terms of human hunting activities. Either most of the *Lestodon* bones were transported to the site, which is unreasonable, or most of the other two species of ground sloths, and other large animals represented by few bones, were transported to other places, which is also implausible.

A 'gourmet' curve for *Lestodon*? 'Curves marked gourmet represent strategies that select for high frequencies of parts of the very highest value and abandon parts of moderate and low value' [6, p. 81]. From a monitoring perspective what needs to be known is if the bone assemblage is transported or 'abandoned' [7]. Transported bone assemblages generally are represented at sites away from kills, particularly storage sites [6, p. 110]. If it is an abandoned kill site, then there are no expectations of a gourmet curve. There is inconsistency either way.

What is AVS, a processing or a kill site? If it is a 'processing' site, then there is little evidence of processing. A mortality profile dominated by prime adults is to be expected at a kill site [8, p. 164] and this is what the authors claim to have found. However, mortality profiles are constructed using tooth eruption-wear of dominant species [8], while Fariña *et al.* use bone fusion. This makes their results not comparable with data from Stiner or other specialists. Also, the basic problem with adult-dominated assemblages is the bad preservation of the young.

On the other hand, it is difficult to accept that 'long distance weaponry' was implicated, given the fact that their evidence for the presence of lithics is dramatically thin and the number (and size) of the presumed hunted animals so impressive. Apparently, this is the basis on which the prime adult mortality profile stands and is normally associated with hunting [8]. Also, in a previous publication it was suggested that the marks on bones were made with silex points, 'which had also a secondary function as scrapers' [9, p. 234]. This makes no sense in terms of the lithics claimed to be associated, which in no way resemble such a tool kit and which are useless for processing 17 individuals of between 4000 and 1000 kg (*Lestodon* sp.), plus eight individuals of more than 1000 kg (other animals).

Fariña *et al.* [1, p. 5] point out that lithic artefacts at AVS are scarce 'as is usual in South American Pleistocene archaeological sites'. First, one of their examples is the Campo Laborde site, which in fact is not a Pleistocene but a Holocene site [10]. Secondly, the number of artefacts within a site is not related with time, but with function. Thirdly, at other sites like Monte Alegre (Brazil) dated during the Late Pleistocene more than 30 000 flakes and 24 formal tools were found [11]. In fact, abundant rocks (cobbles and pebbles) are available at AVS (bed 2a), as can be seen in [1, figure S5], suggesting that some background noise exists. How many pebbles and cobbles were removed during the excavations? What were their shape, size and material? What were the criteria applied to collect and select the so-called artefacts within the 'natural' lithic assemblage? This important information becomes crucial when only very few artefacts—whose cultural character is not obvious—are recovered along with dozens of alleged butchered animals. Even though the authors recognize that no systematic effort was made to collect lithic materials during fieldwork [1, p. 6], their claim concerning AVS archaeological character calls for a thorough associational, technological and taphonomic analysis of lithics that is absent.

There is little information concerning marks not attributed to humans. In their electronic supplementary material, the authors mention few trampling marks. However, in a previous publication many fractures were attributed to trampling and one *Lestodon* clavicle presented 22 trampling marks at its middle part. Another 65 marks were identified in the bone, including 'several chop marks, sawing marks and scraping marks' [9, p. 234]. The presence of all these marks on a single bone speaks of a complicated taphonomic history, one in which it is difficult to substantiate the identification of some of them as anthropic. There is reference to the 'observed extent of the trampling' and to a 'trampled surface'. Since Behrensmeyer *et al.* [12, p. 768] clearly remarked 'microscopic features alone are not sufficient evidence to distinguish human-generated cutmarks from the results of trampling', cutmarks at AVS are suspect.

There is no need to squeeze sites in order to find a human imprint; when there is evidence it shows, and none has been found so far at AVS.

References

1. Fariña RA, Tambusso PS, Varela L, Czerwonogora A, Di Giacomo M, Musso M, Bracco R, Gascue A. 2014 Arroyo del Vizcaíno, Uruguay: a fossil-rich 30-ka-old megafaunal locality with cut-marked bones. *Proc. R. Soc. B* **281**, 20132211. (doi:10.1098/rsob.2013.2211)
2. Rogers RR, Kidwell SM. 2007 A conceptual framework for the genesis and analysis of vertebrate skeletal concentrations. In *Bonebeds. Genesis, analysis, and paleobiological significance* (eds RR Rogers, DA Eberth, AR Fiorillo), pp. 1–63. Chicago, IL: University of Chicago Press.
3. Behrensmeyer AK. 1982 Time resolution in fluvial vertebrate assemblages. *Paleobiology* **8**, 211–227.
4. O'Connell JF, Hawkes K, Blurton Jones N. 1988 Hadza hunting, butchering, and bone transport and their archaeological implications. *J. Anthropol. Res.* **44**, 113–161.
5. O'Connell JF. 1993 Discussion: subsistence and settlement interpretations. In *From bones to behavior*. Carbondale (ed. J Hudson), pp. 169–178. Center for Archaeological Investigations at Southern Illinois University.
6. Binford LR. 1978 *Nunamiut ethnoarchaeology*. New York, NY: Academic Press.
7. Thomas DH. 1983 The archaeology of Monitor Valley. 2. Gatediff Shelter. *Am. Mus. Nat. Hist. Anthropol. Pap.* **59**.
8. Stiner MC. 1991 An interspecific perspective on the emergence of the modern human predatory niche. In *Human predators and prey mortality* (ed. M Stiner), pp. 149–185. Boulder, CO: Westview.
9. Arribas A, Palmqvist P, Pérez-Claros JA, Castilla R, Vizcaíno SF, Fariña RA. 2001 New evidence on the interaction between humans and megafauna in South America. *Publ. Semin. Paleontol. Zaragoza* **5**, 228–238.
10. Politis G, Messineo PG. 2008 The Campo Laborde site: new evidence for the Holocene survival of Pleistocene megafauna in the Argentine Pampas. *Quat. Int.* **191**, 98–114. (doi:10.1016/j.quaint.2007.12.003)
11. Roosevelt A *et al.* 1996 Paleoindian cave dwellers in the Amazon: the peopling of the Americas. *Science* **272**, 373–384. (doi:10.1126/science.272.5260.373)
12. Behrensmeyer AK, Gordon KD, Yanagi GT. 1986 Trampling as a cause of bone surface damage and pseudo-cutmarks. *Nature* **319**, 768–771. (doi:10.1038/319768a0)