Short Report: A déjeté Levallois tool from Khyber Pakhtunkhwa (Pakistan) and the role it plays in the chronology of the Pleistocene terraces of the Bannu Basin

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Abstract:

This paper discusses the importance of the discovery of one *déjeté* Levallois tool from the surface of a dark grey and black patinated gravel terrace located *ca.* 500 m south-west of the Neolithic site of Sheri Khan Tarakai in the Bannu Basin (Khyber Pakhtunkhwa, Pakistan), and provides a detailed geomorphological description of the area where it was found. The Neolithic site rests on a large gravelly fan, at present terraced and dismembered by small seasonal streams. Scatters of black varnished pebbles, at the top of a thick ochre silt of possible alluvial origin, cover its surface. Amongst the numerous siliceous gravels forming the deposit, some are of a good quality chert, whose source can be found in the Tertiary Sulaiman Formation. The typological characteristics of the tool, the chert employed for its manufacture, its location and the presence of black patina on its cortex are all important elements that contribute to the definition of the Pleistocene period during which pebble terraces formed. The tool comes from a region where Middle Palaeolithic artefacts had never been found before, though the re-analysis of old collections would suggest their presence as far as the course of the Indus in Lower Sindh. Moreover, its discovery contributes to the study of the south-eastern spread of the Middle Palaeolithic Levallois technique, an important topic that still needs to be fully understood.

Keywords: Pakistan; Bannu Basin; Pleistocene terraces; Geomorphology; Middle Palaeolithic; Levallois technique

1. Introduction

The scope of this paper is to discuss the chronology of the Pleistocene terraces on which the Neolithic settlement of Sheri Khan Tarakai is located. It is well known that old Quaternary terraces are very difficult to date without the help of chronologically reliable palaeontological or archaeological evidence. In this respect, the discovery of one Middle Palaeolithic Levallois tool on the surface of one of the terraces located *ca.* 500 m south-west of the site, provides new elements for the interpretation of the geomorphology and chronology of these features. The Neolithic village of Sheri Khan Tarakai is located in the western part of the Bannu Basin

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(Khyber Pakhtunkhwa, Pakistan), *ca.* 30 km from the mountains of Waziristan. More precisely, the site rests at the top of a wide low alluvial terraced fan covered with black patinated pebbles and cobbles (Khan *et al.* 1988) (Figure 1).

