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Landscape archaeology of the Kalahari: the impact of major hydrological shifts on Late Quaternary Stone Age mobility and landscape use

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Interior southern Africa represents a significant knowledge gap in African Stone Age archaeology, yet the region possesses a wealth of under-investigated archaeological sites in areas that have undergone major late Quaternary landscape and climatic changes. This interdisciplinary project, funded by the Leverhulme Trust, is undertaking the first systematic analysis of the extensive Stone Age archaeology of the Middle Kalahari, Botswana, framed around the question of how Late Quaternary hydrological changes, relating to the waxing and waning of the 90,000km2 palaeolake Makgadikgadi, affected human mobility, use of lithic raw material resources, and the distribution of archaeological sites in the landscape. Outcomes will have implications for wider theories about early human interactions with changing environments.

Research has four dimensions: characterising and classifying the lithic industries of the region; geochemically identifying the source locations of lithic material; generating new Late Quaternary palaeohydrological data and providing the first chronological framework for human occupation of the basin. Fieldwork in 2016 and 2017 included: mapping of 38 archaeological sites and 44 scatters and minor sites (mainly MSA, also LSA and Pastoralist) on the floor and perimeter of Ntwetwe Pan, the western part of the Makgadikgadi system; excavation of six sites using décapage methodology; sedimentological and landform mapping and sampling in the basin at archaeological sites and beyond, including sampling for chronometric (OSL, 14C), geochemical and bio-proxy analyses; and mapping and sampling of over 300 silcrete outcrops throughout the basin system to allow geochemical provenancing of lithic source areas. Together, these methods provide an unprecedented approach to reconstructing MSA interactions with, and movement in, a hydrologically dynamic environment.

Preliminary findings indicate that the Makgadikgadi basin was used extensively during lowstands/seasonally dry times during the MSA. Occupation sites have been preserved through burial during lake highstands and subsequent deflational exposure. Raw materials are dominated by black silcrete that has arrived from source areas within the basin, often many tens of km distant, in different stages of preparation and from different sources. While the degree of post-depositional artefact disturbance varies from site to site, chaîne opératoire analyses show that some sites are surprisingly well preserved. In these cases flakes and tools have been refitted to cores over distances of a few metres, allowing the documentation of technological approaches and knapping sequences, with further reconstruction of site specific behaviour patterns. Overall, the Makgadikgadi MSA lithic technology has greater affinities to areas to the north and east rather than South Africa, suggesting that hydrological networks, which connect the basin to more tropical source regions, have played a key role in societal dynamics in the late Quaternary.