Research Report for the site of Maropeng.

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SAHRA PERMIT NUMBER 80/11/02/008/51

Dear Mariagrazia,

Please accept this document as the report for my renewal of the excavation permit for the site of Maropeng (25.25.22.2S, 27.10.2.7E). The report includes several photographs of the site after different stages of research during the last three years of work. Work at the site has been conducted as a part of the 3rd Year Early Stone Age field school associated with the University of the Witwatersrand, Johannesburg. The ongoing excavations and research at the site have been a valuable resource for the training of undergraduate archaeologists and young postgraduates. During the 2011-2014 permit term a great deal of artefacts and site formation information has been recovered from the excavations sites at Maropeng including the surrounding landscape. Students involved at the fieldschool are provided an opportunity to be integrally involved in both the archaeological and geomorphological research under my direction. The general progress of excavations has been slow, with excavations and work conducted over only three weeks per year. This is mitigated by the benefits of training students on one of the only ESA open-air sites in Gauteng, and by the opportunity afforded the museum visitors to see an ingoing archaeological excavation. Damage to the site and deposit over the rest of the year is minimal given the secondary context of the deposit and its relatively shallow depth limiting collapse and wall erosion. I am in regular talks with Lindsay Marshal, curator for the Maropeng Museum on preservation plans for the sites once the research has been completed.

Previous research

The original purpose of excavations at the site of Maropeng was to recover and analyse a representative sample of lithic artefacts from the site of the museum. This was initially carried out by Dr Luca Pollorolo in 2006, under the permit of Dr. Kathy Kuman who discovered lithic artefacts being displaced by the construction of the museum and commercial area. Initial test pitting identified an appropriate area for a larger excavation of the in situ artefact horizon which was found about 1m below the surface of the current landscape. This initial excavation yielded a sample of “about 200 pieces” (Pollorolo et al., 2010; pp 4). These were compared typologically to the larger assemblage of artefacts recovered from a large dump created by the construction of the museum. These two sub-assemblages were considered of the same early acheulean origin despite an absence of diagnostic tool types being found in the excavations. All diagnostic tool types (LCT’s – including handaxes and cleaves) were recovered from the disassociated dump. The site formation proposal, based on

sedimentological analysis during the excavation, suggested the artefacts were deposited, together with large proportions of natural quartz, into a natural depression in the area of the museum from the higher ground to the east of the site. This colluvium gradually deflated into a 'pavement' resting on a silt loam lateritic bed which itself is underlain by a dolorite intrusion. The artefact-bearing level can be described as a clast-supported mix of rolled and sub-rounded quartz clasts of small to medium cobble size with a 25% to 35% inclusion of fresh to slightly weathered fine-grained quartzite artefacts and naturally fractured clasts measuring between 5cm and 15cm in maximum dimension. Interstitial voids within the level are filled with small broken quartz pieces and infiltrating lateritic sediments from above. The quartzite ridge to the east is considered to be the raw material source for the majority of the artefacts. The secondary nature of the deposit and absence of datable sediments, faunal or floral material means that tool typology alone was used to estimate the age of the deposit and a bracket of between 1.7 to 1.0 Ma was suggested (Pollorolo et al., 2010).

Continuing research

The initial work left some fundamental questions left unanswered. First, why where there no diagnostic tool types found in the excavation despite a seeming abundance in the dump? Second, how extensive and what was the geomorphology of the deposit? Third, where was the deposit at its thickest and therefore most archaeologically rich and informative? These were the focus of the second phase of work and excavation at the site, starting in 2011 under my direction.

Over the last three years we have opened three more excavations at the site to help address these questions. The three excavations, named M2, M3 and South Pit, have been excavated under my direction by MSc and PhD students in the Archaeology Department at the University of the Witwatersrand. These small excavation trenches were located and excavated with stratigraphically sensitive methods with the goal of identifying variation in the morphology of the deposit in relationship to the current landscape and the new buildings. The location and current progress of the opened excavations is shown in Figure 1. The newer excavations were placed around the commercial and ticketing area of the Maropeng site, the area proposed to hold the densest accumulation of artefacts. As can be seen in the inserts in Figure 1, the artefact-bearing deposit was exposed and left for mapping and in situ documentation. Both M2 and M3 contain a thick artefact-bearing level with relatively abundant and large (>10cm) quartzite clasts and artefacts and have definite deposit surface gradients dipping towards the commercial and ticketing area of the site, suggesting the focus of colluvium was in this area. South Pit, however, yielded only a very thin and discontinuous lateral margin of the artefact-bearing level, with smaller clast sizes, low artefact density. This was unexpected given the proximity to the other sites.

