APPLICATION FOR AN EXCAVATION PERMIT AT BUSHMAN ROCK SHELTER, LIMPOPO

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SCIENTIFIC BACKGROUND

Researches on the Middle Stone age (MSA) focus on the moment, places and mechanisms behind the appearance of the so-called “behavioral modernity”. The scientific debate is intense and fuels a rich literature (e.g. Conard, 2008 ; d’Errico, 2003 ; Marean et Henshilwood, 2003 ; McBrearty et Brooks, 2000 ; Mellars, 2006 ; Porraz et al., 2013 ; Wadley, 2001). Within this panorama, discoveries in South Africa have been among the most spectacular, showing the precocity of some innovative traits (e.g. Henshilwood et al., 2004 ; Porraz, 2010 ; Texier et al., 2010).

Among recent contributions, we have to mention those based on recent excavations at Diepkloof Rock Shelter, on the West Coast of South Africa. The excavation at Diepkloof, with a ca. 3 m deep sequence, has revealed the existence of several key innovations preceding 60 ka BP, as illustrated for example by the rich collection of engraved ostrich eggshells published in 2010 in Proceedings of the National Academic of Science (Texier et al., 2010). Our multidisciplinary study has culminated in a special issue of Journal of Archaeological Science (2013), regrouping 13 original papers. This special issue has been concluded by a synthesis (Porraz et al., 2013) that offers an alternative to the current interpretative models. Indeed, we hypothesize a technological and cultural evolution that has not been homogeneous and synchronous within the Southern Africa MSA, but segmented and arrhythmic (contra: Mellars 2006, Jacobs et al., 2008 ; Lombard et al., 2012).

The next scientific step of our project is to test our “regional” hypothesis by considering new and long archaeological sequences, together with a good understanding of the stratigraphy and a reliable chronology. In this perspective, we propose to excavate Bushman Rock Shelter (BRS, Limpopo), located some 1 500 km east of Diepkloof. Excavations at BRS have been conducted during the 70’s and have exposed a >7m thick sequence with a rich mineral and organic preservation. But the lack of field notes (not located), the rarity of publications and the absence of dating make impossible to study the old collections within new field operations. We propose to excavate a narrow band on the West profile of the site, to clarify the stratigraphy and get new dating and samples.

DESCRIPTION OF THE SITE

Note: The field diary of Eloff is not anymore located, meaning that all observations and statements above are based on publications, more specifically on those of I. Plug (1978, 1981, 1982) and Badenhorst and Plug (2012).

BRS is located in the district of Ohrigstad, Limpopo, South Africa, north of the Drakensberg range. It is an inland site on the interface between the grassland Highveld and the subtropical Lowveld, along the escarpment. BRS faces south at an altitude of about 900 meters above sea level. The shelter, a remnant of a large cavern, opens in the Malmani dolomites of the Transvaal Supergroup. The floor of the shelter has a maximum width of about 50m and a breadth of about 19 m. A museum, called "the Museum of Man", has been created directly on the site.

HISTORY OF THE SITE

Before excavation, the shelter served as a tobacco barn and goat pen. A first hole was dug at the entrance to the shelter to supply stone for the tobacco shed wall. Some deposits adjacent to this hole were later removed as infill for the road leading to Echo Cave. Two smaller holes were also dug at the rear of the shelter, probably at the same time.

The first excavations at the site were carried out by Louw during the 60's (Louw, 1969), in the deepest part of the shelter. The site was excavated in arbitrary levels of ca. 3 inches (ca. 7.5cm) and in squares of 5 x 5 feet (UK feet). Louw never reached bedrock and stopped the excavation at the layer 43, at ca. 240 cm deep.

