Past and present: raw material identification approaches at Umhlatuzana rockshelter, South Africa

Sifogeorgaki, I.; Os, B.J.H van; Fratta, V.; Huisman, D.J.; Dusseldorp, G.L.

Past and Present

Fig. 1 Raw material distribution according to the 1985 (Kaplan 1995) and 2018-2019 (current study, Sifogeorgaki et al. 2020) excavation reports (legend idem Fig. 4)

Raw material identification approaches at Umhlatuzana rockshelter, South Africa

Irini Sifogeorgaki[1], Bertil van Os[2], Viola Fratta[1], Hans Huisman[2,3], Gerrit Dusseldorp[1,4]

Fig. 2. Map highlighting the location of Umhlatuzana rockshelter at KwaZulu Natal, South Africa

INTRODUCTION

Umhlatuzana is an important site documenting technological development over the past 70.000 years. This period is associated with the appearance of sophisticated lithic industries and 'modern behaviour' (Fig. 3). The site was first excavated by Jonathan Kaplan (1990) and is currently re-excavated by a team from Leiden. Kaplan suggested that the lithic assemblage of the Pleistocene deposits consisted mainly of quartz, hornfels, and quartzite (Kaplan 1990, Fig. 1). Renewed excavations were conducted during 2018 and 2019 (Reidsma et al. 2021, Sifogergaki et al. 2020). The raw material types and proportion of the renewed excavations are not in agreement with Kaplan's estimations. Here we present our first results on qualifying and quantifying raw material used at Umhlatuzana rockshelter.

METHODS

We conducted petrographic analysis on 18 micromorphological thin sections and distinguished the raw material types present. We conducted pXRF analysis of the thin section raw material and c. 100 artefacts. This revealed the elemental composition of the different types and allowed linkage of micromorphological and archaeological materials. Micromorphological and pXRF sample preparations are described in Reidsma et al. (2021) and Huisman et al. (2017).

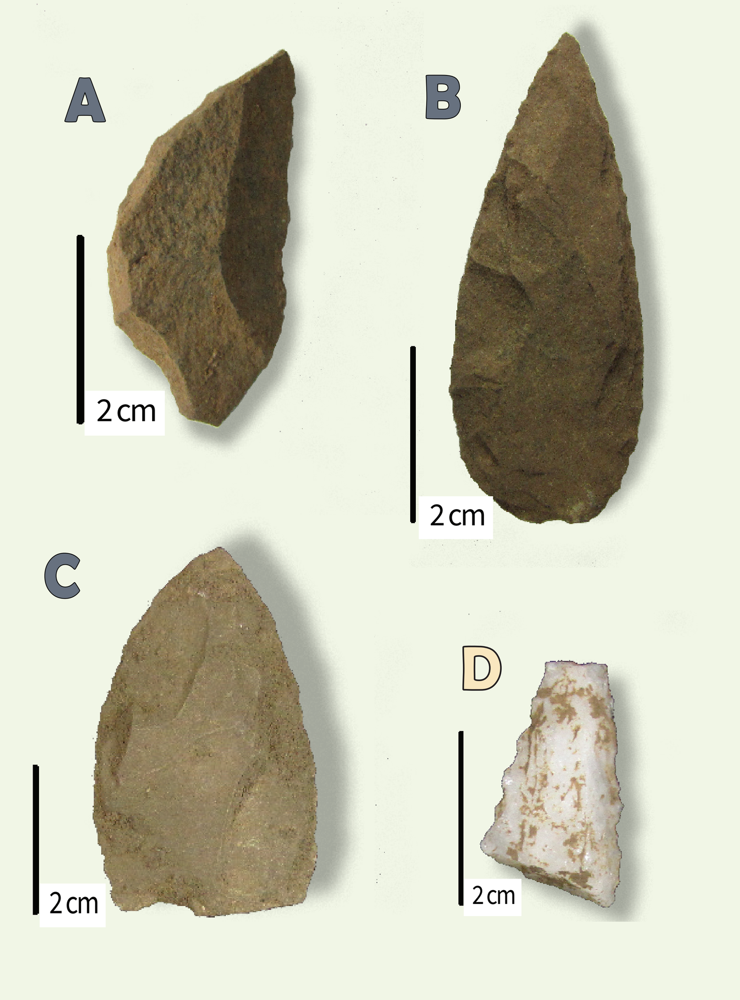

Fig. 3. Raw material distribution according to the 1985 and 2018-2019 excavations KLSJ-FLD SSDFJ SDLKF SKSJWERKJW KFJS D

RESULTS

Thin section analysis reveals **sandstone** (Fig..5 A-B), **quartz** (Fig.5. C), **hornfels** (Fig.5. D-G), **chert** (Fig.5. H-I), and **diorite** (Fig.5. J-K) raw materials.

There are pronounced **differences** on the raw material distribution between Kaplan and the current study (Fig. 1). **Quartzite** fragments were not detected.

