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

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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).

Past and Present

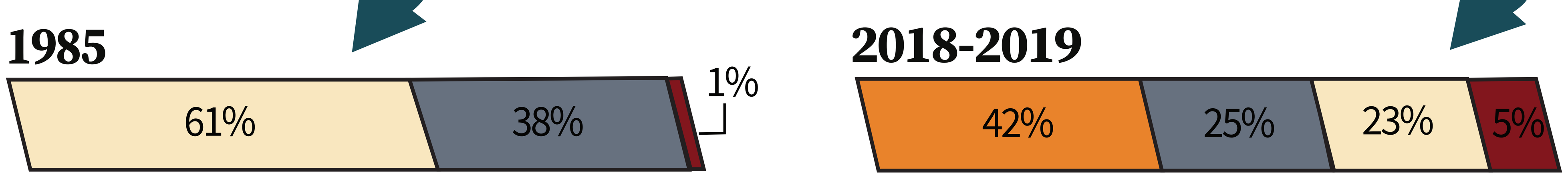

Fig. 2. Map highlighting the location of Umhlatuzana rockshelter at KwaZulu Natal, South Africa.

Raw material identification approaches at Umhlatuzana rockshelter, South Africa

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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) who suggested that the lithic assemblage of the Pleistocene deposits consisted mainly of quartz, hornfels, and quartzite (Kaplan 1990, Fig. 1). Renewed excavations were conducted by a team from Leiden 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 carried out pXRF analysis of the thin section raw material and of c. 100 artefacts. This revealed the elemental composition of the different types and allowed linkage of micromorphological and archaeological materials. Sample preparation methodologies are described in Reidsma et al. (2021) and Huisman et al. (2017).

