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► **To cite this version:**

Guillaume E Porraz, Aurore Val. HEUNINGNESKRANS AND THE STONE AGE SEQUENCE OF THE OHRIGSTAD RIVER CATCHMENT ON THE EASTERN BORDER OF THE GREAT ESCARPMENT, LIMPOPO PROVINCE, SOUTH AFRICA. *South African Archaeological Bulletin*, 2019, 74, pp.46 - 55. halshs-02517630

**HAL Id: halshs-02517630**

**<https://shs.hal.science/halshs-02517630>**

Submitted on 27 Mar 2020

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## Field &amp; Technical Report

# HEUNINGNESKRANS AND THE STONE AGE SEQUENCE OF THE OHRIGSTAD RIVER CATCHMENT ON THE EASTERN BORDER OF THE GREAT ESCARPMENT, LIMPOPO PROVINCE, SOUTH AFRICA

GUILLAUME PORRAZ<sup>1,2</sup> & AURORE VAL<sup>2,3\*</sup>

<sup>1</sup>CNRS, UMR 7041, ArScAn-AnTET, Université Paris Nanterre, Paris, France

(\*Corresponding author. E-mail: aurore\_val@yahoo.com)

<sup>2</sup>Evolutionary Studies Institute, Palaeosciences Building, Private Bag 3, WITS 2050, Johannesburg, South Africa

<sup>3</sup>Abteilung für Ältere Urgeschichte und Quartärökologie Department, Universität Tübingen, Tübingen, Germany

(Received 1 March 2019. Revised 2 May 2019)

## ABSTRACT

*Heuningneskrans was briefly excavated in 1968 by Peter Beaumont who exposed a 6.35 m deep archaeological sequence. However, as with other sites in the former Transvaal Province, Heuningneskrans has since played a minimal role in subsequent Stone Age research. The site was drawn to our attention while elaborating our research programme at Bushman Rock Shelter (BRS). The sites are approximately 4 km from each other and located in the Ohrigstad Valley, near the Blyde River catchment. This area, on the eastern margin of the Great Escarpment, connects the interior plateau of southern Africa (Highveld) with the Lowveld and the Mozambican coastal plain. In 2018, we reopened Heuningneskrans to expose and sample the profiles, contextualise Beaumont's data, evaluate the site's potential, and its complementarity with BRS. The excavation exposed a finely stratified sequence illustrating the action of various sedimentary agents. The last use of the site is associated with Iron Age groups, but most of the sequence documents human occupations that predate 27 000 cal. BP, and last until 8000 cal. BP (calibration OxCal 4.3 SHCal 13). The results of this first excavation campaign, together with ongoing investigations at BRS, highlight that this area is instrumental for the study of Middle and Later Stone Age developments in southern Africa.*

Key words: Early Later Stone Age, Robberg, Oakhurst, Pleistocene/Holocene transition.

## INTRODUCTION

Southern Africa, with its mosaic of habitats and associated mineral, animal and plant resources, constitutes a rare opportunity to explore the extent to which climatic and environmental conditions have contributed to shaping human evolutionary history. Yet, elaborating models on the scale of the southern African region is problematic, precisely because of contrasting ecological, geographical and climatic conditions between, for instance, summer and winter rainfall zones, and between the interior plateau and the coastal region. To understand the southern African region, it is critical to explore human behavioural and technological responses in distinct ecological settings, on a local and regional scale. This contextualisation encourages an investigation of the processes behind the development of cultural regionalisation and the diversification of technologies, thought to be associated with the beginning of the Middle Stone Age (MSA) (Clark 1988). The recognition of presumed distinct cultural areas, sharing technological traits, is pivotal to exploring interconnectedness among human groups, exchanges of ideas and gene flows, as well as scenarios of human adaptation and evolution. The project presented is

part of a growing research effort of (re-)exploring the Late Pleistocene to early Holocene record in the vast and marginally studied interior region (Backwell *et al.* 2014, 2018; Collins *et al.* 2017; Stewart & Mitchell 2018; de la Peña *et al.* 2019).

In 2014, we initiated a research project at BRS in Limpopo Province (Porraz *et al.* 2015). Following a similar approach to previous work conducted on the West Coast (Porraz *et al.* 2016), and in the Cederberg (Mackay 2016), we are advocating the investigation of sites with long and well-stratified archaeological sequences that can serve as references for a given region. This needs to be complemented by data from neighbouring sites, in order to start building regional chrono-cultural models. After a couple of years of work at BRS, we therefore turned our attention to Heuningneskrans Shelter (HNK), located less than 4 km to the southeast (Fig. 1).

The integration of geographical data from both sites provides a sound opportunity to build a regional sequence within a refined palaeoenvironmental context, for the eastern margin of the southern African interior plateau, and more specifically within the Ohrigstad River catchment area. This region sits at the junction of several watercourses, with the Ohrigstad River joining the Blyde River, itself flowing into the nearby Olifants River, a tributary of the Limpopo River. It is strategically located at the interface between the Highveld to the west and the Lowveld to the east. Going northwards along the Great Escarpment, it relates to major, yet somewhat forgotten sites on the other side of the Limpopo River, in the Matopos Hills of Zimbabwe (Walker 1995), while eastwards it connects with the still largely unexplored coastal plain of Mozambique (but see Muianga 2013; Gonçalves *et al.* 2016).

Chronologically, HNK neatly complements the BRS sequence in the critical period of the succession from MSA to the Later Stone Age (LSA). Both sites document human responses to the acceleration of climatic instability that accompanied the transition from the Late Pleistocene to the beginning of the Holocene. Additionally, part of the HNK sequence encompasses the end of the long sedimentary hiatus observed at BRS, which allows us to explore the local techno-cultural dynamics during this period and the potential causes behind this hiatus.

Here, we provide general background information on HNK and previous investigations conducted at the site, as well as current understanding of the chrono-cultural sequence. Finally, we present some preliminary results from our 2018 fieldwork campaign.