The pXRF results indicate that we can **differentiate** between different types of raw materials of Umhlatuzana rockshelter based on the **signal** of specific elements (Fig. 4).

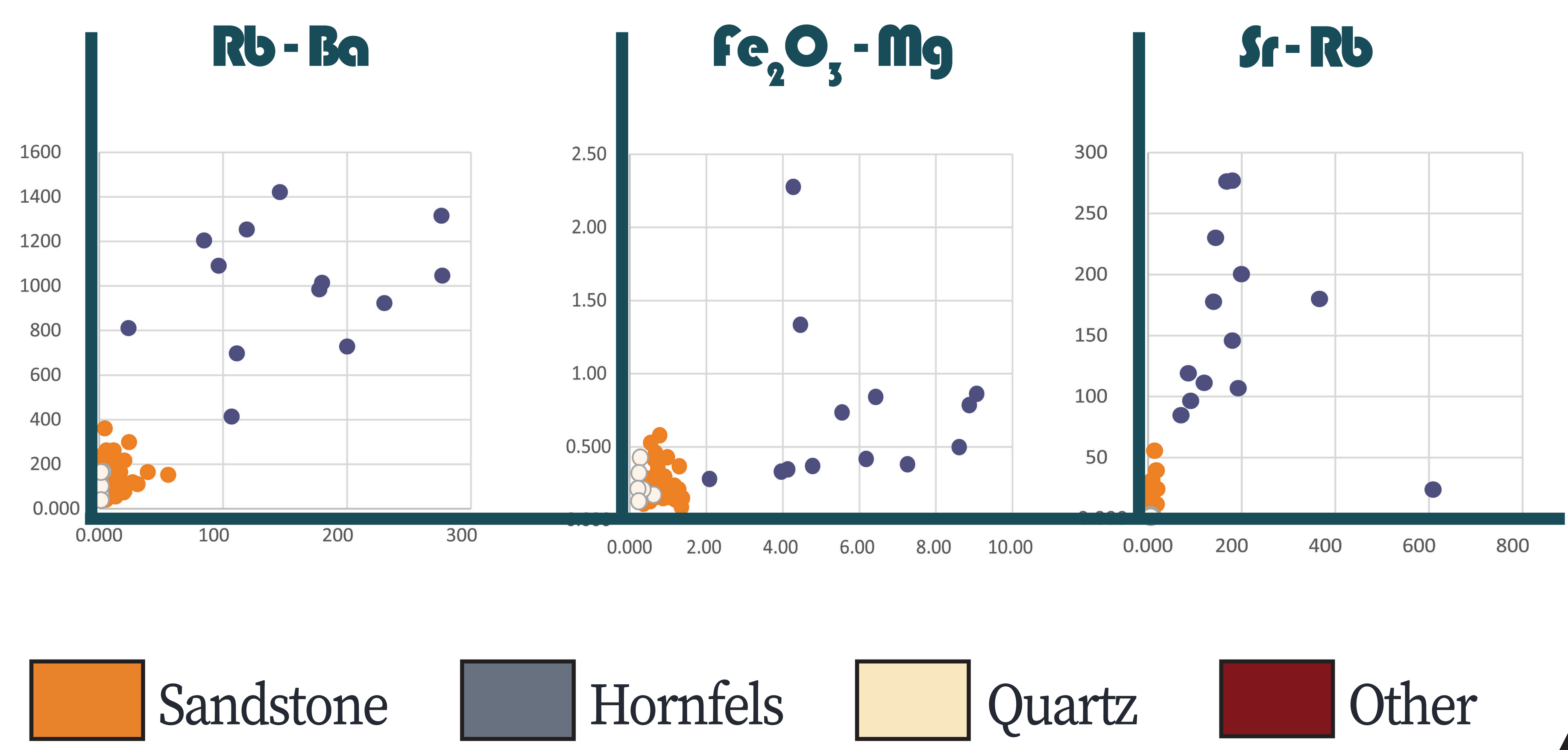

Fig. 4 Raw material distribution according to the 1985 and 2018-2019 excavations

CONCLUSION

The visual determination reliability of archaeological raw materials is increased greatly by applying geoarchaeological techniques. This represents a necessary first step before behavioural questions on raw material selection and sourcing can be reliably addressed.