The second and main excavation at the site was leaded by J.F. Eloff. Badenhorst and Plug (2012: 17): "Between 1967 and 1975, J.F. Eloff (University of Pretoria) directed new excavations at BRS. Eloff opened new squares adjacent to that of Louw, continuing the excavation in 5 x 5 m foot squares. This system was continued until Eloff reached the same depth as the deepest level of the Louw excavation. The squares excavated by the University of Pretoria were A6, B6, C6 and C8. From level 27 (same depth as the lowest level of Louw), 3 squares (A7, B7 and C7) were added. By then, the excavation was well over 2 meters deep, reaching below the deepest level reached by Louw. Subsequently, the excavation has to stepped-in to prevent cave-ins. Eloff followed the natural stratigraphy of the deposit which was clearly visible as colour changes, charcoals and ash lenses. Eloff decided to switch from Louw's imperial to a metric system at the base of level 28. With further in-stepping, a new grid system was followed, consisting of 1 x 1 m^2. Excavation of these squares continued until level 36, when the excavation had to be stepped-in again. The resulting squares did not correspond well with those of the upper units and

they were named J1, J2, J3 K1, K2 and K3. After this, the excavation continued as a test trench of unknown size. Close to the base of excavation, the Test Trench was narrowed down to 1 x 2 m. At level 105, the excavation reached a depth of between 7 and 8 meters."

The stratigraphic sequence as described by Eloff does not correlate well with Louw's excavation, meaning that the levels from the 2 excavations are not directly comparable. However I. Plug (1981) succeeded to correlate some levels with reasonable accuracy. The correlation between the Louw and Eloff excavations was possible to some extent by measuring the depth of the levels and comparing them to the approximate spit depths of the Louw's excavation (Badenhorst and Plug, 2012).

THE STRATIGRAPHY

J.F. Eloff reached a depth of about 7 to 8 meters below the surface, reaching level 105. The excavation at level 105 consists only of a very small, narrow trench ending on a rocky surface. It is uncertain if this rocky surface represents the bedrock of the shelter.

Schematically, the sequence can be subdivided into 2 main sedimentary phases: an upper phase (levels 1-18) dominated by anthropogenic inputs, and a lower phase (levels 19-105) dominated by geogenic inputs. The stratigraphic description below is based on Plug, 1981 (levels 1-18) and Butzer, 1984 (levels 19-105). Butzer based his description on soil samples he studied from Eloff's excavation.

●Level 1-16: consist mainly of unconsolidated loose ash which is generally white, grey or buff coloured. In most levels dark colouration near the back suggests that larger amounts of humus are present, probably the remains of bedding. Between level 14 and 15/16 a clear break in the form of a continuous thin, black deposit was observed, which made level 14 easy to remove from the underlying deposit.

●Level 17: ashy but contains small roof and wall ships which are on the average much smaller and less weathered than those in level 18. Contains large numbers of small roof and wall spalls.

●Level 18: contains mostly larger roof and wall spalls, interspersed with artefacts and ash. Level 18 is divided into at least 2 layers where "breaks" where noticeable between the roof spalls. This indicates that the level was not deposited as a single unit but that it could have been deposited over a long period. Level 18 contains large quantities of roof and wall spalls, often quite weathered.

●Levels 19-20 (155-174 cm): coarse angular roof rubble is present, a clear indication of frost spalling. The soil is partly decalcified, and rests on a brown rubble-free lens.

●Levels 21-30 (174-294 cm): partly calcified, distinct rubble horizons are present at 190, 235 and 260 cm, with gypsum crystals at 195 and 220 cm.

●Levels 31-37A (294-350 cm): frost-weathered rubble is present, in three major rubble horizons, partly decalcified. Gypsum crystals occur at 310 cm.

●Levels 38-71 (350- >480 cm): no rubble is present, but a calcified zone occurs at 395-405 cm.

●Levels 72-105 had no samples available for study.

THE CULTURAL SEQUENCE

There are in the cave a few monochrome paintings in red and black in very poor condition. One red painting of an antelope has been the only painting sufficiently clear to be recognized by Louw (1969). A row of black marks appeared to be the remains of a painting of a procession.

