
Raw-material variety and Palaeolithic variability ca. 0.8 Ma at Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, Spain).

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Abstract

For: XIV-5 From natural to cultural object: raw material-related human behaviors in the early technologies Abstract: Cueva Negra del Estrecho del Río Quípar is a rock-shelter containing a late Early Pleistocene depth of ~5m of fluviolacustrine sediment deposited between < 0.99 - > 0.78 Ma according to magnetostratigraphy and biochronology (Angelucci et al., 2013; López et al., submitted; Scott & Gibert, 2009; Walker et al., 2013, 2016). Palaeolithic artifacts appear throughout. Petrology is mainly chert (poor-quality flint), with some hard limestone (often containing quartz), marble, quartzite, and quartz. Many cobbles were split open in the cave, brought from a nearby Miocene (Tortonian) conglomerate outcrop (where also artifacts were collected) of cemented detritus from high Jurassic escarpments below which also Pliocene and Pleistocene gravels and conglomerates afford chert blocks and cobbles throughout the upper Quípar (a.k.a. "Tarragoya") valley. Lanthanide trace-element analysis implies some chert came from up to 30 km upstream (Zack et al., 2013). Tabular black chert came from Cretaceous outcrops, both 2 km downstream and 20 km upstream. An excavated radiolarite artifact suggests a radiolarite outcrop source 40 km downstream; marble also likely came from hills 10-20 km downstream (quarried nowadays). Possibly some chert also came from Miocene and Pliocene outcrops sampled immediately south of the "Tarragoya" valley. A hand-axe was fashioned by bifacial flaking of a flat cobble of quartz-rich Jurassic limestone (examined by X-ray diffraction and optical microscopical petrography: Walker et al., 2006). Knapping abounded on small subparallelepiped chert nodules that, when struck, more often shatter than producing conchoidal fractures. Secondary knapping

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is common on stubby blocks and laminar fragments. Nevertheless, chert flakes with faceted striking platforms and dorsal flake-scars attest to repetitive flaking on a core, and even to core-preparation for hierarchical flake-removal, in support of which are discoidal chert and limestone cores bearing central scars of final flake-removal. Artifacts rarely exceed 5-6 cm in size. Abrupt secondary knapping along thin laminar fragments converted perpendicular edges into cutting/scraping artifacts. Invasive secondary knapping exists also, sometimes on "microlithic" pieces. Pointed and "beaked" artifacts occur. Small tronco-conical pieces show steep flaking/notching around delicate protruding spurs whose tips sometimes show minuscule retouch. Flaked plano-convex "garden-slug" pieces, lacking use-wear traces, were perhaps cores for removal by bipolar knapping of diminutive (1-2 cm) unretouched flakes (cf. Crovetto et al., 1994). Secondarily-knapped "microlithic" flakes (2-3 cm) exist. Knapping smalls abound, with complete recovery attained by washing all excavated sediment over 2-mm mesh sieves. Microscopical use-wear analysis of notched and denticulate artifacts implies use on hard materials (e.g. wood, bone, antler). Microstriae and micropolishes on other artifacts suggest use on soft materials (e.g. skin, meat). (References: Angelucci et al., 2013, *Quaternary Science Reviews* 89, 195-199; Crovetto et al., 1994, *Human Evolution* 9, 175-207; López et al., submitted, 2017, *Historical Biology*; Scott & Gibert, 2009, *Nature* 461, 82-85; Walker et al., 2006, *Eurasian Prehistory* 4, 3-43; Walker et al., 2013, *Quaternary International* 294, 135-159; Walker et al., 2016, *Human Evolution* 31, 1-67; Zack et al., 2013, *Quart'ar* 60, 7-28.)

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