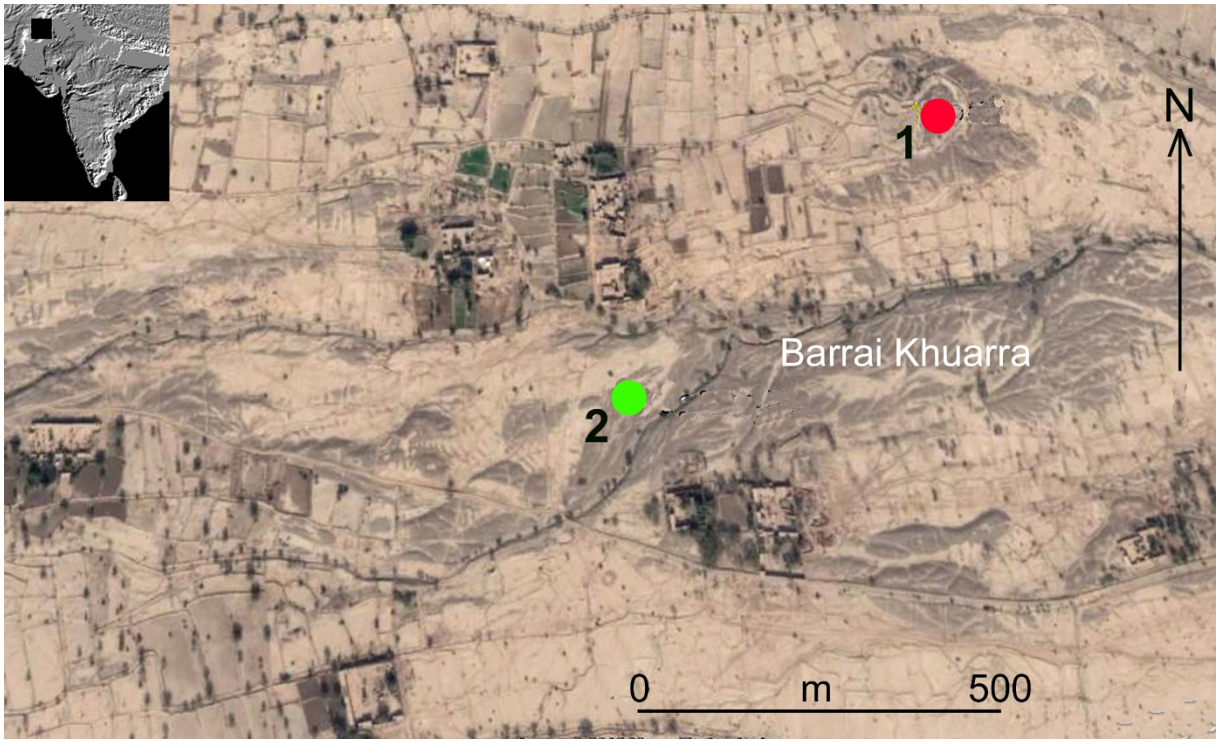

Figure 1. Locations of the Levallois tool on the gravel terraces of Barrai Khuarra (n. 2) and the Neolithic site of Sheri Khan Tarakai (n. 1) (drawing by P. Biagi, 2019).

Archaeological research in Bannu began in 1985 under the auspices of the Bannu Archaeological Project (henceforth BAP), while the excavation of the Neolithic site of Sheri Khan Tarakai were carried out between 1986 and 1990. The site yielded many archaeological features, among which are stone foundations and walls, floors, pits, mud-bricks, and other structures. The associated cultural remains are considered characteristic of a local aspect of the Late Neolithic, called Sheri Khan Tarakai phase. Its chronology is suggested to fall between *ca.* 3800 and 2900 cal BCE (Khan *et al.* 2010: 352).

During the years that followed the beginning of the research in the region, several papers and books were published regarding the archaeology of this remote territory of which almost nothing was known until the second half of the 1980s. Among the many results achieved by the BAP are the definition of the archaeological cultures that characterised the area between the Neolithic and the Historic period, and the absolute chronology of all the excavated sites. Moreover, a few knapped stone artefacts attributable to earlier Holocene and Pleistocene periods were also discovered in the area (Allchin *et al.* 1986: 65; Ambers & Bowman 2003; Khan *et al.* 1986; 1987; 1988; 1989; 1991: 5-7, 151; 2001; 2010: 196, 464; Thomas 1986; 2002; 2003; Thomas & Knox 1994).

2. Geomorphologic setting

The Bannu Basin is part of the thrust belt of northern Pakistan. It is delimited by the Kohat Plateau in the north, the Surghar Range in the east, the Marwat and Khisor Ranges in the south, the Pezu-Bhittani Range in the south-west, and the Waziristan-Sulaiman Range in the west. During the Quaternary, different depositional events led to the silting of large areas of the basin, with sands and silts of probable lacustrine origin accumulated in its central- eastern parts (Abir

et al. 2017). This fact was in some ways envisaged already by the geomorphologic observations made during the second half of the 19th century (Raverty 1888: 424-426; Thorburn 1876: 1-11) and in the first half of the 20th, within the discussion of the much-debated origin of the so-called Bain Boulder-beds in the south of the Bannu Basin (Morris 1938). Recent resistivity data (Farid *et al*. 2014) seem to confirm the existence of shallow Pleistocene lakes in the southern part of the basin as previously suggested by H. Rendell (Rendell 1981). Moreover, laminated lacustrine sediments are known from a quarry located near Lakki Marwat (personal communications with K. Thomas in 2019). In particular, faulting and uplifting consequent to the Himalayan orogenic stress have interested the whole southern sector. They caused the uplift of the Bhittani and Marwat Ranges and the consequent formation of a large subsided depression that was later filled with lacustrine, fine alluvial sediments which form a large part of the Bannu Basin. Pre-Holocene erosional and depositional cycles exerted by the Kurram, Tochi and Gambila Rivers (the last is the name of the lower course of the Tochi) and their many tributaries that flow from the neighbouring ranges, led to the formation of large fans, terracing and coarse sediments deposition with gravel, pebbles and sand interstratified with clay beds (Farid *et al*. 2014).