There are also many grooves visible on the shelter, about 5000 of them and all except 2 are vertically oriented (Plug, 1981). These appear to have been made by the sharpening of metal blades or spears, in Iron Age times.

The excavation at BRS has exposed a rich amount of mineral (lithics, ochre) and organic (fauna, microfauna, charcoals, seeds) remains. Interestingly, organic pieces are preserved all along the sequence. To date, no catalogue of the archaeological collections is available. Badenhorst and Plug (2012) mention a collection of fauna with more than 65 000 pieces. There are also thousands of lithic pieces. While no archaeological sterile layer has been reported, various densities of archaeological finds have been noticed throughout the BRS sequence.

The lithic collection is composed dominantly of Hornfels and quartz, but quartzite and chert are also recorded. The fauna collection is composed of a range of mammals, birds, reptiles, amphibians, fish as well as molluscs. Botanical remains include marula kernels and a buffalo thorn (Ziziphus mucrotana), seedshell fragment, as well as many charcoals.

Detailed cultural analyses at the site have only been undertaken on material from levels 1-18 (Plug, 1981). Therefore, chrono-cultural descriptions have to be considered with caution. Schematically, the sequence can be subdivided into 2 main chrono-cultural phases with an Upper Phase (levels 1 – 18)

being Later Stone Age, and a lower phase (level 19-105) being Middle Stone Age. These 2 chronocultural phases match the sedimentary phases described above.

Within the LSA phase (Plug, 1981, 1982), there is a change in artefacts density noticed for levels 6-14, being noticeable poorer in stone artefacts. The paucity of formal stone tools in levels 6-14 is said to be compensated for by the presence of bone tools. A total of 87 bone tools were recovered from the upper 18 levels, of which more than half were from 6-14. These bone tools, detailed in Plug 1982, consists dominantly of percussion flaked tools and are said to bear great resemblance to stone artefacts such as scraper, burin and scaled pieces.

No backed tools are recorded in levels 14-6 while a few microliths, including segments, occur from level 5 to 1. The base of the LSA, levels 15 to 18, represents a period about which some confusion exists. There are MSA tools mixed with LSA tools. But it is not clear whether this mixing relates to excavation problems or to LSA disturbances, as suggested by Mason (1969). The description published for the level 18 ("Level 18 is divided into at least 2 layers where "breaks" where noticeable between the roof spalls") might indicate some stratigraphic issues.

According to I. Plug (1981): "The LSA of BRS is more or less contemporary with the Albany of the southern Cape (Deacon 76) and the Pomongwe of Zimbabwe (Cooke 1966). Sampson (72, 74) places the BRS assemblage within the Lockshoek industry as part of the Oakhurst complex. Mason (69) and Eloff (69) both regard the LSA of BRS as part of the Transvaal Smithfield. The present analysis do not quite fit the original Smithfield typology. BRS has very few of the typical Smithfield A (Oakhurst complex), B or C tool assemblage. The industry belongs to the Late Pleistocene/early Holocene and may be referred to for the present as the Bushman Rock phase of the Transvaal LSA". But as noticed by Mitchell (1988), we confirm the existence of a Robberg lamellar industry at the base of the LSA deposits, though there is some mixing with MSA stone tools.

Within the deposits, a total of 112 complete beads were recovered and additional 145 beads were found in association with a baby skeleton. An infant hominid mandible, between 6 to 8 months of age, has been found in 1969 by a tourist guide, a Mr van Zyl. The mandible was protruding partially from the wall of the excavation apparently between layers 14 and 18. The "non-fossilized" fresh appearance of this mandible made specialists doubt its association with a stratigraphic location between layers 14 to 18 (see Protsch and de Villiers, 1974).

Regarding the MSA, only a few and preliminary studies have been undertaken. Volman (1984) made a study of the lithic from BRS, on the base of Eloff's collection. He tentatively identified MSA 1 in the lower portions of levels 31-107, MSA 2 in levels 19-30 and the upper portions of levels 31-107, as well as MSA3 lithic artefacts in levels 15-18. A more recent study of D. Underhill (2012) has been undertaken on the lower layers of BRS, within a comparative work with Cave of Hearths.