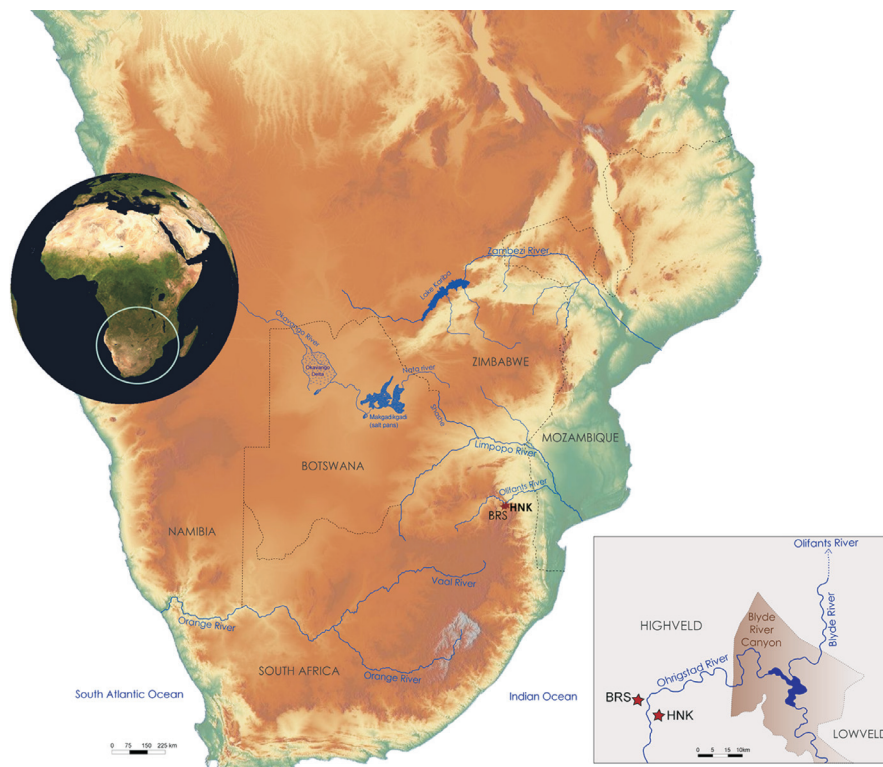


FIG. 1. Location of Heuningneskrans and Bushman Rock Shelter in southern Africa, and enlargement of the Ohrigstad and Blyde Rivers catchment areas.

#### PRESENTATION OF THE SITE AND PAST EXCAVATIONS

The HNK is located on the eponymous farm (Farm No. 476), in the Lydenburg District, 19 km north of Ohrigstad in Limpopo Province. It sits at an altitude of about 950 m above sea level, on the fringe of the Great Escarpment. It is about 400 m from the eastern bank of the Ohrigstad River, which joins the Blyde River in the Blyde River Canyon situated nearby (Fig. 1).

The floor of the shelter is 4 m higher than the floodplain. At HNK, the alluvial plain is about 1.25 km wide. A recent farming core on the riverbank opposite the site has removed approximately 25 m of sediments before reaching bedrock. The site is a more than 200 m long dolomitic northwest-facing cliff (Beaumont 1981; Fig. 2). The geometry of the shelter offers narrow cavities favoured by bees, hence the Afrikaans name of the site, 'Heuning-nes-krans', literally meaning 'the cliff with honey nests'. The HNK cliff hosts a karstic system still largely unexplored. The main gallery, visible today, opens up within the excavation area, in the northern part of the cliff (Fig. 2). This c. 5 m wide gallery can be followed without difficulty for about 50 m before it is obstructed by sediments. Several other unexplored galleries are known to exist.

The local geology is composed of massive folded dolomite and includes shale, quartzite and conglomerate, which is rich in quartz pebbles (Beaumont 1981). The shelter belongs to the Savannah Biome and the surrounding vegetation is assigned to the Mixed Bushveld (Mucina & Rutherford 2006).

#### EARLY WORK AT THE SITE BY BEAUMONT (1968)

Limited documentation on HNK is available. The information provided comes mainly from two sources: an unpublished field report compiled by Peter Beaumont in the early 1970s, and a note published in 1981, which is largely based on this initial report with a few noteworthy modifications. The existence of these two sources has led to some confusion regarding the stratigraphy, ordered from bottom to top in the early, unpub-

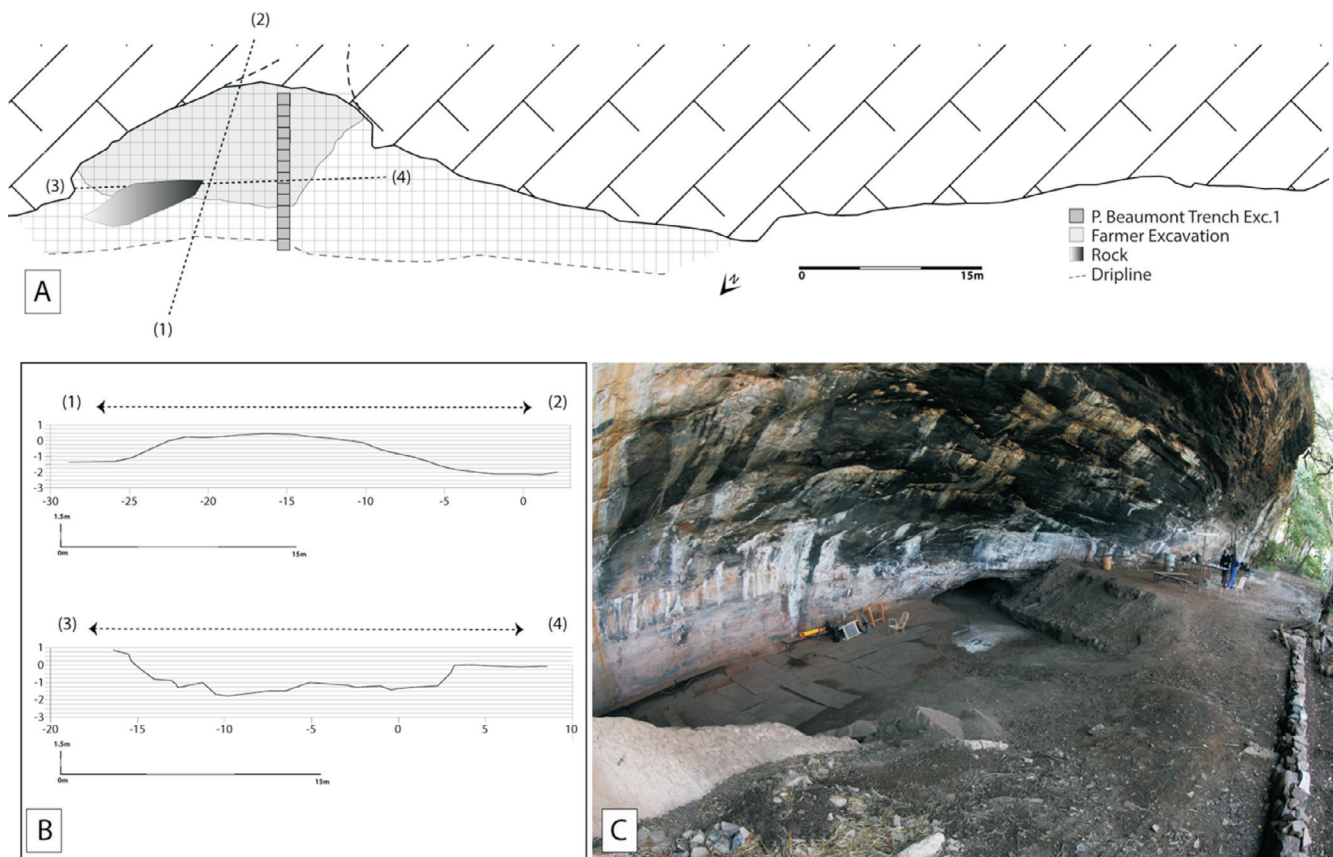
lished report (see, for instance, Vogel & Marais 1971; and Linick 1977), but from top to bottom in the published note. Preference is given to the latter.