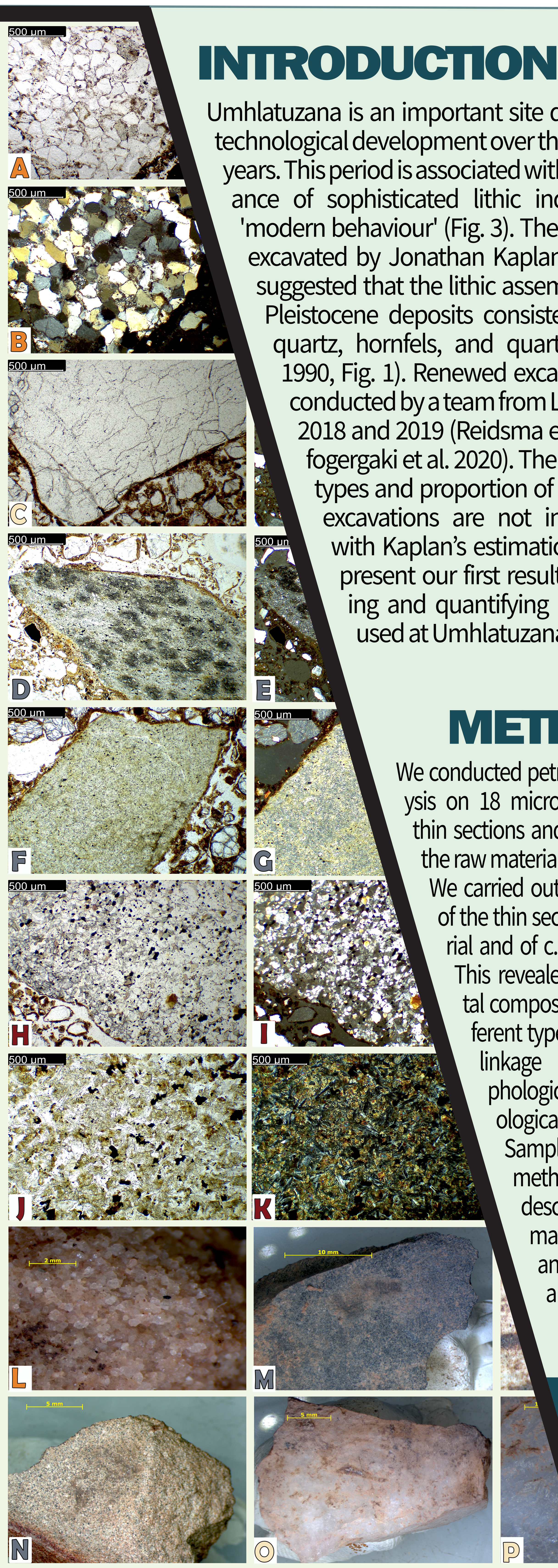

Fig. 5: A-K: Micrographs of the main raw material types: A, B. Sandstone (PPL, XPL); C. Quartz (XPL); D, E, F, G. Hornfels (PPL, XPL, PPL, XPL); H, I. Chert (PPL, XPL); J, K. Dolerite (PPL, XPL)
L-P: Textural vew of the main materials by stereo microscope: L. Sandstone; M, N. Hornfels; O, P. Quartz

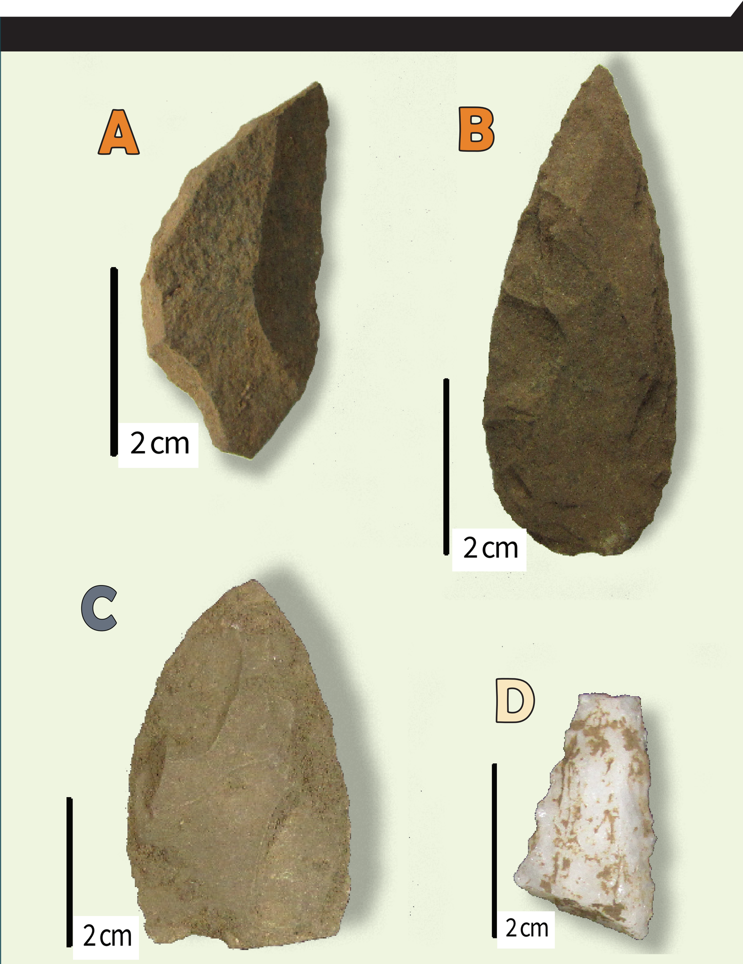

Fig. 3. Middle Stone Age artefacts from Umhlatuzana:. A. Backed segment; B, C. Unifacial points; D. Fragment of bifacial point.

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 **dolerite** (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 (Fig. 4). Categorization of lithics that cannot be visually identified will be supplemented with pXRF.