During a short trip to Bannu made in July 2019, we visited some of the most important archaeological sites excavated by the BAP. A morphological aspect that characterizes many Neolithic and Bronze age sites consists in the recurrent presence of dark grey or black varnished pebbles covering part of the surface of the terraces on which the sites are located, as was already reported in detail by previous researchers. Such elements were observed at many archaeological settlements, among which are Tarakai Qila, on the right terrace of Tochi River (Ambers & Bowman 2003: 537), Lewan (Allchin *et al*. 1986: 89-102), and Sheri Khan Tarakai (Khan *et al*. 2010: 30). As early as 1876, S. S. Thorburn described in a picturesque though realistic way, the same aspect that he observed in the Marwat: "*a vast treeless plain of undulating sandy downs, merging to the west into a fringe of soft loamy clay, furrowed, as with some giant's plough, with numerous deep narrow water-courses, which converge almost at the same point, in the Gambila, or lose themselves before reaching it in the sand. Immediately under the hills to the west this loamy soil is overlaid by a layer of gravel, and smooth rounded stones, called by the people* 'dózakhi kánri' *or 'hell stones', owing to the black scorched appearance, which have been washed down from the hills during the long ages that had elapsed since God said: 'Let the dry land appear*" (Thorburn 1876: 7).

More recently, the impression that the dark grey or black pebbles surfaces should be considered much older than the Late Holocene archaeological materials lying just above and among them was taken into consideration. Khan *et al*. (1991: 4, 151), who undoubtedly recognised the nature of the problem, discussed the presence of alleged Palaeolithic artefacts from seven sites discovered in the southern and western parts of the Bannu Basin. In particular, they described the terrace remnants at Dre Ghundheri Pickets amongst which several 'old' age artefacts were collected, whose surface is "*covered in extensive spreads of pebbles and cobbles, most of which were heavily coated with desert varnish*" (Khan *et al*. 1991: 4). The techno-typological analysis of the knapped stone artefacts did not allow the authors to define their precise chrono-cultural attribution, though they expressed the opinion that their antiquity was granted by the heavy dark patina covering most of the tools, for which "*dates possibly in excess of 30,000 BP may be suggested*" (Khan *et al*. 1991: 5).

The site of Sheri Khan Tarakai (central point: N32°50'32.0" - E70°28'25.9", 408 m asl: Figure 1, n. 1) rests on a wide fan, dissected into several large terraces by the Barrai Khuarra seasonal stream that flows just south of the archaeological area that during some earlier Holocene periods was undoubtedly more important and active than it is nowadays (Khan *et al*. 2010: 41). Dark varnished pebbles cover an area of ca 30 ha uphill (0.3 square km) (Figure 2). They form the present top of the terraced coalescent fans that overlie a thick deposit of silt of alluvial origin (Figure 3). Chert sources are found mostly in the Tertiary rocks of the Sulaiman

