Sodmein Online Resource 1

Survey, excavation and recording techniques

As no fixed topographical point was available near the site, we defined a local datum point in the cave, which was given a notional elevation of 20 m. The grid datum was established using three points:
1: An iron rod driven into the cave floor. Its local co-ordinates (in metres) are as follows: 20.000 north, 0.000 east and 20.000 elevation. From this point a base line was drawn with a direction of 28° east from magnetic north. This 28° direction functioned as a local north direction during the excavations.
2: The top of an iron screw which was implanted in the southern limestone wall of the cave, with the following co-ordinates: 19.536 north, 13.983 west; 22.470 elevation.
3: The top of an iron screw which was implanted in the northern limestone wall of the cave, with the following co-ordinates: 40.544 north, 13.252 west; 20.943 elevation.
At the end of the excavation the three reference points were left in place. Any point or surface in the field is indicated by its co-ordinates, north or south, and east or west. Point positions are expressed to the nearest cm and surface areas were recorded using a higher scale of measurement: thus 15.2N5.7E indicates a surface of 1 dm², the nearest point of which to the grid datum is at 15.2m to the North and 5.7m to the East. In cases where surfaces are larger than a unit value, coordinates would have two figures indicating the precise extent of the surface, e.g. 17N 5-7W indicates a surface of 2 m² located at 17m to the North and between 5 and 7m to the West.

Excavation commenced with two **{**xe "trench"**}**trenches, one in the southern part of the cave (sector A) and one in its northern part (sector B). Subsequently other trenches were cut in between these two. Trenches were oriented (locally) East-West (Fig. 4). Most trenches were excavated into the deposits until an accumulation of very large blocks was reached. Collapse of sediments, mainly huge limestone blocks, which were generally not consolidated and presented an open structure, prevented excavation into deeper layers. On a later visit in 2010, when quarrying activities were organised in the Wadi Sodmein (Kindermann, Bubenzer, & Van Peer 2013), it appeared that these huge limestone blocks were resting *in situ* on rock. All together an area of about 120 m² was excavated down to a maximum depth of 3.5 m.

Features and artefacts were registered using a total station and a field laptop. When measuring errors occurred, we tried to evaluate the measurements and make the corrections as best we could. Nevertheless some errors could not be corrected. In the field, features and artefacts were carefully attributed to specific field stratigraphic units, which were not always easy to detect during the excavations. As is normal with cave deposits, the stratigraphic units are not horizontal, which prevented us from digging using a system of spits. All larger artefacts and features were registered in three dimensions enabling them to be plotted on drawn profiles (Fig. 7 &8), on which the stratigraphic sequences were registered. However, it was clear that profiles could change rapidly in all directions, a characteristic which resulted in problems correlating vertical plots of artefacts with the profiles. In order to minimize this effect we made plots of artefacts and features for every half a metre in East-West and in North-South directions. It should be noted that in the field we did not draw stratigraphical profiles for each half a meter in both directions, which would have been too time-consuming.
Nevertheless, by utilising proximate profiles we were able to achieve a good fit closeness of fit between stratigraphical profiles and their contents. However, problems of attribution did sometimes occur. In such cases attribution was made on the basis of our best judgment.

After sieving, the excavation deposits were dumped on top of the boulder field outside the cave.

Fig. OR1/1 Sandy surface of the cave in front of the backwall after clearing away the limestone blocks. The central disturbance was present before the excavation.

Part of the upper deposits in the area around 20-21N6-7W had already been removed before the excavation campaign began (Fig. OR1/1). On April 7, 1999, a 3m section of the 6W-profile accidentally collapsed from 15N to 18N. This prevented excavation of this area, which created some gaps in the general artefact distribution.

The structure of the cave interior

The origin of Sodmein cave has been studied by Moeyersons, Vermeersch & Van Peer (2002). Here, we mainly refer to their observations and interpretations. Only the upper Holocene layers will be discussed.

The deposits (Table OR1/1), present in the cave, show that, after a period of solutional-mechanical attack, the steeply inclined backwall was covered by a rockfall, reworked by water (Fig. 6). Consideration of plant remains, humic content and types of depositional processes indicate a cave environment, with only very restricted chemical weathering. Subsequently, rockfall from the cliff in front of the cave created a physical barrier to the evacuation of material that had been mechanically disturbed from the cave ceilings. The transition between the rockfall wall and its backfill comprises subhorizontally interfingering layers, indicating an episodic, but contemporaneously progressive accumulation. It is thought that aeolian reworking, dry creep, direct rock and dustfall and human deposits are responsible for the accumulation of the younger backfill deposits (A to D). During a still later phase, probably after 5.5 Ka calBC, the western part of these deposits was cut away by a gully depression (Fig. 9) which started from the southern shaft. The archaeological remains included in these deposits, were scattered or redeposited.