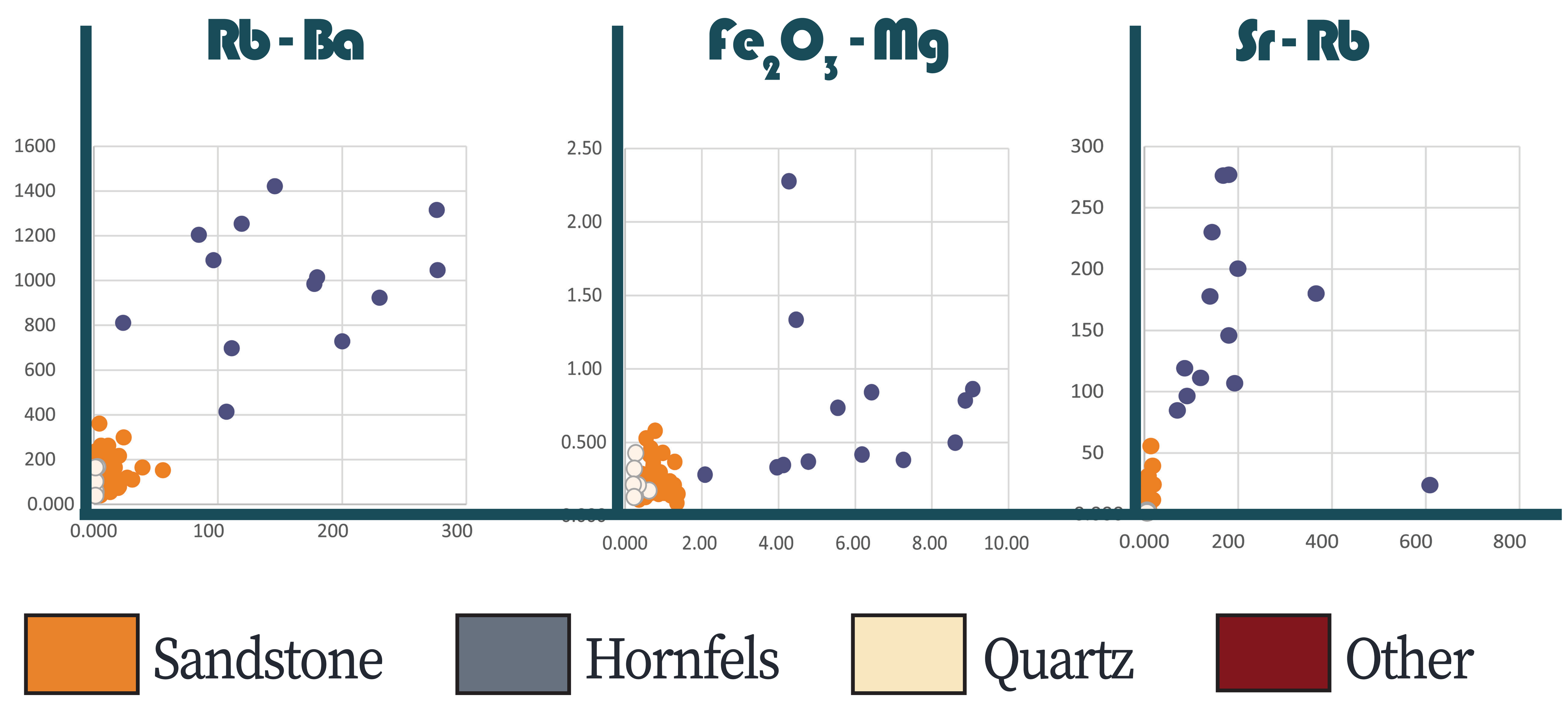

Fig. 4 pXRF correlation plots: A. Rb-Ba; B. Fe_2O_3-MgO; C: Sr-Rb.

CONCLUSION

The reliability of visual classification of lithic raw materials is increased by the application of geoarchaeological techniques. This represents a necessary first step before behavioural questions on raw material selection and sourcing can be reliably addressed.

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