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The Hellenistic settlement of Tuna el-Gebel

Jörg W.E. Fassbinder^{a, b}, Lena Kühne^b and Melanie Flossmann-Schütze^c

KEY-WORDS: magnetic prospecting, Tuna el-Gebel, Egypt, Graeco-Roman period, Hellenistic settlement, tower houses

INTRODUCTION

Tuna el-Gebel is situated about 300 km south of Cairo, in Middle Egypt, on the western side of the Nile. It is the necropolis of Hermopolis Magna, ancient capital of the 15th nome and cult centre of Thot, god of writing and sciences. The archaeological site of Tuna el-Gebel is particularly known for its Greco-Roman necropolis and the *ibiotapheion*, one of the largest animal cemeteries of pharaonic Egypt. In the course of almost a millennium, millions of ibises and baboons, representing the god Thot, were buried in the vast catacombs. Since 1989, the Institute for Egyptology and Coptology of the Ludwig Maximilian University Munich, and the Faculty of Archaeology of Cairo University, have cooperated on the Tuna el-Gebel Project aimed at exploring the architectural development of the animal cemetery and related religious and administrative buildings.

Since 2002 the principal investigations have been concentrated on the site to the east of the underground galleries. A processional way lead once from the animal necropolis to the remains of the ancient town, on Kom el-Loli, where priests and craftsmen of the religious association of the animal cemetery had lived. The geophysical prospection of this area, conducted by the University of Kiel, to the north and south of the processional way, huge mud-brick building complexes lying side by side under sand mounds. Five of these complexes, two of the northern and three of the southern row, were excavated in the past years (Figs 2, 3). All these building complexes — only foundations, sometimes basements, and rarely ground floors have been preserved — consist of one to three tower houses, surrounded by smaller annex houses as well as numerous production facilities, like bakeries, siloses and animal stables. The earliest buildings date to the reign of Ptolemy I, an important phase for the architectural and cultic development of the animal cemetery. Several cult places, almost identical to the ritual places of the animal cemetery, were discovered in some of the houses. A second construction phase of the tower houses dates to the reign of Ptolemy VI. Some buildings were in use until Roman times. The square-plan tower houses of Tuna el-Gebel probably had five floors and were constructed with undulating walls and vaulted ceilings. Although most of the building complexes were either excavated or looted at the end of the 19th century, plenty of ceramics, organic and botanical materials, artifacts of daily life and religious objects were discovered in the course of the excavations (Arnold 2000). Domestic courtyards consisted of production and kitchen areas equipped with siloses, ovens, mills and bread moulds.

^a Bavarian State Department for Monuments and Sites (BLfD), Ref. ZII Archaeological Prospection, Munich, Germany

^b Geophysics Department of Earth and Environmental Sciences, Ludwig Maximilians-Universität München, Munich, Germany

^c Institute for Egyptology and Coptology, Ludwig Maximilians-Universität München, Munich, Germany

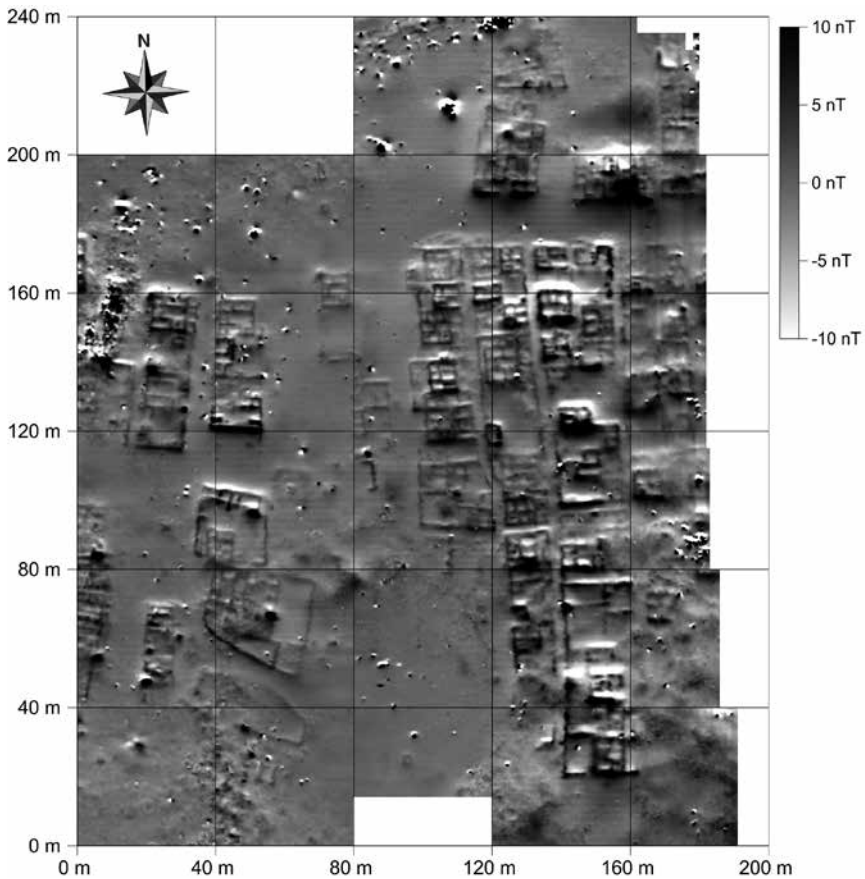


Fig. 1. Settlement on Kom el Loli,. Magnetic map of survey area I. Caesium total field magnetometer Scintrex, SM4G-Special in duo-sensor configuration, total Earth's magnetic field at Tuna el-Gebel 4/2013, 42.360 ± 12 nT, sensitivity ± 10 pT, sampling density 25×50 cm interpolated to 25×25 cm, dynamics in 256 grey scales, 40×40 m grid

RESULTS OF MAGNETOMETER PROSPECTION

During the spring campaign of 2013 the ancient settlement at Kom el-Loli, where the processional way and its building complexes merged into the urban area of the kom, was surveyed by magnetometer prospection (Fig. 1).