BRS is well-known in South Africa as it is one of the few MSA sites that have revealed the presence of bone tools, human remains and shell beads. Badenhorst and Plug (2012) report the presence of a bone scraper from level 29ii and mention the existence of a bone tool in level 25 (Sq. C8), oval in shape with polish along the edge. The human specimen consists of a right cuboid fragment from level 28(a) in square A/B7, as well as another cuboid fragment from level 29(1) in square J1. Finally, while most of broken and complete beads in all stage of manufacture were recovered from levels 1 to 17 (LSA), a few were also reported from levels 21 and 28. "The ostrich eggshells beads from BRS are from levels we suggest date to between 53 000 and 60 000 years of age. Admittedly by association, this makes it the oldest occurrence of ostrich eggshell beads ever found in southern Africa". (B&P: 26).

Regarding the absolute chronology, only radiocarbon dates have been undertaken. For the upper part of the sequence, there is a discrepancy between the radiocarbon dates of Protsch and De Villiers (1974) obtained from the University of California (USA), and those done by Vogel (1969, also Plug 1978) which were done at Groningen. "When UCLA and Gröningen dates are compared, the seeming discrepancy between dates can be explained in several ways: (…) contamination or disturbance. Knowing the painstaking research at the Gröningen laboratory, it is far more likely that stratigraphic anomalies exist between the different excavations locations dated by UCLA and Gröningen". (Protch and de Villiers, 1974). As a result, the dates by Vogel are regarded as the more reliable of the two sets. Subsequent research (Abell and Plug, 2000) confirmed some of the dates processed by vogel. A study on oxygen isotope ratios in shells from the giant African land snails (Achatina sp.) from BRS indicates the Younger Dryas event, which correlates well with the dates by Vogel of the Terminal and early Holocene.

For the MSA, the oldest radiocarbon date is 53 000 BP for level 38, but level 41 has been dated to 47 500 BP, indicating a reversion. These 2 dates are however beyond the range admittedly accepted for radiocarbon dates and should be considered with caution. Some interesting hypotheses have been developed by Badenhorst and Plug (2012) based on their study of Marula kernels: "Marula trees are indicative of bushveld (savanna and trees) and woodland environment. They occur in frost-free regions, typically with sandy soils. At BRS, marula kernels were common in LSA and present in MSA levels 21-30. The presence of carbonized kernels might indicate they are not intrusive. So interestingly, no marulas were found in younger and older MSA levels, which we suggest coincide with 2 periods of lower temperature in SA. The younger levels (19-20) we suggest are LGM and the older (31-37) during MIS 4, also a colder time period. Their presence in levels 22-30 may indicate that climatic conditions between 53 000 and 60 000 BP were similar to those of today".

PLANNED ACTIONS AND STRATEGY OF EXCAVATION

The project relies on short and medium-term objectives and declines 3 main steps:

1) The LSA occupations and the LSA/MSA succession at Bushman Rock Shelter (levels 1-19): the objective is to get a full cultural and paleoenvironmental understanding of the Late Pleistocene to Holocene succession at the site, and to newly document the MSA/LSA sedimentary contact at BRS, including a new set of C14 dating. The 3 first year of excavations will specifically focus on this question.

2) The upper MSA occupations (level 20-37): the objective is to contextualize some of the discoveries said to be associated with the MSA (bone tools, human remains, shell beads), to get an absolute chronology and a first technological characterization. Our preliminary study indicates that some technological horizons do not find equivalency within the present literature.

3) The lower MSA occupations (level 38 - 105): the objective is to discuss the classification of Volman (the MSA 1, the MSA 2) and to fuel our understanding of the nature of the southern African Early MSA.

We can resume the goals of the new excavation in 3 main points:

1) The first motivation is to clarify the stratigraphy at the site and to document the site formation processes. That includes micro-morphological sampling.

