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# Refitting NMO: Ad-hoc Late Middle-Paleolithic knapping in hunting locality and its significance to Middle-Paleolithic lithic variability

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## Abstract

The site of Nahal Mahanayem Outlet (NMO) is a short-term, task specific hunting locality located on the east bank of the Upper Jordan River. The site is OSL dated to c. 60000 years BP. NMO yielded a uniquely small, yet highly significant, lithic assemblage in mint preservation conditions, dominant by pointed elements and cutting elements. Importantly, few on site reduction sequences could be refitted, allowing us good understanding of the on-site knapping as well as flint economy. The flint assemblage offers rare glimpse into the tool kit and its technological preferences used by the Late Middle-Paleolithic (LMP) hunters in the Levant. Claims for an increase of stone tools technological variability in the Levantine LMP (~50-70k years ago) are long debated. recent study indicate that such variability can be observed not only within the Levallois method production sequences, but also evident from increase of non-Levallois knapping methods in the LMP assemblages, for example the number of single-platform cores for flake and blade production. The refitted sequences from NMO indicate the application of non-Levallois, ad-hoc knapping methods, aiming to achieve maximum cutting edge length by means of minimum effort. The knapping method applied efficiently to the size and form of the available raw material. The unique flint assemblage of NMO allows us to place the non-Levallois knapping methods in a chrono-cultural context and better understanding of technological flexibility, mobility patterns and raw material procurement and curation by LMP hunters.

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