foothills, though they are known also in the upper part of the Habib Rahi Limestone and in the Chaudhwan Formation conglomerates *ca.* 120 km to the south (Hemphill & Kidwai 1973: 5-43; Thomas *et al*. 2010). Their outcrops would have provided a variety of lithologies of excellent quality for the production of prehistoric knapped stone artefacts (Figure 4). According to Inizan *et al*. (1994: 247), the knappable material from Sheri Khan Tarakai consists of "*fine grained homogeneous flint*" that is perfectly consistent with our July 2019 observations. This opinion contrasts with that of J. C. Morris *et al*. (2001: 137). These authors described the presence of microcrystalline to cryptocrystalline quartz, more simply chert, from both the Tochi River bed and the Sheri Khan Tarakai terraces. According to them the material is of a "*poor quality, probably as a result of the sequence of erosion, weathering, and deposition*" (Morris & Khan 2010: 196), though we noticed a great difference in both structure, quality and colour between the knappable raw materials sampled from the two areas. Isolated outcrops of the Habib Rahi Limestone Member are known also along the western part of the Tochi River Valley, much closer to Sheri Khan Tarakai.

Figure 2. Dark grey and black varnished gravel terraces south of the course of Barrai Khuarra (photograph by R. Nisbet, 2019).

Figure 3 A thick deposit of silt of alluvial origin covered with a layer of dark grey and black varnished gravels south of the course of Barrai Khuarra (photograph by R. Nisbet, 2019).

Figure 4. Natural chert pieces (left) and nodule (right) from the gravel terraces of Barrai Khuarra (photographs by R. Nisbet, 2019).

3. The Levallois tool

The knapped stone implement discussed in this paper was incidentally discovered by one of the writers (RN) on the surface of a dark varnished pebble terrace at point N32°50’18.7”-E70°28’10.3” (409 m asl), *ca.* 500 m south-west of the Neolithic site of Sheri Khan Tarakai (Figure 1, n. 2). The tool was found reversed, in a horizontal position with its ventral face exposed. From a typological point of view the tool is a *déjeté* Levallois convergent tool with a dihedral, partly facetted, “*chapeau de gendarme*” platform. It was obtained from a *ca.* 5 cm wide, and at least 7.5 cm long, oval pebble of good-quality white chert (2.5Y8/1). Its width is deduced from the presence of small traces of the original dark grey colour (7.5YR4/1) varnished cortex along both sides (Figure 5; Figure 6, nn. 1 and 4). The maximum measures of the point, taken from the platform’s axis, are 6.1x5.6x1.2 cm (Length, Width and Thickness). A few, very small notches are visible on both sides, most probably caused by trampling (Figure 6, nn. 2-4). The tool, weighing 32.70 g, is covered with a thick, translucent, pale yellow patina due to exposure (2.5Y7/3) (Munsell Soil Color Charts 2000). It does not show other damages or rounded surfaces caused by rolling or (water) transport suggesting that it has been found in its primary position. The maximum thickness of the point was measured on the left side ridge, where a small portion of the original cortex is preserved, partly removed by a direct, scalar retouch. The cross-section is elongated, scalene, and triangular with slightly concave and convex surfaces.