Stratigraphy

Table OR1/1 - Stratigraphical units and their content

Rockfall at entrance of cave	Backfill	Field layers		Arch. deposits
		Sector A	Sector B	
Organic layer	Organic layer	0 - 1	A - B	A-B
Coarser in upper part	Dust and flakes of Thebes limestone, chert and rockfall	2 a - 2 b	C	C1

Finer in lower part	White limestone debris	2 c	C	C2
Flakes and dust of Thebes limestone and chert. Laminar structures indicate water flow	Predominantly organic (dark)	3a1	C/D	C2
	EROSIONAL CONTACT	3a1/3a2	D/E	

Gully depression deposits (Complex A and B)

These deposits have filled the western erosional gully incising the lower Holocene main archaeological zone deposits and butting to the east against the rockfall deposits. These deposits are the youngest of those filling the cave. They are well represented in the area west of 4W. The layout of this gully corresponds quite well to the present surface topography of the cave. It is not clear whether this gully depression is due to natural erosion processes, driven, for example, by water leaking from the cave ceiling, or whether it is due to human perturbation.

From top to bottom the following field layers were distinguished (table OR1/1):

Field layer 0: The cave surface is formed from a whitish fine silt matrix with dark minerals, numerous limestone chips and some polished quartz grains.

Field layer 1a is a sediment characterized mainly by numerous spherical coprolites and coprolite remains, charcoal and some small, fresh and angular limestone fragments (2-3cm) with some sand grains. The deposits are quite corroded (7.5 YR 5/6).

Field layer 1b is a pale (10 YR 7/4) bed with mainly fine sandy silt and small fresh and angular limestone fragments (1-2cm) and chips with a significant salt deposit, superposed on fine sandy silt with small fresh and angular limestone fragments; some rare excrement.

Field layer 1a2 is a brown (5 YR 5/6) bed of organic origin with numerous wood fragments and very few inorganic sediments.

Field layer 1a3 is a bed of mainly organic materials with numerous spherical coprolites but also some limestone chips and saccharoid silt (7.5 YR 4/4).

Main archaeological zone deposits

Fig. OR1/2 View on the Holocene artefacts on top of the C-deposits and on wadi Sodmein in front of the cave.

The field layers of the backfill in sector A (Fig. OR1/2): are as follows from top to bottom:
Field layer 2a is a light brownish (7.5 YR 6/3) sandy sediment with spherical coprolites and some slightly weathered limestone chips, limestone with fine white speckles and flint fragments.
Field layer 2b is a darker band (7.5 YR 4/6) of apparently more organic material with excrement, and limestone chips (1-3 cm), either dipping or lying flat. A carbonate precipitation is deposited on some of the chips.
Field layer 2c is a heterogeneous organic material, excrement in a matrix of fine sandy silt with small fresh and angular limestone fragments (7.5 YR 4/4).
Field layer 3a1 is composed of a silt matrix with fine limestone chips and some larger angular fresh limestone blocs with a salt deposit (7.5 YR 4/6). The presence of polished sand grains suggests the admixture of an aeolian deposit.
Due to the local extremely high dust content of the rock fall, the interfingering between backfill and rock fall could not be precisely documented. This means that rock fall layer 2 need not necessary correspond to the backfill layer complex 2a-2b-2c. Likewise the correlation between rock fall layer 3a1 and 3a in the backfill was not established. It is supposed that the Pleistocene-Holocene boundary in the backfill coincides with the 1a3-2a limit. In the eastern part of the rock fall, this boundary is probably constituted by the 3a1-3a2 limit.

In Sector B another sequence of field layer was identified.
Field layer A is an orange-brown surface layer, 15 to 20 cm thick, containing numerous spheroidal droppings and some limestone fragments and chips, 2 to 10 cm, but on average less than 5 cm. Some chips were found lying flat, others are more-or-less vertical (7.5 YR 5/4).
Layer B is a calcareous white (7.5 YR 5/4) rubble layer consisting of small limestone chips and larger cobbles. The matrix is brown and composed as in Layer A. The chips have a tendency to be oriented according to the stratigraphy. Much humus-material is present (tobacco structure) and includes twigs.
Layer C is a light gray (10YR6/4) layer with a dipping slope of about 15°. It is composed of many large-sized rocks, limestone fragments and chips. The chips are brittle and break easily.
Layer D is a dark (7.5 YR 3/4) lens of organic material (mainly excrement), which also contains many small limestone chips sometimes with a chaotic orientation, sometimes flat. The chaotic structures resemble twisted bundles.

Reference

Kindermann, K., Bubenzer, O. & Van Peer P. (2013). Geoarchaeological research on the Late Pleistocene of the Egyptian Eastern Desert: recent threats to the Sodmein Cave. http://www.antiquity.ac.uk/projgall/kindermann337/.