Preglacial archaeological evidence at Grimshaw, the Peace River area, Alberta: Reply[1]

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Archaeological evidence potentially predating the well-known Palaeo-Indian traditions, characterized by bifacial stone projectile points, has been a subject of debate for decades. Claims on cultural records predating ca. 12 000 years BP have been questioned because of the particular geological context implying an unusual antiquity, which does not fit into the established culture-historical paradigm and (or) the cultural authenticity of the alleged early human evidence, mostly represented by rudimentarily modified lithics. Although the criticism can be justified on objective grounds in some cases, there is a tendency, which we call "folklore" (Chlachula and Le Blanc 1996), to question records, which may be genuine, by means of selectively applied and occasionally simplified arguments about the capacity of natural processes to generate them, because they simply differ from the established pattern of cultural manifestations. Instead of providing direct data based on personal observations and independent studies to support their critical position, highly generalized comments and out-of-context references are used to question the presented evidence as cultural. This is also the case with the Grimshaw site.

The reported "pre-last glacial" cultural evidence (> 20 ka BP), represented by flaked quartzite cobbles and flakes displaying diagnostic artefactual flaking attributes, is regarded as problematic because of the particular geological context incorporating the record and the alleged formal similarity to lithics, which can be produced by natural processes. While this argument may be considered by some as legitimate, we regret to differ and would like to draw attention to some misleading or directly false statements, which must be commented upon. This can be summarized as follows:

(1) The principal "problem" is the coarse depositional matrix of the Grimshaw (and Calgary 2) sites, implying the "controversial" nature of the evidence. Nevertheless, if the same reasoning is applied worldwide for the Pleistocene (as well as Holocene) sites, the number of palaeolithic (and early prehistoric) sites confined to just fine-grained sedimentary contexts and low-energy environments will become very reduced regardless of the cultural manifestations. We reject this argument, as well as the reference to the African early hominid sites, which do not have any bearing to and intellectual significance for the preglacial cultural occurrences in Alberta. Instead, we refer to close to *identical* contextual analogues from the Old World, such as the Acheulian site at High Lodge, England, buried in a basal till with entrained stone tools from the former occupation surface time-estimated to ca. 0.5 Ma BP (Ashton et al. 1992), or the Ulalinka site in the Altai, Siberia, buried in Pleistocene coarse fluvial gravels (Okladnikov 1982), among many other examples. The former occupation surface at one of the southern Alberta sites (Calgary 1) is buried in situ by lacustrine clays (as at the East African sites), with concentration of quartzite tools and refittable lithic waste removed in the process of their production, excluding any possibility of high-energy natural actions that would generate them (Chlachula 1996*a*, 1996*b*).

(2) Another argument generally questions a researcher's ability to discriminate between the naturally and culturally flaked lithics, regardless of particular geological contexts. We must again strongly disagree with this statement. This would mean that most of the palaeolithic evidence in any part of the World is based on faith or some kind of "consensus" and not on scientifically recognized and objective criteria. This would also apply to the New World Holocene-age sites characterized by non-bifacially flaked stone tool assemblages, as these, by using similar arguments, may simply represent debris of natural (frost, slope wash, etc.) fracturing that possess some attributes of cultural modification. Accordingly, the validity of all these late prehistoric records should be reevaluated (Chlachula and Le Blanc 1996). However, we do not expect that this will be done as these records, even if represented by rudimentarily flaked lithics, "fit" into the general culture-chronological scheme. On the other hand, analogous collections even of a superior quality and displaying a higher technological level and resulting tool forms will be viewed as controversial, just because of the high (>12 000 year BP) age implied from the geological position. There is a tendency of a circular reasoning to reject these records simply by arguing that there is no evidence for a pre-last glacial peopling of North America; therefore, they can-

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not be considered as authentic. Yet, these objects, if found in Holocene contexts, would be automatically taken for human implements. More than fifty experienced archaeologists actively involved in palaeolithic investigations in different parts of the world, as well as lithic experts on the New World (Holocene) prehistory, were presented the assemblages from the Calgary sites at various occasions and had no problems accepting them as artefacts. It is difficult to imagine that they all were wrong as implied by the above comments on the Grimshaw evidence by Driver.