HNK was used for several years as a tobacco shed. In September 1967, the farmer undertook an excavation in the northern part of the shelter in order to enlarge his leaf-drying facilities. This excavation was about 20 m wide, 10 m long, and 2 m deep (Fig. 2). Within this area, a small trench was dug down to a depth of 4.6 m, without reaching bedrock. Several lithic implements and faunal remains were selected by a local archaeology enthusiast, S.S. de Kock, and brought to the attention of, first, James Kitching, and then Beaumont, who visited the site in June 1968.

A single excavation campaign took place from 14 to 21 December 1968, under the direction of Beaumont, accompanied by seven of his colleagues and six farmworkers. A 13.65 m-long trench was dug, from the drip line to the back wall of the shelter. This trench, called 'Exc.1', comprises 15 squares (A1 to A15) of 82 cm<sup>2</sup> each. The location of the trench was determined by the possible use of steps artificially created by the farmer and was placed within the axis of the karstic gallery (Fig. 2).

The "absence of any clear or consistent natural stratification" and the "evidence that ash lenses had invariably been laid down parallel with the near-horizontal present-day ground surface" (Beaumont unpubl.: 3) led to an excavation by spits of 7.5 cm in the upper part, and 15 cm in the lower part of the deposits (Beaumont 1981). Deposit depths varied greatly due to the general morphology of the excavation (Fig. 3), with a maximum depth of 6.35 m in square A12. At this point, large slabs of dolomite, presumed to be bedrock, were encountered. A total of 15.21 m<sup>3</sup> of sediment was removed and sieved using 3 mm screen meshes.

Beaumont identified three main strata which he subdivided into two or more sublevels. Such subdivisions were decided *a posteriori*, based exclusively on variations in artefact density and the nature of the archaeological content: "Subsequent



**FIG. 2.** Planimetry and general topography of Heuningneskrans. (A) Sketch from the 2018 fieldwork showing the position of the previously excavated areas (limits of the squares of Trench Exc. 1: Beaumont 1981). (B) Two transects within the excavated area (see A for their locations). (C) Northern view of the excavation.

analysis revealed that the retrieved artefacts occur in zones of lesser or greater abundance. These variations were used to split Str. 1 into two sublevels (1a + 1b), Str. 2 into two sublevels (2a + 2b), and Str. 3 into eight sublevels (3a–3h)” (Beaumont unpubl.: 3–4, with strata numbers corrected following Beaumont 1981):

- Stratum 1 (0 to 69/76 cm) contains grey/brown sand interspersed with small and sporadic ash lenses.
- Stratum 2 (69/76 to 145/152 cm) is characterised by abundant ash lenses of various colours (white, grey, and black), and smaller quantities of brown sand.
- Stratum 3 (145/152 to 635 cm) contains mostly fine brown sand, with minor and sporadic ash lenses.

Limited information on site formation processes is available. Beaumont mentions the presence of shelter roof spalls with a high concentration on top of the sequence (Stratum 1, spit 7.5–15 cm). Such concentration could mark, according to him, a stratigraphic break and – while not clearly formulated – could explain his distinction between sublevels 1a and 1b. One of the main changes noted by Beaumont was the increasing degree of humidity and calcification going down the sequence: “Stratum 3 shows marked vertical variations in the degree of calcification that occasionally results in localised travertine crusts” (Beaumont 1981: 135) and “the deposit below about 480 cm was found to be increasingly moist with depth” (Beaumont unpubl.: 3).

#### EXISTING ARCHAEOLOGICAL COLLECTIONS

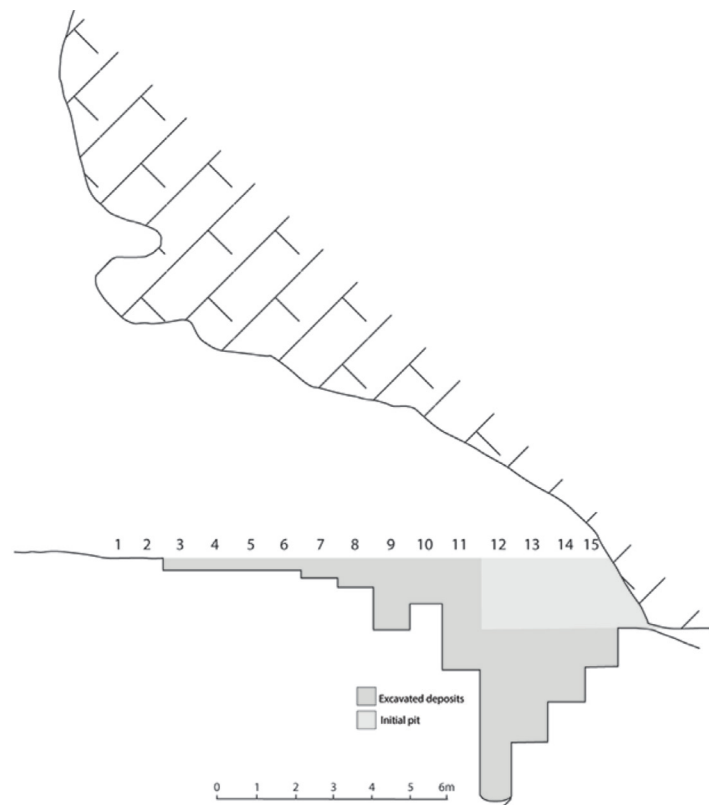
Given the uncertainties associated with the definition of the stratigraphic units, we prefer to use the term ‘spit unit’ (SpU) rather than the term ‘sublevel’ chosen by Beaumont.