2) The second motivation is to get an absolute chronology for the deposits at BRS. Different methods will be applied, including radiocarbon and luminescence dates (OSL and TL).

3) The third perspective is to enrich the archaeological sample, to secure its context and its representativeness (strategies of sieving and sorting) and to pilot an interdisciplinary group of research (involving notably researchers from Wits university, Tuebingen university and the CNRS).

The field research will be done according to the following plan:

The first operation at the site will consist to clean and sieved the collapsed deposits. Considering the actual context of the excavated zone, we will need to install a scaffolding to access the deposits and secure the excavation. The plan is to keep the scaffolding on the site from year to year, until the end of the excavation.

Our perspective is to focus our field work on the West Section of Eloff's excavation. For the first year, we will clean the profile, draw the stratigraphy and correlate our field observations with the stratigraphy of Eloff. By the same time, we plan to engage a large campaign of archaeological and geological survey in the surrounding of the site. The goals are to document the full spectrum of raw material availabilities, both in primary and secondary contexts, and to get a good understanding of the archaeological heritage in the area. We notably plan to visit the site of Heuningneskrans, located nearby BRS.

For the following years, our strategy is to excavate a narrow band on the West section of Eloff, on a surface that should be of about 50 cm x 5 m. To secure the deposits, we will respect the different steps-in of past excavations. The fieldwork will rigorously respect the modern standards in terms of excavation. We employ a 3D geo-referencing for all archaeological pieces. A total station will be used and each individual artefacts of a dimension superior to 20mm will be piece plotted (x, y, z). Plotted pieces will have their own number of identification and will be kept in their own bags. Moreover, we will record dip and orientation of plotted artefacts to track the degree of disturbance of the deposits, how this varies through time and the site formation processes entailed.

The squares will be excavated by ¼ square meters. Within each stratigraphic unit, the excavation will proceed by spits of 2,5 cm. The sediments of each spit will be kept separately in a bucket where will be recorded all the information relative to their context (the square meter, the sub-square, the stratigraphic unit and the décapage number with its absolute altitude). That will be the minimal information of all the archaeological pieces.

Each bucket will be dry-sieved at 0.3 cm and wet-sieved at 0,1mm, and then sorted at the University of Witwatersrand. All the sieving will be done outside the site, in order to protect the rock paintings from the dust.

Sections will be drawn and various samples will be collected (for micromorphological and palynological studies, as well as for OSL dating). During excavation, photographs and notes will be made on a daily basis. In case of specific features (e.g. hearth), photographs will be automatically completed by drawings.

CLOSURE AND CONSERVATION PLAN OF THE SITE

30 years after the excavation of Eloff, the upper part of the deposit is surprisingly well preserved, and the collapsed zones are only those that were directly in contact with the rock of the shelter. At the closure of the site, we will pay a special attention to the deeper part of the deposits, that we plan to fill up with sand bags.

Regarding the conservation of the site, its access is controlled by people from the museum. There is consequently no risks to see the site damaged by vandalism. Moreover, the excavated zone is closed by a wooden barrier that secures the visits and that will keep visitors at a good distance from our excavation.

We do believe that the success of our operation also rests on our ability to communicate with local communities and to involve them in the renovation and modernization of the museum. Together with the owner of the site and the local authorities, we will diffuse our results and organize visits.

We will rigorously inform the SAHRA of our dates of field excavation and of any discoveries that will be of interest for SAHRA. The results of our excavation will be resumed every year in a report that will be send in time to SAHRA.

TO SUM UP

The south African Stone Age is at the center of many discussions and controversies. This research requires the exploration of long and new archaeological sequences. In this perspective, we propose to re-excavate the LSA and MSA site of Bushman Rock shelter (Limpopo) in order to clarify the stratigraphy and contextualize the old archaeological collections. We will sample for micromorphological analysis and for dating (C14 and OSL) and excavate a narrow band on the West profile of past excavations. For 2014, we plan to clean the sections, to draw the profiles, to sieve the collapsed deposits, to install a scaffolding and to survey the area. The excavation at BRS will not start before 2015.

