A Unique Stone Adze Discovery in Northwestern Alberta

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Introduction

Diagnostic artifacts such as lithic tools are rarely recovered from archaeological sites in the boreal forest during routine HRIAs, with non-diagnostic lithic flakes tending to be more common. This characteristic, combined with the low abundance of preserved organic materials available for chronometric dating, frequently limits the interpretation of sites in northern Alberta. Another effect is that the few potentially diagnostic tools that are recovered may have had little previous study and therefore minimal archaeological, temporal, or regional contexts in which to interpret them. The discovery of a unique stone adze in Alberta's boreal forest represents one such find.

GbQd-5 Description

Archaeological site GbQd-5 was discovered in 2017 in approximately 20 km southeast of the town Fox Creek on a large rounded terrace along the Iosegun River valley margin (Fig. 1). A single large lithic tool was recovered from the site in a single positive shovel test (Fig. 2). The site area represents a relatively open mixed forest (Fig. 3). GbQd-5 is interpreted as an isolated find of potentially high archaeological significance.

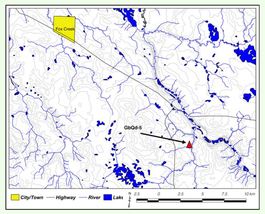

Figure 1. General location of GbQd-5 within Alberta.

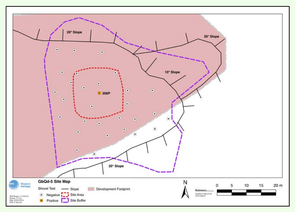

Figure 2. GbQd-5 site map.

Figure 3. Photo of GbQd-5 general area, facing S.

Research Questions

1. What lithic tool type this artifact represents?
2. What manufacturing techniques were used to make it?
3. What is the function of this implement?
4. What are the depositional context characteristics at GbQd-5?
5. What is the spatial-temporal context of this artifact and GbQd-5?

References

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2. Stewart, M.S. 2010. A particular type of cobble spall tool from the Canadian Plains: multi-variant analysis of Early-MIddle period Eldon unifaces. Unpublished M.A. thesis, University of Saskatchewan.
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4. Morin, J. 2015. Classification and typologies of stone celts in British Columbia. *Canadian Journal of Archaeology* 39:82-122

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Artifact description

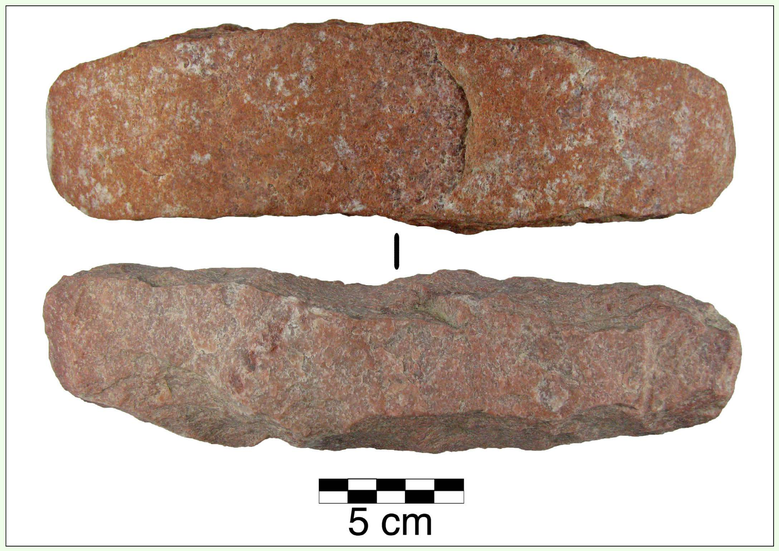

Figure 4. Quartzite adze from GbQd-5, dorsal (at the top) and ventral (at the bottom) sides.

1. **Technology:** this artifact represents a unifacially chipped stone tool made of a large quartzite cobble/boulder spall bearing full cortex on its dorsal surface. It was shaped into a roughly symmetrical elongated oval-shaped implement with parallel margins employing a hard hammer direct percussion technique which produced negative flake scars with predominantly stepped termination and sinusoidal edge with crushing along both margins. Ventral surface exhibits no signs of modification except for a negative flake scar of an attempted thinning flake removal at one end. This tool exhibits no evidences of grinding or manufacturing abrasion.
2. **Morphology:** the artifact measures 22.2 cm **Length**, 5.8 cm **Width** , 4.5 to 1 cm **Thickness** (thickest in the centre and tapering at both ends) and 902.7 gr. **Weight**; it is roughly trapezoidal and lenticular in transverse and longitudinal cross sections respectively. The working edge angle is approximately 45°.
3. **Function:** tool's working edge exhibits signs of intensive use - rounding and utilitarian micro retouch obliterated by heavy polishing. Single or multiple smaller flakes detached during tool's use resulting in slightly asymmetrical appearance of the working edge. No obvious striations and clear evidences of hafting are observed macroscopically, most likely due to coarse structure of quartzite raw material. It appears that this tool was implemented for heavy shaving (adzing) on medium to hard material such

