GEOMORPHOLOGY AND PAST ENVIRONMENTS AT NOMBE CAVE, SIMBU PROVINCE, PAPUA NEW GUINEA

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ABSTRACT

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Nombe is a large rockshelter located at an altitude of 1660m on the NE side of Mt. Elimbari, a faulted limestone massif which overlooks the junction of the Wahgi and Asaro Rivers. The rockshelter was formed at the end of a strike ridge bounded by steeply dipping faults, and is on the rim of the Lombila doline, which is one of a series on the floor of a valley descending from Mt. Elimbari to the Mai River at Chuave. Nombe has acted as a karst spring whose level is accordant with the inter-doline thresholds of the valley. The spring has been infilled with fine textured sediments, probably the result of surficial sediment transport through a strike–oriented cave system in the ridge. The sediments have subsequently been consolidated by calcareous roof drips, and later covered by flowstone deposition and anthropogenic sedimentation.
The basal sediment exposed in archaeological excavations is a fine red–brown clay in which bones of extinct fauna such as *Protemnodon* sp. and *Thylacinus* sp. occur. The presence of these two genera would indicate that at the time of formation of the deposit, the inhabitants were within reach of the grassland fauna of the late Pleistocene period. Stone tools found in this unit include waisted blades, pebble tools, large scrapers and rectangular blades with edge polish. Dense lenses and scattered deposits of land snail shells occur in the basal clay and provide an opportunity for dating and possible environmental evidence. Flowstone samples from the basal deposits have been dated by the radiocarbon and uranium–thorium methods.
Above the basal clay is a sequence of flowstones, cemented earths and ash deposits. There is cultural material amongst this sequence, but the density of artifacts increases in the uppermost sequence of loose, deep–brown organic loams. The coarse fraction of the sediment is composed of bone and stone fragments, burnt soil nodules, charcoal and limestone fragments. As well as providing biogenic sediments, human activities have probably promoted spalling and increased fall of the insoluble residue that fills fine cracks in the limestone. Some of the uppermost material has intruded lower strata along cracks in the flowstone or cemented ash. This intrusion may be the consequence of several inter-related processes, namely:

1. slumping of the deposits following truncation by water erosion at the dripline.
2. seismic activity causing slumping and cracking of the deposits.
3. solutional enlargement of joints in the underlying limestone and settling of materials into the joints, resulting in loss of support for overlying deposits.

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These disturbances may necessitate coarse vertical divisions in the analysis of cultural material. In such geomorphically mobile landscapes as that of the PNG Highlands, it is false to assume stability in cave and rockshelter deposits. Positive evidence of stability, such as conformable strata and lack of intrusion, must be gained by careful examination of the stratigraphy.