(3) The criteria provided in the original publication (Chlachula and Leslie 1998), which we consider as diagnostic for cultural flaking, are only *summary* criteria. Since the scope and objectives of the report did not allow us to discuss these in more detail, we referred to other publications where this was previously done. Any discussion of these in our paper would have necessarily resulted in repetition or presentation of only a short summary of the information. Particularly in one of the studies, a close descriptive, as well as statistical, analysis with illustrations, specified 48 attributes and their associations discriminating between the natural and cultural flaking characteristics on quartzite cobbles and their fragments, based on comparison of the lithic artefacts assemblages from the preglacial sites in Calgary, two analogous palaeolithic stone tool sets from Europe and Siberia made on similar raw materials; the naturally modified rocks from the geological deposits at the Bow Valley sites; and clastics from past and present fluvial and glacigenic contexts from western Alberta (Chlachula 1994). In this respect, the assertion that naturally fractured cobbles were not recovered from sedimentary contexts analogous to those found at Grimshaw, is not correct. These issues are thoroughly discussed (also in Chlachula 1997). We also do not agree with Driver's simplistic summaries of our general criteria (such as "naturally broken cobbles are irregular": culturally flaked pieces can be also, but we referred to a general pattern) that give a rather misleading impression.

(4) We reject the argument that the artefacts–"naturefacts" differentiation can be done only by means of statistical tests and that the analyst's experience is insufficient. Experience with the palaeolithic stone tool technologies and the resulting forms, experimental flaking and knowledge of mechanical properties of local clastic materials play a major role in distinguishing artefactually flaked cobbles in Pleistocene geological formations, even if found in secondary position. The previous quantitative studies showed that the morphological differences between the artefacts and natural fragments present at the sites are so marked and the cultural evidence at the preglacial sites in Alberta is so straightforward that any further statistical evaluation we consider as redundant. We reject the idea of classifying a potential site by means of statistical probability: either it is clearly cultural or it is not. General criteria of early stone tool flaking are fairly well known in the Pleistocene cultural context worldwide. From this perspective, we do not see any reason to "distinguish" a biface with associated *débitage*, a marginally retouched chopper, or a hammerstone with concentrated percussion marks from the preglacial sites in western Canada in different terms and under different criteria than the identical inventories from the Old World palaeolithic localities (e.g., Figs. 1A and 1B for comparison with figs. 10C and 8A, respectively, in Chlachula and Leslie 1998).

(5) We do not see any relevance of the references to naturally fractured flint collections from the British "crags," the southern California alluvial fans, South African caves, etc. for the lithic assemblages from glacigenic deposits in western Alberta. The topography at Grimshaw precludes waterfall development, which would be responsible for natural rock breakage as of basalt cobbles at the Victoria Falls on the Zambezi River. Also, it is much more problematic to encounter naturally shaped cobbles, especially of anisotropic rocks, that would mimic human actions than on fine-grained and easily-to-flake clasts, such as siliceous cobbles, particularly in high-velocity (coastal and other) settings. As recognition of artefacts in Pleistocene-age contexts may be problematic for most archaeologists, any comparative studies (if necessary) must be performed on *similar raw materials* and in *analogous sedimentary environments.* These and other comments mirror a lack of understanding of some geoarchaeological studies concerning the Pleistocene peopling of western Canada.