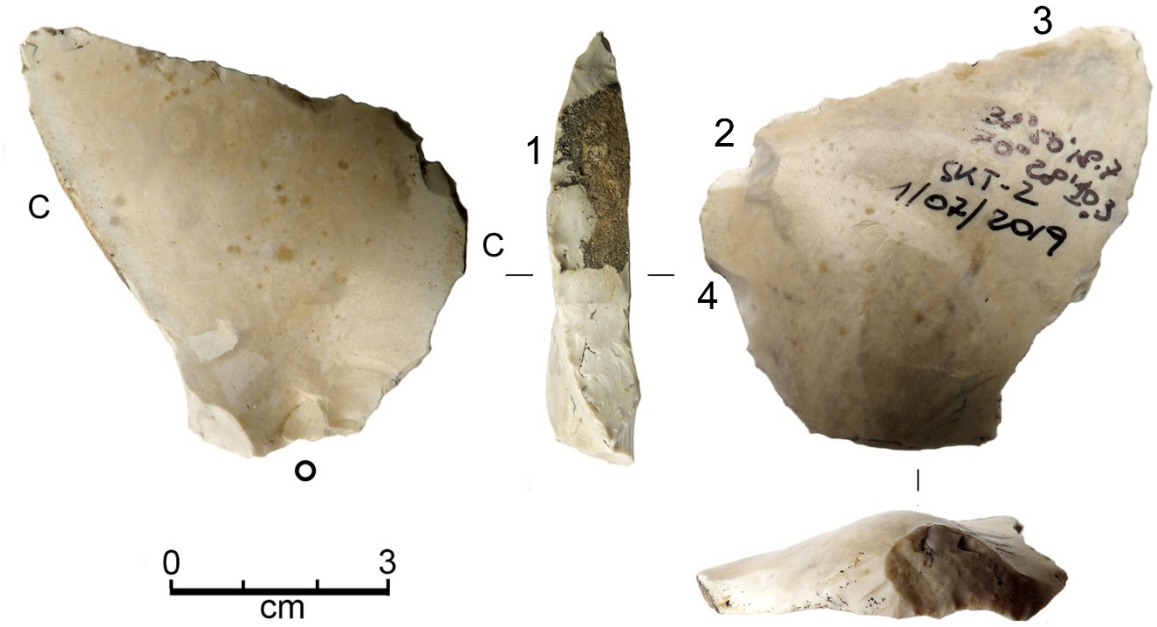

Figure 5. *Déjeté* Levallois tool recovered from the surface of a black varnished pebble terrace at point N32°50’18.7” - E70°28’10.3”, *ca.* 500 m south-west of Sheri Khan Tarakai with the indication of the points where part of the original dark grey cortex covering the flint pebble is still preserved (C), the points where the microphotographs of Figure 6 were taken (nn. 1-4), and the location of the platform (small circle) (photographs by E. Starnini, 2019).

The BAP had already discovered techno-chronologically undiagnostic Palaeolithic artefacts on the surface of the low hills of Dre Ghundheri Pickets, *ca*. 8 km west of Bannu City. They were described and partly illustrated by Khan *et al*. (1991: 4-7, fig. 5). Although they cannot be attributed to any defined Palaeolithic period. In any case, Levallois artefacts are not reported from the hills of Dre Ghundheri Pickets by the above authors. Other probably earlier Palaeolithic artefacts were published by T. O. Morris (Morris 1938: 412, fig. 9), though they

come from the southernmost part of the Bannu Basin (Pezu-Malagan area), and were recovered from very different geomorphologic locations.