As part of understanding the broader extent of this artefact-bearing level, surveys were conducted across the Maropeng property. In the area of the amphitheater, in the southeast of Figure 1, a lateral exposure of the level was identified. Here, the level is thin (< 10cm) with a

highly restricted clast size range and very low artefact density. Raw material proportions and bounding sediments are analogous with all the excavated areas. The presence of this level, approximately 200 meters from the main site, indicates that the original depression into which the artefact-bearing colluvium accumulated was greater than previously thought but irregular in morphology. Further test pits between the main excavation area and the amphitheater will allow us to further understand the depositional topography. Based on the current information I would suggest that the distribution and thickness of the deposit has been heavily influenced by the morphology of the intrusive dolorite. The thickest deposits are found in M1, M2 and M3 and in all cases the artefact-bearing level has been directly associated with shallow exposures of dolorite. These outcrops may have formed a natural barrier against which the thickest deposit formed. Conversely, in South Pit and the amphitheater no dolorite is present.

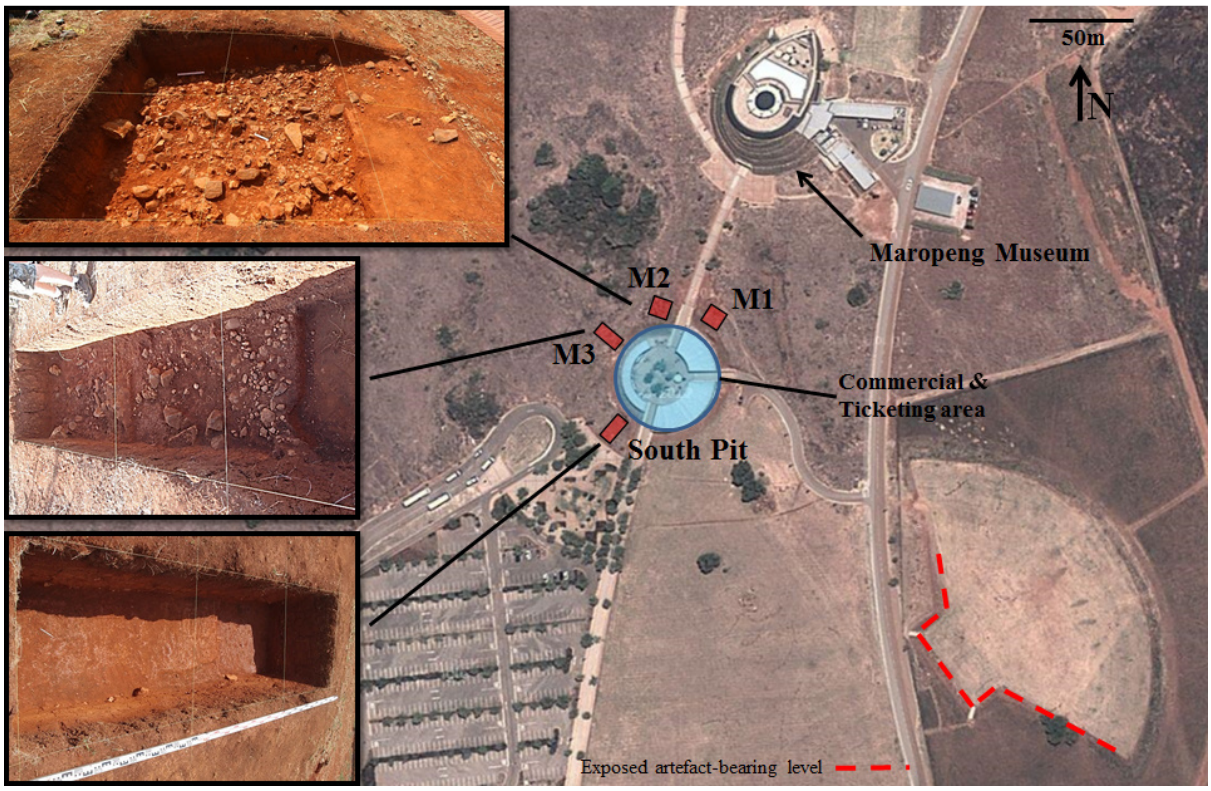

Figure 1. Map of Maropeng and location of new excavations opened since 2011. Inserts show excavations in their current state with the artefact-bearing level exposed. Image from Google Maps.

The second objective of the new excavations was to provide a representative analytical sample of the in situ artefacts. The goal being to assess technology, typology and inter-site variability in size, shape and condition, and avoiding the sample biasing inherent to dump-derived samples. The largest excavation, named here M1 (Location 2 in Pollorolo et al., 2010) was progressively extended over the three years to ensure appropriate sampling and

mapping was conducted.. The final condition of this excavation is shown in Figure 2. M1 was closed in April 2013 to avoid further issues of soil erosion and loss of site wall integrity. An assemblage of over 1000 pieces has now been excavated from the in situ level and will be significantly augmented this year as students map and excavated through the exposed deposits in M2 and M3. From these excavations, we have recovered or exposed the first diagnostic tools of the acheulean period, finally allowing us to confidently associate the assemblage recovered from the dump to this deposit. Figure 3 shows several of these important artefacts exposed in the deposit. Once the exposed artefacts have been excavated, the complete assemblage will be analysed using a techno-typological approach. The lack of small flaking debris found in the excavations is suggestive of preferential removal of the smallest assemblage components by winnowing during the deflation of the artefact-bearing horizon, and corresponds well with the site formation scenario. This observation is in contrast to those made in the original excavation where small quartz 'flaking debris' was identified within the layer. Closer examination and documentation of the association between sediments and clasts revealed that the smaller shattered quartz pieces found in the interstitial voids of the deposit were created in situ during post-depositional loading and compression of the deposit and are not artefactual. The absence of small flaking debris does, unfortunately, limit the resolution of the lithic analysis, requiring us to focus on core, flake and tool features and variables.