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▪ 2013 : Co-director of excavation at the open air Upper Paleolithic site « Les Prés de Laure » (Var, France)

▪2012-2002 : Excavation at the MSA site « Diepkloof Rock Shelter » (West Coast, South Africa), direction J.-P. Rigaud (Université Bordeaux) and P.-J. Texier (CNRS)

▪2012-2009 : Co-director of geological and archaeological surveys in the Provence-Alpes-Côte-d'Azur region (Var, Alpes-Maritimes, France)

▪March 2011 : Director of excavation at the MSA/LSA site of « Elands Bay Cave » (West Coast, South Africa)

▪March 2006 : Director of excavation at the Middle Paleolithic site « la grotte des Chauves-Souris » (Var, France)

▪2003-2002 : Excavation at the Open-air Paleolithic site « Monte Doc » (Vénétie, Italy), direction M. Peresani (University of Ferrara)

▪june 2003 : Excavation at Oldowayen/Acheulean sites of « Nayana-Engol » et « Nadung'a », West Turkana Project (Kenya), direction H. Roche (CNRS)

▪July-August 2001 : Excavation of the Middle Paleolithic site of « Umm-el-Tlel » (Syria), direction E. Boëda (Université de Paris X)

▪July 2001 : Excavation at the Middle Paleolithic site of « La Combette » (Vaucluse, France), direction P.-J. Texier (CNRS)

▪1999-2000 : Excavation at the Middle Paleolithic site of « Hermies-le-Tio-Marché » (Nord-Pas-de-Calais, France) direction B. Masson and L. Vallin (CRA Lille)

▪July 1998 : Excavation at the Gallo-roman site of « Cavillargues » (Vaucluse, France), direction H. Petitot (INRAP)

• List of publications

▪(in press) : Porraz G., Texier P.J., Miller C.J. "Le complexe Still Bay et ses modalités d'émergence à l'abri Diepkloof (Afrique du Sud) », Bulletin de la Société Préhistorique Française.

▪(in press) : Porraz G., Igreja, M., Texier P.J.. "Développement sur une discontinuité technique dans la séquence Howiesons Poort de l'abri Diepkloof (Afrique du Sud) », in In : N.J. Conard , A. Delagnes (ed.) Settlement Systems of the Middle Palaeolithic and Middle Stone Age. Settlement Dynamics IV. Kerns Verlag Tübingen.

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▪(2013) : Igreja, M., Porraz, G. . "Functional insights into the innovative Early Howiesons Poort technology at Diepkloof Rock Shelter, Western Cape, South Africa", Journal of Archaeological Science 40: 3475-3491

▪(2013) : Schmidt, P., Porraz, G., Slodczyk, A., Bellot-Gurlet, L., Archer, W., Miller, C.E. "Heat treatment in the South African Middle Stone Age: temperature induced transformations of silcrete and their technological implications", Journal of Archaeological Science 40: 3519-3531

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▪(2013) : Tribolo, C., Mercier, N., Douville, E., Joron, J-L., Reyss, J-L., Rufer, D., Cantin, N., Lefrais, Y., Miller, C.E., Parkington, J., Porraz, G., Rigaud, J-P., Texier, P-J. “OSL and TL dating of the Middle Stone Age sequence of Diepkloof Rock Shelter (Western Cape, South Africa): a clarification”, Journal of Archaeological Science 40: 3401-3411

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▪(2009) : Porraz G. “Middle Paleolithic mobile toolkits in short-term human occupations: two case studies”, Eurasian Prehistory, vol.6 (1-2), p.33-55.

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▪(2013/07) : Porraz, G., Kempson H., Wadley, L. « What is below? The lithic collection of the LBG complex at Sibudu Cave, South Africa », ASAPA, Gaborone, Botswana.