These SpUs vary substantially in depth and density (Table 1), and the question of sterile horizon(s) remains open. The site is rich in lithic material with more than 45 000 artefacts recovered. A high concentration occurs in SpUs 3e and 3f, following a much lower density in SpU 3h (Table 1). Raw materials comprise rock types most likely collected in the Ohristad River terraces, as well as in local dismantled conglomerate formations. Quartz, which includes some crystal quartz, dominates the lithic sample across the sequence, followed by chert, chalcedony, quartzite, shale and dolerite/hornfels (Table 2).

Pebbles occur sporadically but are particularly concentrated in SpU 3b, with about 100 collected between 227 and 257 cm deep (Beaumont unpubl.: 14). This high pebble density is consistent with a decrease in lithic density in that SpU (Table 1). Some pebbles bear use-wear traces (“a few show very

**TABLE 1.** Density of lithics per SpU (after Beaumont unpubl.).

SpU	Average thickness (cm)	Volume excavated (m <sup>3</sup> )	Total lithics (n)	Density (n lithics/m <sup>3</sup> )
1a	26	1.95	3032	1555
1b	48	1.89	5470	2894
2a	48	1.19	2438	2049
2b	27	0.44	1367	3107
3a	27	0.44	1182	2686
3b	84	3.02	3908	1294
3c	67	2.09	9071	4340
3d	50	1.26	5449	4325
3e	73	1.21	8378	6924
3f	38	0.5	2655	5310
3g	45	0.37	1471	3976
3h	102	0.85	728	856
TOTAL	–	15.21	45149	–



	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15
<b>1a</b>	0-23cm	0-30cm	0-30cm	0-30cm	0-30cm	0-23cm	0-30cm	0-23cm	0-23cm	Pit	Pit	Pit	Pit
<b>1b</b>	23-30	not excavated	not excavated	not excavated	30(?)53	23-76	30-76	23-69	23-69	Pit	Pit	Pit	Pit
<b>2a</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	76-122	69-114	69-122	Pit	Pit	Pit	Pit
<b>2b</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	122-145	not excavated	122-152	Pit	Pit	Pit	Pit
<b>3a</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	145-175	not excavated	152-175	Pit	Pit	Pit	Pit
<b>3b</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	175-183	not excavated	175-267	175-259cm	178-259cm	206-259cm	206-251cm
<b>3c</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	267-290	259-335	259-312	259-328	251-282
<b>3d</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	335-381	312-373	328-373	not excavated
<b>3e</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	381-450	373-450	not excavated	not excavated
<b>3f</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	450-488	450-472	not excavated	not excavated
<b>3g</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	488-533	not excavated	not excavated	not excavated
<b>3h</b>	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	533-635	not excavated	not excavated	not excavated
	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated	not excavated

FIG. 3. Sagittal view of Beaumont’s Trench Exc.1 and table of excavation depths per m<sup>2</sup> (after Beaumont unpubl.).

minor traces of having perhaps been used for pounding and/or grinding/smoothing” [Beaumont unpubl.: 14]) but their origin within the deposits remains to be clarified.

Following Beaumont’s descriptive comments, the lithic assemblage seems to show little technological variation across

the sequence, with a generally limited blade component, and a low percentage of butt preparation. Our observations indicate the frequent use of bipolar knapping. Some bladelet cores indicate the use of marginal, direct percussion technique and are reminiscent of the Robberg technical traditions. Finally, we

TABLE 2. Petrographic distribution in percentage (%) of the lithic assemblage (after Beaumont unpubl.).

SpU	Quartz	Fine chert	Coarse chert	Chalcedony	Quartzite	Miscellaneous
1a	80.2	17.5	0.4	0.2	0.8	0.9
1b	76.9	20.3	0.8	0.6	1.2	0.2
2a	74.5	23.5	0.6	0.1	0.8	0.5
2b	72.6	24.1	1.3	0	1.6	0.4
3a	82.1	15.3	1	0	1.5	0.1
3b	59.2	27.5	4.4	1.1	3.1	4.7
3c	86.5	10	0.4	1.9	0.8	0.3
3d	85.4	12.4	0.7	0	0.9	0.5
3e	68	27.7	2.5	0	1.3	0.3
3f	87.7	9.2	1.4	0	0.8	0.9
3g	76.2	17.2	4.4	0	1.2	1
3h	85.1	7.5	2.4	0	3.4	1.6

note the presence of numerous short, trapezoidal flakes, and some large transverse side scrapers that we locally associate with the Oakhurst technical traditions. Retouched tools are scarce.

Mineral remains include various pieces of haematite, particularly specularites (from SpUs 3c and 3f). There is a peak in the proportion of haematites compared to the lithic assemblage from SpUs 2a to 3a. In SpU 2a, Beaumont mentions the presence of an ostrich eggshell fragment covered in ochre on its internal face, possibly indicating the use of the egg as a container. The HNK sequence yielded a large collection of beads, primarily made on ostrich eggshell ( $n = 430$ ) and mollusc shell ( $n = 30$ ). The few other items of personal ornaments come from the more recent deposits, and include four porcelain beads and a cylindrical glass bead. Finally, 981 pottery sherds associated with Iron Age occupations (Beaumont 1981) were recovered from the uppermost part of the sequence, mostly in SpU 1a ( $n = 944$ ).

Both faunal and botanical remains occur throughout the sequence, with varying degrees of preservation. Water circulation has caused precipitation and the formation of secondary crystals, and according to Beaumont's notes, would have particularly affected the lower part of the sequence. Although field information is limited, the botanical remains seem well preserved, as illustrated by the presence of abundant charcoal throughout, as well as calcified plant remains such as twigs and grass fibres in SpU 3e (Beaumont 1981).

The faunal assemblage comprises more than 20 000 remains, including a few worked bones, such as a pendant collected from SpU 2a. Bones are generally highly fragmented and have been affected by various pre- and post-depositional natural and anthropogenic processes. Faunal remains from SpUs 3g and 3h present surface modifications apparently characteristic of the lower part of the sequence, regularly exposed to water. The mammalian sample was analysed by Klein (1984) who underlines little diachronic variation regarding faunal spectrum composition. Hunting strategies seem orientated towards the acquisition of small to large ungulates, comple-

mented by the exploitation of tortoises, monitor lizards, and giant land snails (Beaumont 1981; Klein 1984). Two human bones were also discovered during 'de Kock's excavation' (Beaumont unpubl.). Although no exact location for these specimens is provided, the depths at which they were collected allowed Beaumont to propose a chrono-stratigraphic attribution. Hence, these human remains possibly originate from SpU 2 (lumbar vertebra) and SpU 3b (fragmentary radius).