(6) We reject the comment that the Grimshaw and Calgary flaked lithic assemblages are believed to be cultural solely on the basis of a formal similarity with the Old World palaeolithic inventories. As stated in the previous publications (Chlachula 1996*a*, 1996*b*; 1997; Chlachula and Le Blanc 1996; Chlachula and Leslie 1998), their artefactual character is inferred from *the recurrent patterning of sets of individual attributes diagnostic of cultural flaking.* It would be valuable if Driver could provide evidence that the identical flaking and the corresponding forms occur in natural environments either in the present or older geological contexts, as we did not find such evidence in the broad study area. Conclusions on human authenticity made on percentage proportions of "cores" and "flakes" are equally misleading and cannot be regarded as valid. At Grimshaw, we were limited to the lateral section exposure and no procedures were applied to recover small implements from the sedimentary matrix. In Calgary (site 1), the cultural assemblage from systematic archaeological investigations (1996–1998) is largely (ca. 90%) formed by small flakes, including several microblades from screen-washed sediments on top of the former occupation surface.[3] Apart from a series of definite stone tool types, easily described using the Old World palaeolithic nomenclature, the human nature of the collections is also supported by microscopic use-wear traces on retouched flake specimens that are absent on naturally fractured rock fragments (Chlachula 1996*b*).

[3] Chlachula, J. Archaeological investigations (1996–1998) at the Late Wisconsinan occupation sites in Calgary, NW Alberta, Canada (in preparation).

Fig. 1. (A) A laterally flaked quartzite cobble (chopper) with a retouched edge. (B) A quartzite hammerstone with concentrated battering marks on the proximal end. Both stone tools are a part of the collection from the Middle Palaeolithic occupation site Ust'-Izhul', Central Siberia, located on top of the 70 m Yenisei River terrace. The archaeological layer, including a concentration of over 200 mostly rudimentarily flaked lithic artefacts in association with large fossil fauna remains (mostly early form of *Mammuthus primigenius),* is luminescence (IRSL) dated to 125–105 ka BP (Drozdov et al. 1999). The above examples of cultural stone flaking and utilization with the diagnostic attributes, also present at the Grimshaw site (Chlachula and Leslie 1998, figs. 10C, 8A), cannot be reproduced by natural forces in geological contexts, excluding human occupation (photographs by J. Chlachula).

(7) The archaeological localities in Calgary were not the subject of the Grimshaw study. The geological context and the lithic morphology at sites in northern Alberta, thus, do not have any direct bearing on the validity of the Calgary sites. There were detailed geological and archaeological studies conducted at the Bow Valley sites (1990–1998) with the resulting publications: Chlachula 1996*a*, 1996*b*, 1997. The claim that the cultural record

from the Calgary sites was not demonstrated is unsubstantiated.

(8) The nature of Driver's discussion is apparent from the absence of any specific data and illustrative materials, which would support the arguments on the noncultural character of the Grimshaw (and Calgary) lithic assemblages. It is legitimate to require supporting evidence on an elaborate *natural* flaking on identical clastic rocks from glacigenic and fluvial deposits from Alberta to match with the photographs provided in the original reports (Chlachula 1996*a*, 1996*b*; Chlachula and Le Blanc 1996; Chlachula and Leslie 1998). As an example, we will be very interested to see naturally modified pieces similar to the bifacially flaked cobble and (or) the hammerstone with all the particular attributes (i.e., a steep, bifacially flaked edge with overlapping flake scars; and a concentration of battering marks, respectively), which we believe to be diagnostic for human activity (Chlachula and Leslie 1998, figs 5B, 6, 8A-B). We invite Driver to present such alternative evidence, which would contribute substantially to the discussion.

Conclusion

While we are open to any critical comments, which may eventually lead to a further elaboration of methods and approaches in the geoarchaeology studies on the Pleistocene peopling of Canada, particularly in the areas subsequently covered by ice, we cannot accept Driver's arguments on the basis of which he questions the validity of the Grimshaw archaeological site. The required studies on natural and cultural flaking were performed elsewhere. The other comments on the "naturefact" occurrences do not have any bearing for the assessment of the cultural evidence from western Alberta. The discussion would be more productive if specific comparative data of naturally fractured rocks from similar geological contexts and on identical clastic materials were presented, instead of generalized and unsubstantiated statements on the potential of natural forces to produce objects that could not be distinguished from artefacts.

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