A Scintrex SM4G-Special Caesium magnetometer was applied in a duo-sensor configuration with sensitivity of ± 10 pT and sampling rate of 25×50 cm interpolated to 25×25 cm. The total Earth's magnetic field in Tuna el-Gebel (4/2013) was $42,370 \pm 20$ nT. As far as magnetic properties and the contrast of mud-brick structures with Nile sediment and the adjacent quartz sand are concerned, Egypt can be regarded as the "promised land" for magnetometer prospection (Fassbinder

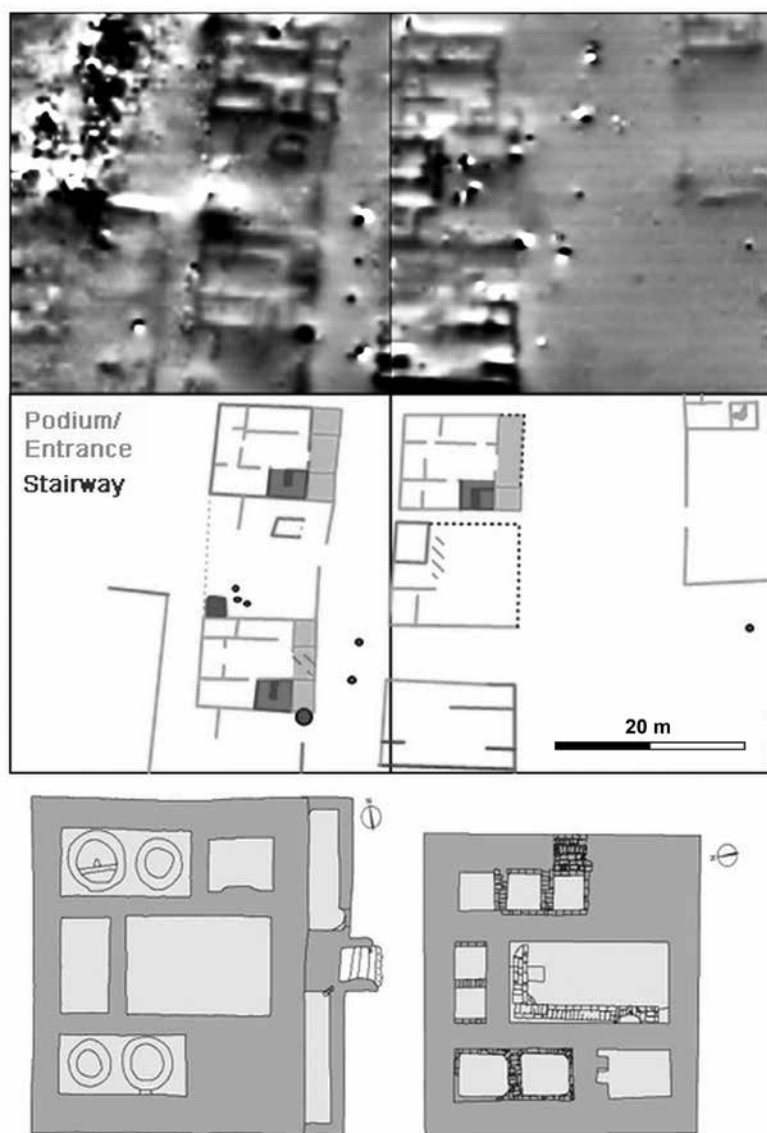


Fig. 2. Detail of the magnetic map and interpretation of the north-western area of the prospection with assigned room functions (© Bavarian State Department for Monuments and Sites). By comparing these with ground plans of the tower houses in Tuna el-Gebel excavated in earlier campaigns (TG2002.K2 North tower, TG2010.K5), the structure of the tower building is obvious: the podium to the first floor with steps to the entrance is mainly in the east; next to this, in the corner, the inner stairway to the upper stores is located, marked by the foundation of the lowest step (© Institute for Egyptology and Coptology, LMU Munich)



Fig. 3. Excavated North tower with staircase, TG2002.K2 (©Institute for Egyptology and Coptology, LMU Munich)

2015). The magnetic susceptibility of volume mud bricks was comparatively low (values range from $0.3\text{--}0.7 \times 10^{-3}$ SI), but the adjacent sand consisted of diamagnetic quartz and revealed even negative kappa values. Such conditions deliver an ideal background for magnetometer surveying in Egypt (e.g., Forstner-Müller *et al.* 2010).

The processional way narrowed to a street of 16 m width, dividing the settlement into two parts: two huge buildings, probably temple structures, are situated in the north, while the southern part of the kom consisted entirely of numerous tower houses and annexes. As we know the composition and setting of typical Hellenistic tower houses, we can recognize the entrance plans with stairs on a podium to the first floor in front of the buildings, the stairway inside the building, identifiable by one thick wall inside a room, and the typical three rows of rooms (Fig. 2). The kitchen was normally located in one of the long rooms. The ground map, the architecture and even the detailed utilization of the houses can be derived from the measurement by comparing them to excavation reports (Flossmann-Schütze 2011; 2014).

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