### THE HNK CHRONO-CULTURAL SEQUENCE

In the 1970s, two series of radiocarbon dates were published (Vogel & Marais 1971; Linick 1977; Table 3; Fig. 4). A third set of radiocarbon dating was later performed on ostrich eggshell (Miller *et al.* 1992), and Beaumont (1981) mentions another five amino-acid dates on uncharred bones (respectively 12 000, 14 300, 22 000, 24 800 and 31 000 uncal BP for the SpUs 3b, 3c, 3e, 3f and 3g). These different ages ( $n = 23$ ) accord with one another (Table 3). Together with the preliminary descriptions of the archaeological material, they place the human occupations of the shelter between MIS3 and MIS1. We suggest that the sequence could be consistent with two main phases of occupation, separated by a sedimentary hiatus possibly related to the Last Glacial Maximum (LGM) (Fig. 4). The first phase, from SpUs 3h to 3c, precedes the LGM and occurs between >30 000 and 23 000 cal BP. The second phase, from SpUs 3b to 1b, covers the final Pleistocene to early Holocene, and occurs between 16 000 and 8000 cal BP. A final, undated phase of occupation during the Iron Age (SpU 1a) caps the sequence.

Beaumont (unpubl.) initially attributed the complete Stone Age sequence to the Early Later Stone Age (ELSA), with the exception of SpU 3h. This lowermost layer contains several flakes with patina and possibly prepared butts, which he assigned to a final MSA. The cited dating papers refer to these initial cultural attributions. Beaumont, however, later re-evaluated the cultural sequence and proposed instead a succession of a MSA with Howieson's Poort affinities, Robberg-like, Intermediate and Oakhurst (Albany) industries (Beaumont 1981). Klein (1984: 109) refers to the same sequence:

**TABLE 3.** Radiocarbon dates available for Heuningneskrans (calibration OxCal 4.3.2 SHCal 13: Bronk Ramsey 2017). The Pta-233 sample in SpU 3 provided an age of  $11.220 \pm 140$  BP. It comes from a secondary carbonate formation and we have therefore removed it from this list. Data from: Vogel & Marais 1971; Beaumont & Vogel 1972; Linick 1977; Miller *et al.* 1992; Wadley 1993.

SpU	Square	Depth (cm)	Sample	Material dated	Age estimate (uncal. BP)	Age estimate (cal. BP)
1a	–	–	–	–	–	–
1b (upper)	A10	23–53	Lj-3199	Mollusc shell	$8880 \pm 100$	10 195–9598
1b (lower)	A8	45–68	Pta-112	Charred bone	$7200 \pm 70$	8160–7847
2a	A10	75–113	Pta-099	Charcoal	$9780 \pm 85$	11 309–10 775
2a	A11	69–122	Lj-3198	Mollusc shell	$9230 \pm 100$	10 650–10 188
2a	–	69–122	AA-6649	Ostrich eggshell	$9675 \pm 75$	11 200–10 745
2a	–	69–122	AA-8563	Ostrich eggshell	$9935 \pm 75$	11 690–11 185
2b	–	–	–	–	–	–
3a	A9	143–165	Pta-114	Charred bone	$10 430 \pm 150$	12 669–11 715
3b	A14	221–259	Lj-3150	Shell	$12 260 \pm 110$	14 675–13 775
3b	A12/A13	218–233	Pta-100	Charcoal	$13 100 \pm 110$	15 995–15 275
3b	–	221–259	AA-5829	Ostrich eggshell	$12 030 \pm 130$	14 167–13 495
3b	–	221–259	AA-8564	Ostrich eggshell	$12 405 \pm 90$	14 920–14 070
3c	A12	290–335	Lj-3135	Shell	$19 320 \pm 240$	24 470–23 130
3d	A14	328–351	Lj-3136	Shell	$19 980 \pm 260$	24 690–23 325
3e	A12	404–419	Lj-3137	Mollusc shell	$20 510 \pm 270$	25 366–23 996
3e	–	373–434	AA-6451	Ostrich eggshell	$21 940 \pm 230$	26 711–25 723
3e	A12 ("hearth")	435–442	Pta-101	Charred bone	$24 630 \pm 300$	29 317–27 965
3e	–	373–434	AA-8565	Ostrich eggshell	$24 700 \pm 250$	29 311–28 131
3f	A12	450–488	Lj-3138	Shell	$23 400 \pm 500$	28 571–26580
3h	–	–	–	–	–	–