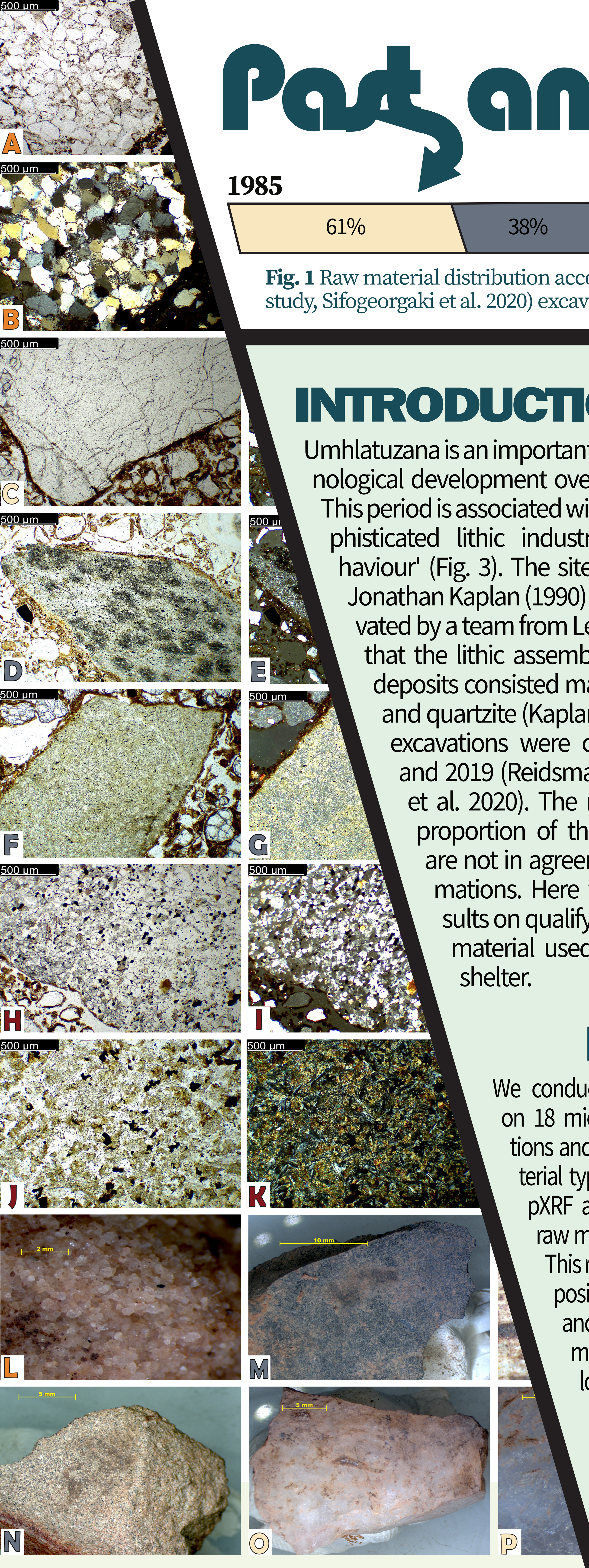

Fig. 5: A-K: Micrographs of the main raw material types:
A, B. Sandstone (PPL, XPL); C. Quartz (XPL); D, E, F, G. Hornfels (PPL, XPL, PPL, XPL); H, I. Chert (PPL, XPL); J, K. Diorite (PPL, XPL)
L-P: Textural vew of the main materials by stereo microscope:
L. Sandstone; M, N. Hornfels; O, P. Quartz

ACKNOWLEDGEMENTS

We thank V. van den Brink, V. Madinani, F. Reidsma, J. Dekker, G. Halewijn, C. Thornhill, A. Sokela, and L. van Schalkwyk for assistance in the field. We are grateful to the KwaZulu-Natal Museum, Department of Human Sciences, G. Blundell, G. Laue Phumulani Madonda, M. Munzhedzi, D. Tlhoalele, and G. Whitelaw who supported our excavations. We gratefully acknowledge AMAFA aKwaZulu-Natali, SAHRA, B. Pawandiwa, and S. Uys for issuing the requisite permits. The research is funded by an NWO Vidi grant awarded to G. Dusseldorp.

Universiteit Leiden

Cultural Heritage Agency
Ministry of Education, Culture and Science

KwaZulu-Natal

NWO

University of Johannesburg

Kaplan, J., 1990. The Umhlatuzana Rock Shelter sequence: 100 000 years of Stone Age history. Natal Museum Journal of Humanities. 2, 1–94.

Huisman, D. J., van der Laan, J., Davies, G. R., van Os, B., Roymans, N., Fermin, B., Karwowski, M., 2017. Purple haze: Combined geochemical and Pb-Sr isotope constraints on colourants in Celtic glass. Journal of Archaeological Science. 81, 59-78.

Sifogeorgaki, I., Klinkenberg, V., Esteban, I., Murungi, M., Carr, A. S., Van den Brink, V. B., Dusseldorp, G. L., 2020. New Excavations at Umhlatuzana Rockshelter, KwaZulu-Natal, South Africa: A Stratigraphic and Taphonomic Evaluation. The African Archaeological Review. 37(4), 551.

Reidsma, F., Sifogeorgaki, I., Dinckal, A., Huisman, H., Sier, M., van Os, B., Dusseldorp, G., 2021. Making the invisible stratigraphy visible: a grid-based, multi-proxy geoarchaeological study of Umhlatuzana rockshelter, South Africa. Frontiers in Earth Science.

AFFILIATIONS

[1]Faculty of Archaeology, Leiden University, NL
[2]Cultural Heritage Agency of Netherlands, NL
[3]University of Groningen, NL
[4]Palaeo-Research Institute, Faculty of Humanities, University of Johannesburg, SA