

Review of the paper "*Tektite geoarchaeology in mainland Southeast Asia*" by Ben Marwick et al.

The article presents an updated information on tektites in archaeological contexts as chronological markers and suggests that they are reliable only when supported by other dating methods. In this context, the paper is important and provides another perspective that would have implications for the chronology of some of the Palaeolithic assemblages from East Asia. The review with insights and updates on the tektite geochronology would suggest a rethink on debates related to the earliest Palaeolithic sites in SE and E Asia. While the focus is on sites in Vietnam (An Khe sites), it has implications that span theories of hominin dispersals across Asia. The crux of the argument lies in the disparity of age estimates from stratigraphic contexts using other dating methods versus the proposed age of the tektites. For this, a comprehensive discussion on the same has been provided, and contributes the bulk of the paper. Important here are discussions on occurrence of the tektites at various sites across Australasia in redeposited or reworked contexts and that this redeposition is not a single event.

The crucial site in this context is that in the Bose basin, where discoveries of dated Acheulian-like bifaces were situated at around 800 ka based on tektite presence. This had significant implications for studies of the Acheulian across Asia, rethinking debates on hominin dispersals and demolishing in many ways the infamous 'Movius line'. The challenge to using tektites for sites in this region has a history with several other authors also debating the in situ nature of tektites and thus the age of the Bose basin sites. Here, too, the authors imply that the Bose sites are far younger in age and that the tektites were redeposited in these fluvial sediments. This is in line with previous debates on this issue as have been referred to here as well. Arguments proposed to support the older age of the tektites are also summarised in this paper, although these arguments are criticised in this paper. The authors suggest that tektites were introduced to the site by hominins making Acheulian-like bifaces, based on Late Pleistocene artefacts on tektites and ethnographic analogies. This point may however be expanded on.

The focus of the paper is on sites in N. Vietnam, where the tektites occur in sites dating to the Holocene. While this is no doubt fascinating, I would recommend more information on the details of the tektites (dimensions/preservation), perhaps as tables to enable comparison with those found elsewhere in terms of morphology, size ranges, etc. This would be of use for readers unfamiliar with the data from Vietnam. Further information on An Khe sites would also be useful, as this is where the crux of the matter lies, i.e. bifaces dated using tektites. Here, based on published literature, the authors challenge interpretations that the bifaces are as old as the tektites and suggest reworking based on similarities in stratigraphic contexts with other sites in Vietnam and elsewhere. In this context, reports on sites in Thailand that challenge interpretations of tektite reworking are important and are cited here. The authors draw on these arguments (based on tektite morphology, etc.) to suggest that similar methods if used at Go da and Roc Tung would support interpretations of an early age.

While I recommend publication, I would like to see expanded data on the sites discussed, as also in higher resolution maps. Perhaps inset maps of the areas under discussion in Vietnam

would be helpful if presented along with the geomorphological or sedimentary contexts, e.g. if the sites are plotted on soil maps or geology/geomorphology maps.

Some additional points:

On page number 10, in the introduction paragraph for “Tektites from archaeological sites in Northern Vietnam”, author has mentioned five archaeological sites but only four are listed. The Dong Choi site is missing from the list.

Fiske, P., Putthapiban, P., Wasson, J. (1996). Excavation and analysis of layered tektites from Northeast Thailand: Results of 1994 field expedition. *Meteoritic and Planetary Sciences*, 31, 36-41. Here please check the journal name. It should be *Meteoritics*.

In the article you have referred Son 2014 and 2017. But both references are not mentioned in the reference list.

Figure-1: The site name Go Da and Roc Tung are not mentioned on the map.

In the Figure-2 description author has described the sediment layers (1 to 5) is according to colour variation. Is it possible here to describe the layers as per the sediment composition? For example whether it is sandy layer or clayey or silty in nature? Also in the same figure, though scale details are written in the figure description, the scale and the numbers for the layers are not clearly visible. For the same figure please give the types of the artefacts.

Figure-4: Could you please provide a section diagram with the scale bar? Also please mention the types of the artefacts which are shown in the image.

Figure-5: As shown in Figure-3, could you please show the in situ location of these six tektite?