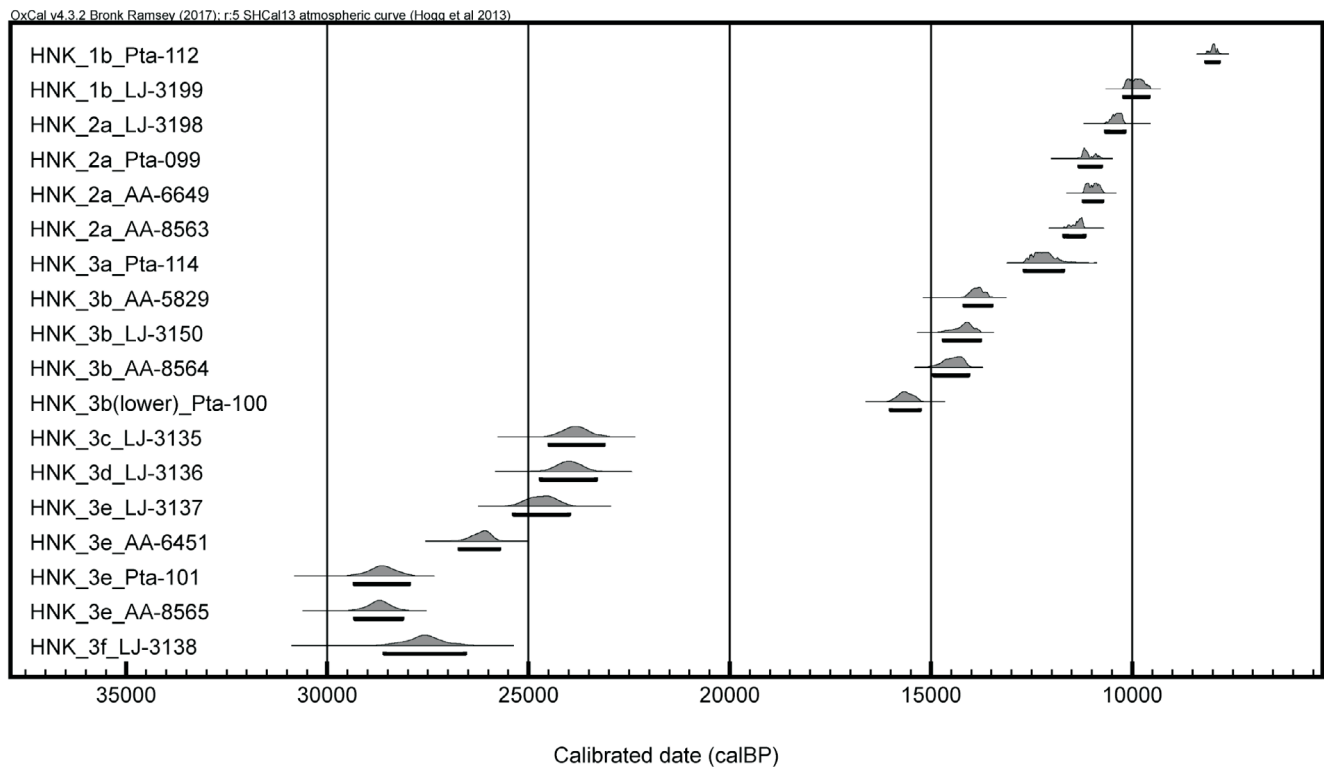


FIG. 4. Calibrated radiocarbon dates for the Heuningneskrans sequence (calibration OxCal 4.3.2 SHCal 13; Bronk Ramsey 2017; atmospheric curve: Hogg et al. 2013).

Beaumont found Early Iron Age potsherds at the very top of the sequence and a few Middle Stone Age flakes among the dolomite blocks near bedrock. He assigned the artefacts in between to three successive LSA industries. The oldest, in layers 3B to 3H, includes bladelets and associated pyramidal cores similar to those found in the Robberg Industry of the southern Cape. [...] The youngest industry, in levels 1A and 1B, contains large scrapers and other flake artefacts that resemble ones now often subsumed in the 'Oakhurst Complex' of Sampson (1974). [...] Between the Robberg-like and Oakhurst Complex industries is a third industry which Beaumont regards as typologically and technically intermediate between them.

Since Beaumont's initial appraisal of the lithic assemblage, no techno-typological study has either confirmed or discussed the chrono-cultural attributions. A short mention by Mitchell (1988, 1995), reiterated by Wadley (1993), recognizes the Robberg occupations, thus identifying HNK as one of the oldest places for this technical manifestation. In their synthesis, Lombard and colleagues (2012) place HNK on their list of ELSA sites, not on their list of sites associated with Robberg and Oakhurst industries. A recent work by Bousman & Brink (2018) includes HNK on their lists of both ELSA and Robberg sites.

## THE 2018 CAMPAIGN AT HNK

### COMPLEMENTARITY WITH BRS

HNK and BRS occupy a similar position on the landscape, although HNK is more open and integrated into the alluvial plain than BRS. Both sites were excavated at the same time but researchers never formally compared the data from the two sites (but see Plug 1981; Klein 1984). These two sites' material records provide a rare opportunity to engage in a discussion on intra- and inter-site variation and territorial organisation.

The BRS sequence is approximately 7 m deep, with a stratigraphy that includes MSA and LSA deposits separated by a

significant sedimentary hiatus. Recent luminescence dating places the end of the MSA within MIS 5 and evaluates the duration of this hiatus to a minimum of 46 000 years before the shelter was occupied again from c. 15 500 cal BP to 10 500 cal BP (Porraz *et al.* 2018). With regard to BRS, the HNK sequence allows us to document the hiatus observed at BRS and to explore its causes on a local scale. Several hypotheses relating to site formation processes and/or human settlements may contribute to explain why these two neighbouring sites present such distinct records. In addition, both sites are finely stratified and characterised by good organic preservation. Besides the cultural information, they offer the possibility to combine several organic proxies to reconstruct past habitats and environmental conditions during the transitional period from the end of the Pleistocene to the onset of the Holocene.

### CONTEXTUALISATION OF BEAUMONT'S EXCAVATIONS AND ARCHAEOLOGICAL COLLECTIONS

The main difficulty encountered in reappraising Beaumont's collections is owing to the scarcity of field documents and the lack of stratigraphic descriptions. Although provenance of the material can be identified thanks to a systematic labelling by squares and by spits, several restrictions still constrain the scientific valorisation of the site. The first issue relates to the relevance of the spits excavated by Beaumont. How the excavation's geometry fits within the general organisation of the deposits and how the SpUs defined *a posteriori* by Beaumont relate to the natural stratigraphy are key questions that need to be clarified. Lastly, site formation processes remain to be investigated in order to integrate the excavated area within the general layout of the site and its immediate landscape.

### THE 2018 CAMPAIGN

We conducted an initial geophysical recording of the shelter using ground-penetrating radar (GPR) to locate Trench