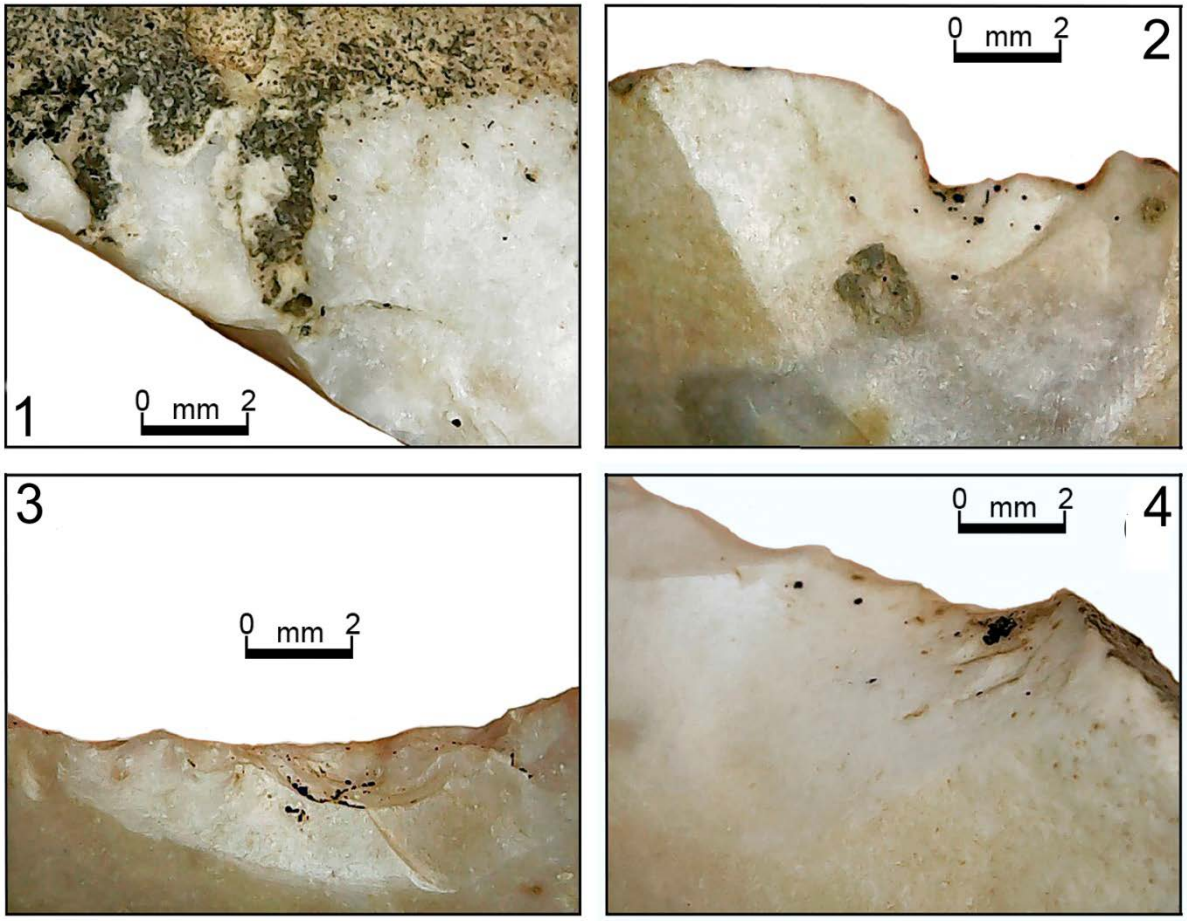

Figure 6. Microphotographs of four different points of the Levallois tool on which part of the original cortex is preserved (nn. 1 and 4) and small breakages are visible (nn. 2-4). Numbers indicate their positions in Figure 5 (photographs by E. Starnini, 2019).

4. Discussion

The discovery of a *déjeté* Levallois tool in the Bannu district of north-western Pakistan is important because it can help date the formation of the black varnished pebble terraces on the surface of which it was collected that according to our data are to be attributed to a Pleistocene period probably earlier than 50-40,000 BP. Moreover it contributes to the study of the distribution of Middle Palaeolithic Levallois technique in the Indian Subcontinent, a topic that is still badly known (Bar-Yosef 2013: fig. 2.1) and interpreted in different ways (Biagi & Starnini 2014).

The discovery of the Levallois tool may suggest the impressions already put forward regarding the Pleistocene attribution of the terraces. Consequently, the presence of heavily patinated tools on the surface of some of these features seem to confirm that they formed most probably well before the tool was discarded (Khan *et al.* 1991: 5). The presence of this tool would therefore represent at least a possible *terminus ante quem* for the terrace formation.

Moreover, the re-analysis of old collections, and the discovery of new, characteristic knapped stone artefacts in Pakistan show that Middle Palaeolithic Levallois assemblages are attested at least as far as the course of the Indus River in Lower Sindh (Biagi & Starnini 2018). At present, the evidence of Levallois assemblages is however very scarce in the north-western

regions of the Subcontinent (Nishiaki & Akazawa 2018: 5) most probably because of the absence of research in the region. They are known from the cave of Darra-i-Kur in north-eastern Afghanistan (Dupree & Davis 1972), where they are still undated (see Douka *et al*. 2017), as well as in the easternmost part of South Khorasan (Iran) (Nasab 2011: fig. 1), not far from one of the suggested dispersal, migratory routes across the Iranian plateau towards Afghanistan (Nasab *et al*. 2013: fig. 10; see also Heydari-Guran *et al*. 2015).

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