THE BAQ'AH VALLEY, JORDAN: TEST SOUNDINGS OF
CESIUM MAGNETOMETER ANOMALIES

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Introduction

The third season of the Baq'ah Valley Project, undertaken over the period from May 15th to June 30th, 1990, proved to be a most rewarding follow-up to the geophysical survey previously reported in this Journal (see McGovern 1979). Concurrent with that survey, thirty-three partially or fully robbed-out burial caves, nineteen of which dated to various phases of the Late Bronze Age (LBA), had been located on the lower slopes of Jebel al-Hawiyah and Jebel al-Qarqir, in the Umm ad-Danâbân region of the northwestern Baq'ah Valley (Plate 1). But in the geophysical survey proper, cesium magnetometer data documented some twenty-five additional, significantly high magnetic anomalies with a pattern of intensity variation consistent with their source being burial caves which had naturally slided up, and had remained undisturbed until this time. A line of individual magnetic highs, coincident with the LBA cave-designated A1, follows a diagonal path uphill. Clumps of vegetation along this line are supporting evidence for the presence of cave entrances at these points. Six significantly low magnetic anomalies, possibly resulting from non-magnetic air voids amid the slightly magnetic bedrock, were also recorded potentially as burial caves, only the mouths of which had become sealed by subsequent silting. The attraction of this latter group of caves, of course, was that they would be far easier to excavate than fully filled ones.

Excavation of Cave A4

Ultimate excavation priority was eventually placed upon an area circa 7 meters by 11 meters at Jebel al-Hawiyah, with a high magnetic anomaly of about 15 nanotesla (nT). Arguments favoring this choice included the proximity of a very rich LBA cave (excavated in 1977; see McGovern 1980) and of several other robbed-out caves, which overall suggested the area had served as a large cemetery.

When excavation began, only a small outcrop of bedrock was visible under the surface's heavy vegetational growth. But soon the mouth of a burial cave (designated as A4) was visible, with its sealing of six large boulders, each 1.5 meters in length, still intact. This main entrance faced due east onto a cobble-filled forecourt (of about 20 square meters), which in turn gave way to an entrance ramp on the southeast side (Plate 2). All of this area was completely slided over, in some
places to a depth of 2.5 meters. A secondary entrance through
the cave's roof—the so-called egal (= soul) hole—was blocked
by a single boulder wedged into its mouth.

The cave itself proved to be circular in shape (circa 4.5
meters in diameter) and close to 2 meters in height. When the
ground plan of the cave and forecourt was superimposed over
the high-resolution meter-spaced magnetometer grid, the fit
between them was extremely close (Fig. 1). The NS contour
line (recording the magnetic intensity of 40,885 nT) follows
the general external configuration of the burial complex: the
area of greatest colluvial accumulation in the forecourt
matches the 15 nT high in the magnetic anomaly (at z = 11, y =
12.5). With some allowance for geometric variations the range
of magnetic values (dropping to 5 nT near the periphery of the
complex) corresponds very closely to calculated intensities
for the soil volumes of the cave and the forecourt. The low
magnetic anomalies to the north, rather than being due to non-
magnetic air voids in this instance, correspond to large
bedrock outcrops with a lower magnetic intensity that is not
offset by any surface soil, which is further accentuated by the
anti-magnetic 'tail' of the main magnetic high (for fuller
explanation of this reversal effect, see Atikem 1974). Although
groundwater percolation may have eroded away some of the
soft limestone/sandstone bedding planes during the initial
stages of cave formation, the final form of the relatively
symmetrical cave and forecourt is man-made.

The artifact record

Despite its relatively small size, cave A4 had been used to
inter more than 225 individuals, the majority of which were
deposited in two secondary hearths: women and childrens to the
south, men to the north. And with the burials there was an
excellent, unique assemblage of, not LBA material, but
instead Iron IA artifacts (dating circa 1200-1050 B.C.): 78
whole vessels (including bowls, lamps, chalices and basin
morts), iron and bronze as lovely arsenics/braclets, earrings and
rings, heads in a wide assortment of types and materials
(including glass, bone, faience and semi-precious stones),
toggle-pins, buttons, and one example each of a pendant, a
scrap, a stamp-seal, and a cylinder-seal (Plates 3a-d).

The pottery ware is currently the subject of thin-section and
neutron activation analyses, so that comparison can be made
with the rich clay deposits of the region that are possibly the
largest in Jordan (see McGovern 1981). The iron
asbestos/braclets are, in fact, of mild steel, and are the earliest
such artifacts from Transjordan, and fortunately retain
substantial amounts of uncorroded metal in their structure
(see Pigott and McGovern 1981). The study of the human
skeletal and faunal material is being carried out in two stages.

The gross qualitative and non-quantitative attributes are
now being interpreted by Marilyn Saul, at ACOR in Anman,
but the material will subsequently be studied by Dr. Donald
Ottens at the Smithsonian Institution, with respect to the
catastrophic and genetic characteristics of the bones. Preliminary
results already indicate all ages are represented,
various diseases are in evidence (for example, arthritis and
dental caries) and a number of individuals exhibit similar
genetic traits of the patella and cranium. It appears, from the
partial articulation of some of the skeletons, that several
bodies were hastily pushed aside soon after initial use of the
tomb, to make room for a large number of fresh individuals.
This is perhaps suggestive of the impact of an epidemic, war,
or other natural or human catastrophe, often hypothetized for
this period (see, for example, Hayes and Miller 1977).

In general this tightly dated burial group promises to
illuminate a critical period when the relatively advanced and
cosmopolitan LBA culture was in decline and new peoples,
such as the Arimonzites and Izaelsites, were emerging as a
major force in the area. These findings come at a time when
the information we have about the mechanisms of the
LBA/early Iron Age transition on the Transjordan plateaus is
still minimal.

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