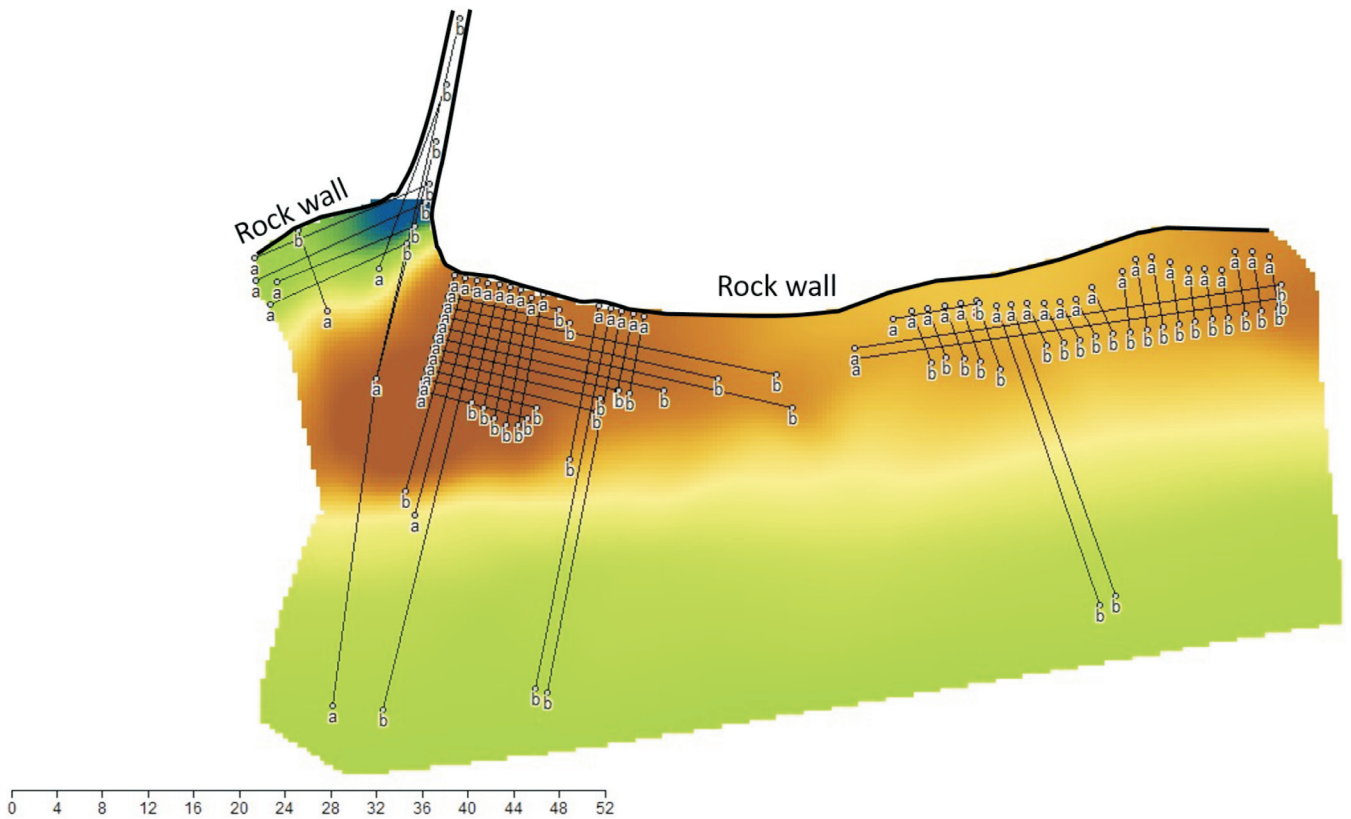


FIG. 5. Location of ground-penetrating radar (GPR) measurements (document courtesy of Aloise Barbieri).

Exc.1, verify the presence of intact sedimentary structures, determine the depth of the bedrock, and assess the distribution of large rock falls and the extent of tufa. We employed a 400 MHz and 200 MHz antenna connected to a TerraSIRch SIR System-3000, and collected 120 GPR measurements along two freely orientated lines (Fig. 5). Results show a limited depth of

reworked deposits before reaching the top of the archaeological sediments, and identify a localised depression at the entrance of the karstic gallery where Trench Exc.1 is located.

In order to clarify Beaumont’s stratigraphy, we exposed the *in situ* deposits (Fig. 6). Our preliminary stratigraphic analysis focused on two main locations: the upper c. 3 m of deposits on

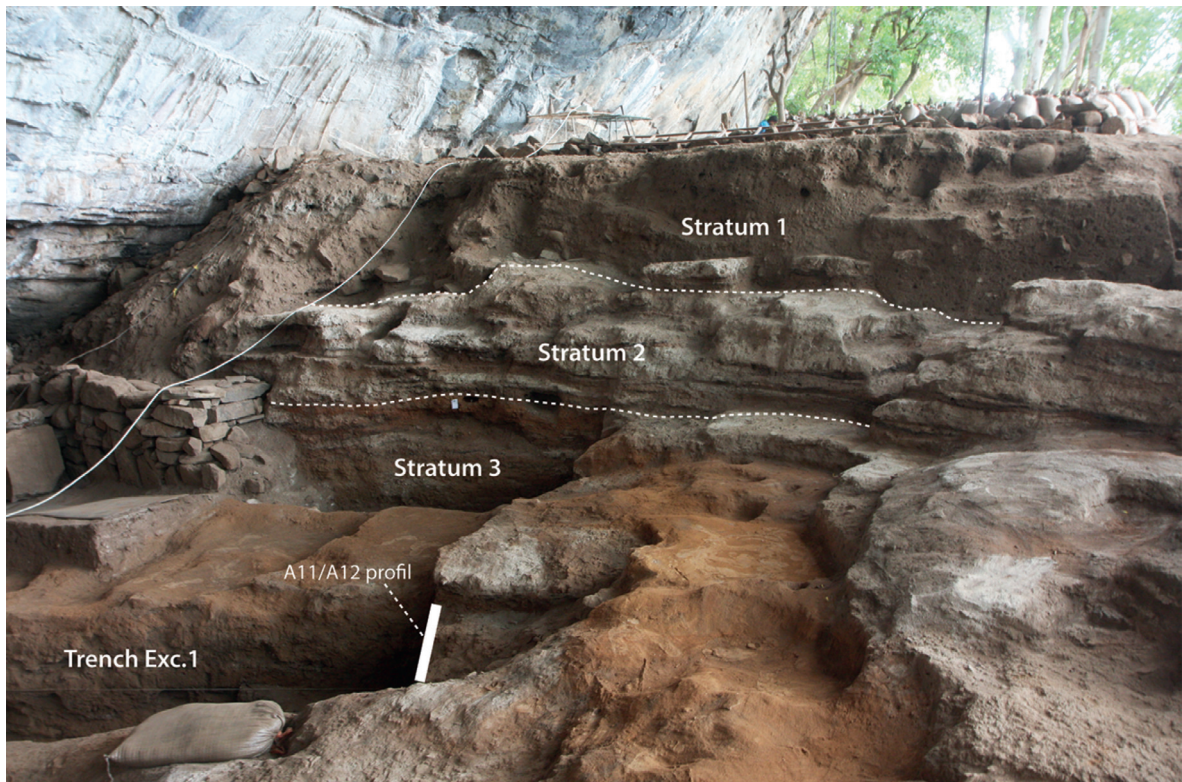


FIG. 6. View of the main profile of Heuningneskrans showing the location of Trench Exc.1 and the presumed limits between Strata 1, 2 and 3 defined by Beaumont.



the southern profile (SpUs 1a to 3b) and the lower 3.35 m of deposits in Trench Exc. 1 (SpUs 3b to 3h). In the opposite section (Fig. 2), there is a large boulder likely post-dating the LGM, as deduced from field observations.