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▪(2013/04) : Conard, N.J., Porraz, G. « What the long stratigraphic sequence at Sibudu Cave tells us about cultural change during the MSA in Southern Africa » Hugo Obermaier Tagung, Vienne, Autriche.

▪(2013/04) : Porraz, G. « Insights into the Middle Stone Age technology at Diepkloof Rock Shelter, South Africa Bay Cave (South Africa) » French Institue Seminars in Humanities, Johannesburg, Afrique du Sud

▪(2012/09) : Schmid, V., Parkington, J., Conard, N.J., Texier, P.J., Porraz, G. « A revision of the southern African «MSA 1» based on new excavations at Elands Bay Cave (South Africa) » Poster presented at the European Society of Human Evolution, 2nd annual meeting, Bordeaux.

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▪(2012/06) : Dayet L., Daniel F., Le Bourdonnec F.X., Porraz G., Texier P.-J. « Vers la reconstruction des stratégies d'approvisionnement en ocre sur le site de Middle Stone Age de Diepkloof Rock Shelter, Afrique du Sud », 3ème Rencontres d'art rupestre, Les Eyzies, France.

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▪(2012/06) : Dayet, L. Texier P.J., Porraz G., Daniel, F. "The Ochre Resource at Diepkloof Rock Shelter in the context of the MSA of Southern Africa", in Diverse cognitive interpretations of the MSA (L Wadley). SAfA Toronto, Canada.

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▪(2010/11) : Texier P.-J., Parkington J., Porraz G., Rigaud J.-P. « Symposium on the MSA sequence of Diepkloof Rock Shelter: a view on the cultural evolution of southern African modern humans”, Safa, Dakar, Sénégal.

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- Porraz G., Texier P.-J., Piboule M., Rigaud J.-P., Poggenpoel C., Tribolo C.“Technological changes at Diepkloof Rock Shelter, South Africa: introduction of a new MSA reference sequence”

- Dayet L., Daniel F., Texier P.-J., Porraz G. “A preliminary characterization of the ochre remains from Diepkloof Rock Shelter, South Africa: an archaeometric perspective”

- Charrié-Duhaut A., Conan J., Cartwright C., Texier P.-J., Porraz G. “Molecular study of an organic residue on a Howiesons Poort backed segment from Diepkloof Rock Shelter, South Africa”

- Texier P.-J., Porraz G., Parkington J., Rigaud J.-P., Poggenpoel C., Tribolo C. “Patterns of symbolic communication during the Howiesons Poort at Diepkloof Rock Shelter, South Africa: the engraved ostrich eggshell collection”

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truncated and backed pieces », Society of African Archaeologists (SAfA), biennal international meeting, Frankfurt, Allemagne.

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▪(2009) : Piboule M., Porraz G. « Examen macroscopique et pétrographique de 4 silcrètes de la province du Western Cape, Afrique du Sud : rapport préliminaire », In : Diepkloof (Western Coast, Afrique du Sud), rapport sur travaux. Direction P.-J. Texier. Ministère des Affaires Etrangères.

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▪(2006) : Porraz G. « La grotte des Chauves-Souris, Châteaudouble, Var », Rapport de sondage, Service Régional de l'Archéologie PACA

• Seminars

▪(2009/12) : Universität Köln, Germany « 60,000 years ago, the technological context of the engraved ostrich eggshells at Diepkloof Rock Shelter (South Africa) » (1h00)

▪(2009/05) : Max Planck Institut, Leipzig, Universität Tübingen, Germany « The Early Upper Palaeolithic in the Mediterranean Arc: raw material transfers & mobility patterns. Scenario, implications and perspectives » (1h00)

▪(2007/10) : University of Cape Town, South Africa « First modern humans occupations in Western Europe and major changes in lithic strategies: the case study of the Observatoire cave (Monaco) » (1h00)

▪(2007/03) : University of Cape Town, South Africa « Linking raw material provisioning to mobility patterns : a case study from a European Mousterian site » (1h00)