GbQd-5 Stratigraphy and POSL results interpretation

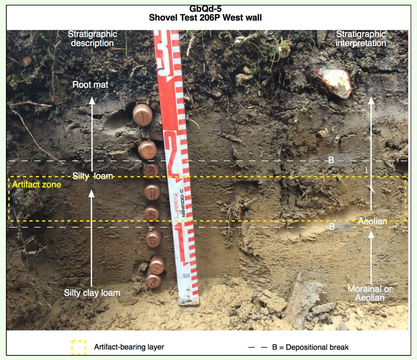

Figure 5. Positive shovel test ST206P at GbQd-5 (yellow box indicates artifacts bearing zone).

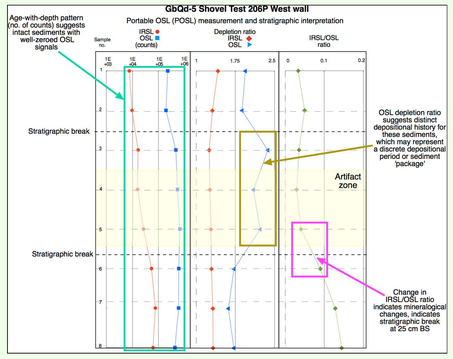

Figure 6. Example of graphic depiction of POSL results, ST206, GbQd-5.

- the artifact-bearing sediments have a distinct POSL signature (Fig. 5 and 6), which suggests intact stratigraphy and that the artifact was buried by sediments in the more remote past;
- GbQd-5's stratigraphy appears intact, it does not look like there has been a lot of bioturbation and mixing (in that case we would expect to see inverted no. of counts and/or the same 'relative' age [i.e. no. of counts] throughout the POSL profile. Instead we get the age with depth profile, as illustrated);
- The artifact zone is located at the base of an appreciable stratigraphic change, after a break in deposition (as indicated in both graphics, Fig 5 and 6.)—possibly during or following a significant environmental change; again, suggests more remote past.[1]

Comparison and Analogies

There are no direct analogies of described stone adze from GdQb-5 in Alberta archaeological records known to the authors. However, a generalized comparison could be drawn between this artifact and Eldon Unifaces from Saskatchewan and Alberta and also adzes/celts from British Columbia and Alberta.

1. **Eldon Unifaces** are unique to the Canadian Plains of the Early -Middle Pre-contact period (7,500-4,500 yBP); they are unifacially flaked, with cortex entirely covering one side, thinned (or attempted to be thinned), made preferentially of large quartzite cobbles employing bipolar reduction technique. Their difference from GbQd-5 tool is in general shape as Eldon unifaces tend to be less carefully shaped generally retaining original cobble preform outline, often with only working edge being shaped by retouch (Fig. 7).[2]
2. **Adzes/celts** made of e.g. nephrite and jadeite are common in BC and rare in AB; they vary greatly in sizes but tend to exhibit symmetrical proportions and straight working edge; predominant manufacturing techniques are sawing, grinding, polishing, and pecking which is determined by the properties of raw materials selected raw material (Fig. 8).[3, 4]

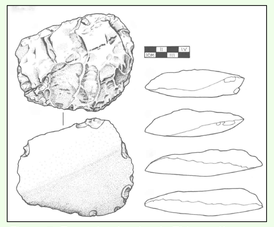

Figure 7. Example of a classic Eldon uniface from EgNp-63, SK.[2]

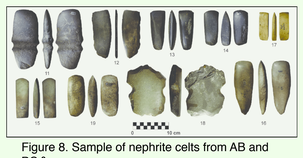

Figure 8. Sample of nephrite celts from AB and BC.[3]

Discussion

1. Unique lithic implement discovered at GbQd-5 represents an adze; it was likely locally manufactured of coarse grained reddish quartzite boulder/cobble abundant across northwestern Alberta; it was made employing a direct percussion knapping technique and possibly used for woodworking, bone or hide processing in a shaving (adzing) manner.
2. There are no firm indications of the tool's temporal, cultural, and spatial contexts reflected in its morphological traits, manufacturing techniques, or function. However, closest analogies are discovered among Eldon unifaces found across Alberta and south/central Saskatchewan.
3. Stratigraphic analysis of GbQd-5 sediments and POSL results interpretation suggest that the site occupation occurred in the more remote past.

   Further research involving POSL profiling of archaeological sites in Northwestern Alberta will eventually help to build more detailed relative regional chronology and to shed light on cultural history of the region and place of this unique find in it.