Cleaning the profiles revealed a clear stratigraphy preserving distinct alternating layers, relatively continuous across the exposed areas and with minimal slope. Based on Beaumont’s notes and altitudes, we could identify the limits among his three main strata (Fig. 6). Field observations highlight a seemingly low archaeological material density, which varies across the sequence. The three strata are a combination of different sedimentary dynamics that reflect changes in the site’s expo-

sure and/or in human occupations. In addition to processes such as wall spalling and aeolian contributions, we are inclined to recognise three main dynamics that alternate within the sequence. We suggest the existence of alluvial dynamics notably characterised by the presence of light brown to yellow silts and silty sands; colluvium dynamics associated with soil aggregates of dark red colour; and anthropogenic dynamics marked by the presence of ashy lenses and some possible *in situ* combustion features. A few sedimentary units seem particularly rich in macro-charcoal and other plant remains. These sedimentary processes alternate within Stratum 3 (Fig. 7), although we notice the disappearance of the brown to dark red

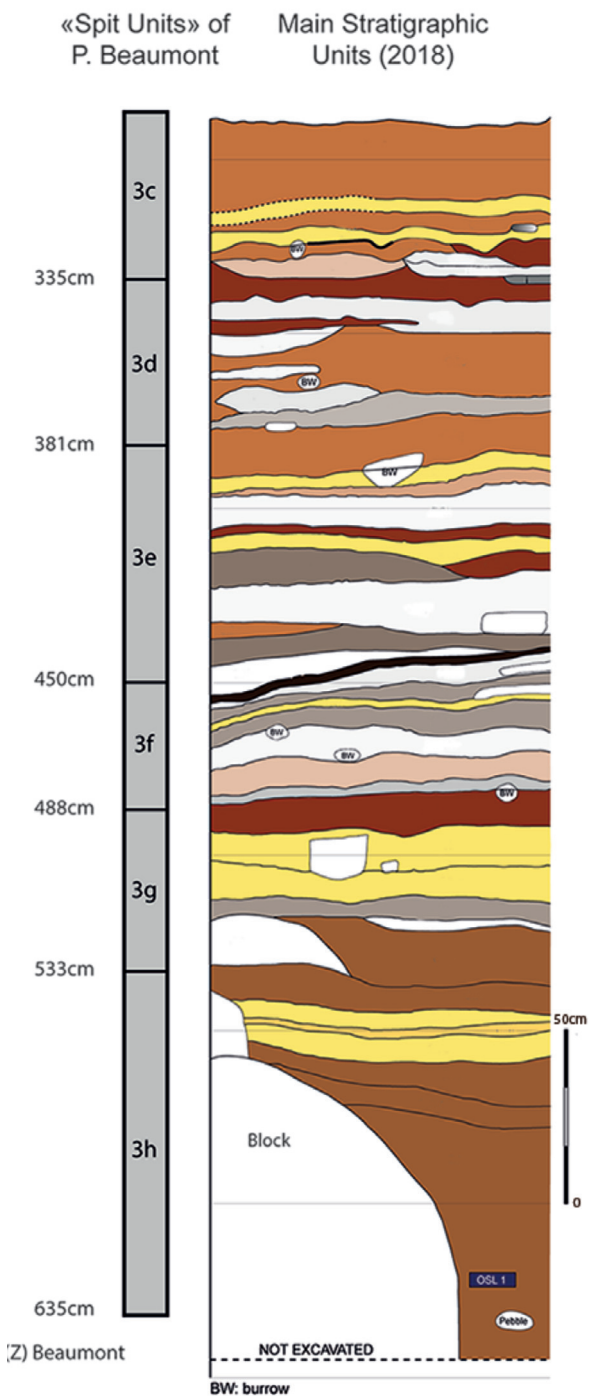


FIG. 7. Lower stratigraphic profile in Trench Exc. 1 at Heuningneskrans.

layers from SpU 3a upwards, which might be concomitant with the infilling of the entrance of the karstic gallery. Similarly, yellow silts assimilated with alluvial sedimentation have not been observed from the most recent deposits, which could indicate a change in the general exposure of the shelter. These preliminary field observations recognise the peculiar setting of HNK, which has been exposed to conditions typical of both open-air environments (insertion within a large alluvial plain), and sheltered environments (insertion within a karstic system). Understanding the implications of these sedimentological variations will be critical in interpreting the general evolution of the plain, and human settlement dynamics in the area.

## CONCLUSION

HNK is an imposing site, with remarkable archaeological potential. Beaumont reached the base of his excavation at a depth of 6.35 m, and estimated the volume of trapped sediments to be about 10 000 m<sup>3</sup>. Our first field campaign has produced several promising results that help in clarifying Beaumont's excavation. First, it allows us to revise some of his stratigraphic observations. Our own field observations question the presence of the bedrock at the base of his trench and postulate the existence of older deposits. Second, the sedimentary sequence of HNK represents a series of extremely well-stratified deposits linked with various geogenic and anthropogenic events. Beaumont's excavation favoured artificial spits that cannot be firmly positioned within the natural stratigraphy, but which do follow the general horizontality of the deposits. Finally, the high resolution of the sedimentary events is combined with good preservation of archaeological remains. Although the site has suffered in the past and still suffers from water infiltration, this does not seem to have significantly affected the stratigraphy and archaeological material. The occurrence of lithic and organic remains across the sequence, combined with the apparent preservation of *in situ* combustion features, should allow us to propose refined reconstructions of palaeoenvironmental conditions, as well as of site occupation modalities during the last 30 millennia.

Past investigations of HNK were limited in scale, despite the obvious potential of the site. Several field questions remain unanswered and justify the development of larger-scale excavations at the site. Such questions relate to the nature of human activities and their spatial organisation, as well as to the relationship between sedimentary processes and the local environment.

The HNK sequence constitutes a rare opportunity to document climatic and environmental changes characteristic of the LGM and the Pleistocene to Holocene transition, as well as the human behavioural adaptations in response to these changes, on the regional scale of the eastern side of the Great Escarpment in southern Africa. Together with BRS, HNK also provides the opportunity to build a local chrono-cultural sequence and to connect those sequences with northern sites (e.g. in the Matopos in Zimbabwe), as well as with eastern sites from the Mozambican plain. Finally, the Blyde River Catchment is positioned at the interface of distinct ecological zones and key geographic features, and on the margin of sites that are instrumental for understanding the early stages of the LSA, notably Border Cave (Beaumont 1978).

## ACKNOWLEDGEMENTS

We are greatly indebted to David Morris for his support from the beginning of this project, and for facilitating access to Beaumont's collections. We would like to thank the Evolution-

ary Studies Institute for curatorial space and field equipment. Our acknowledgements go to Bernhard Zipfel, Bruce Rubidge, and Marion Bamford at that institution. We thank SAHRA for the excavation permit. We are extremely grateful to Sakkie and Marnus van der Wal, previous and current owners of the HNK farm, for allowing us to access the site and their support of the research project. The HNK project is part of the BRS project funded by the Ministère de l'Europe et des Affaires Étrangères in France and has also been supported by the French Institute in South Africa. We acknowledge the support of the Lydenburg Museum and specifically the curator, Jean-Pierre Celliers, for his valuable assistance. We thank all colleagues and specialists who assisted us in the field, especially Alvise Barbieri who conducted the GPR investigation at the site, and Léa Feyfant for the radiocarbon dates calibration. Finally, we would like to thank two anonymous reviewers for valuable comments on an earlier version of the manuscript.

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