Figure 2. The M1 excavation at Maropeng. The site was expanded from the original 'Location 2' excavation conducted by Pollorolo between 2005 and 2007. Several squares were excavated to expose the artefact-bearing level to allow mapping of the gradient and morphology of the deposit surface. This site has now been closed.

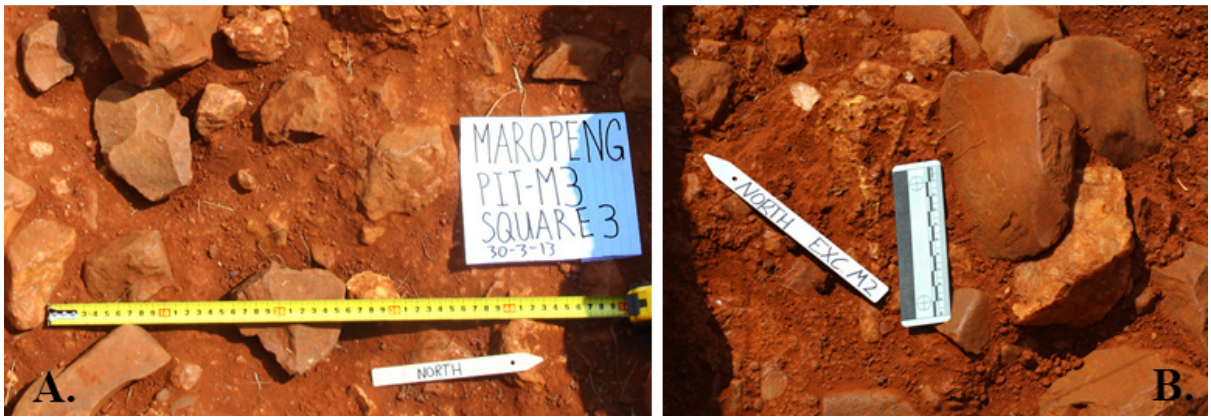

Figure 3. In situ artefacts from M2 and M3 excavations. A. shows an in situ handaxe exposed in square 3 of the M3 excavation. B. shows a large flake in situ flake exposed in square 6 of the M2 excavation.

Over the last three years the research at the site, despite its slow progress, has yielded some important information and has been conducted with great precision. We can now confidently associate the dump assemblage with the excavation assemblage through the discovery of in situ diagnostically acheulean tool types. We can confidently support the proposed site formation model with new and spatially representative documentation of the artefact-bearing levels. We can propose a higher resolution model for the depositional geomorphology and we can propose that the thickest area of the artefact-bearing level was probably where the commercial and ticketing area is now. This can further explain the relative abundance of larger tools in the dump assemblage in addition to selective collection. We have also yielded a large in situ, contextually isolated and representative assemblage of stone tools which can be analysed with a higher degree of precision than was allowed by the dump assemblage.

Research projects in 2014-2017

The research project at Maropeng will be drawn to a close over the next permit term. Upon the renewal of my SAHRA permit, the exposed levels in M2 and M3 will be mapped, carefully documented and excavated, providing a comparative analytical assemblage of over 1500 pieces. This will be more than sufficient for a techno-typological analysis and comparison with other acheulean sites of South Africa. A small set of test pits will then be excavated to a depth of 1.5m between the main excavation site and the amphitheater to explore the vertical and lateral distribution of the artefact-bearing level. I am working with the Susan Webb of the School of Geosciences to conduct a Ground Penetrating Radar survey of the area which will clarify the extent of the exposure in relation to the intrusive dolorites and the current buildings on the property. The lack of faunal and floral material, combined with the colluvial nature of the artefact-bearing deposit, means that direct dating of the

deposit is not possible. This is a major limitation of the site and continuing research. We have, however, through this research found and documented the largest open-air acheulean-aged site in the Cradle of Humankind. With the expanded in situ lithic assemblage I am confident we can make some important interpretations of acheulean hominid technological behaviour in the Cradle of Humankind. I have been working with Lindsay Marshall to ensure the collections from this study and exhibited at Maropeng once the lithic analysis has been completed and I would like to work further with Maropeng to preserve the excavation site and provide an opportunity for the public to see the sites and learn about the research conducted at Maropeng.

References

Pollorolo, L., Susino, G., Kuman, K. & Bruxelles, L. (2010). Acheulean artefacts at Maropeng in the Cradle of Humankind World Heritage Site, Gauteng Province, South Africa. *South African Archaeological Bulletin*, 65: 3-12.