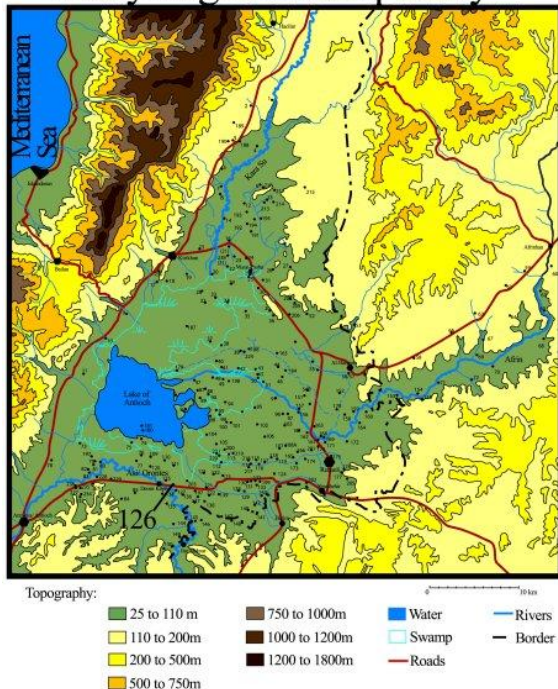


# "THE 2002 TAYINAT ARCHAEOLOGICAL PROJECT GEOMAGNETIC SURVEY"

Timothy P. Harrison,\* Stephen Batiuk,\*\* and Laurence Pavlish\*\*\*

## INTRODUCTION

### Hatay Region: Amuq Valley



The Tayinat Archaeological Project (TAP) represents part of an ongoing regional research effort investigating the historical development of urban institutions and the rise of early state societies in the ancient Near East. More specifically, TAP was conceived within the framework of the Amuq Valley Regional Project (AVRP), which has been systematically documenting the archaeology of the Amik Plain, in southeastern Turkey, since 1995. This explicitly regional project, still a relative rarity in the field of Near Eastern Archaeology, seeks to facilitate a multi-scalar approach to the investigation of the complex social, economic and political institutions developed by the first urban communities to emerge in this part of the ancient world. As first revealed by the investigations of the University of Chicago Expedition in the 1930s, Tell Ta'yinat preserves the extensive remains of the Neo-Hittite/Luwian capital Kunulua. Within the broader framework of the regional perspective

articulated by the AVRP, therefore, the TAP investigations were initiated for the specific purpose of documenting the archaeological record preserved at this important settlement, located on the southern edge of the Amik Plain, just east of the northern bend of the Orontes River.

Due to the considerable size and importance of Tell Ta'yinat, TAP was conceived and initiated as a long-term project, committed to fully and systematically documenting the archaeological record preserved at the site. Given the extensive architectural remains preserved on the site, conservation will also play a central role in the project. Furthermore, these remains will be linked to the original Chicago excavations, with the aim of producing a final report that integrates the results of both projects in a comprehensive monograph series.

The specific goals of the current phase of TAP are (1) to create a computerized base map (using GIS software technology) clearly defining the settlement parameters and topography of the site, (2) to document all visible architectural remains on the site, (3) to document the settlement history of the site through the assemblage of extensive, quantifiable collections of surface artifactual remains, (4) to document sub-surface remains utilizing remote sensing technology (both satellite imagery and ground-penetrating techniques), and (5) to integrate these architectural and artifact records in a comprehensive relational database that will permit the

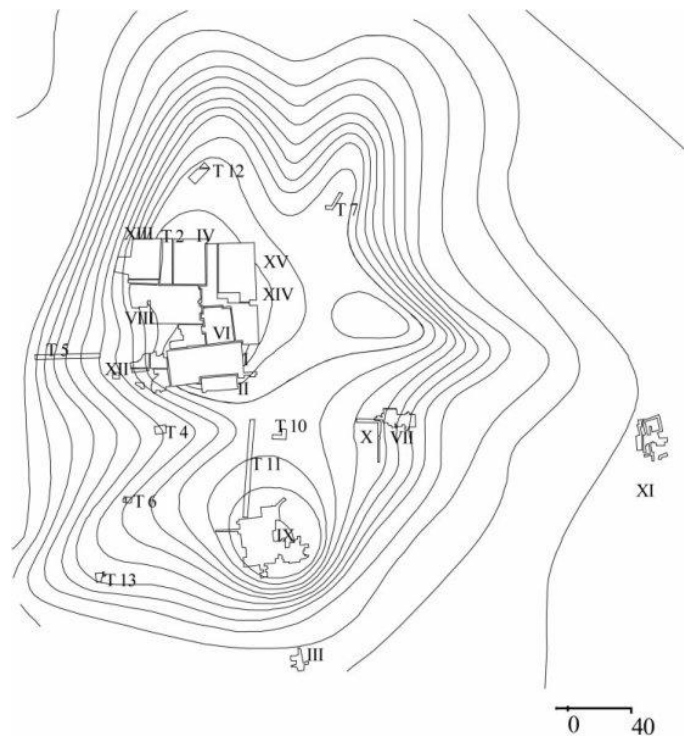
detailed regional comparative analyses necessary to address the broader research objectives of the project referred to above. The first three goals were the focus of field seasons conducted as part of the AVR P Survey. The surface artifact (3) and architectural (2) surveys were completed in 1999, and the topographic survey (1) was completed in 2001 (for more thorough descriptions of these field seasons, see previous reports in *Arastirma Sonuçları Toplantısı*). The 2002 field season, therefore, was devoted entirely to project goal (4).

The 2002 season was conducted between May 20 and June 11. The survey team consisted of Dr. Timothy Harrison (Project Director), Dr. Laurence Pavlish (Geophysical Specialist), Stephen Batiuk, James Osborne and Heather Snow. Mr. Okan Cinemre, of the Museum of Anatolian Civilization in Ankara, served as government representative for the Directorate of Monuments and Museums. As a preliminary, exploratory field season, the remote sensing survey produced significant and unexpected results, confirming the existence of an extensive (and well-preserved) lower settlement at Ta'yinat.

### *PREVIOUS INVESTIGATIONS AT TELL TA 'YINAT*

#### *The Chicago Syro-Hittite Expedition Excavations*

Large-scale excavations were conducted by the University of Chicago at Tell Ta'yinat over four field seasons between 1935 and 1938 as part of the Syro-Hittite Expedition. The excavations focused primarily on the "West Central Area" of the upper mound, although areas were also opened on the eastern and southern edges of the upper mound and in the lower city. In all, the excavations achieved large horizontal exposures of five distinct architectural phases, or "Building Periods," dating to the Iron Age (Amuq Phase O, ca. 950-550 B.C.) (Haines 1971). A series of isolated soundings (see particularly T4 and T8)



below the earliest Phase O floors produced remains dating to the third millennium (primarily Phases I-J, but also H) (Braidwood and Braidwood 1960: 13-14), indicating that a lengthy period of abandonment occurred between the Early Bronze and Iron Age settlements at the site.

Although a full report of the Tell Ta‘yinat excavations has yet to appear, a University of Chicago doctoral dissertation by G. Swift (1958) completed a preliminary study of the second and first millennium pottery (Amuq Phases K through O) gathered by the Syro-Hittite Expedition. Drawing on the architectural and artifactual evidence recovered from the Iron Age levels at Chatal Hoyuk, Judaidah and Ta‘yinat, Swift proposed a four-stage developmental sequence for Phase O, which he labeled Stages Oa-Od, with ceramic imports and key historical events providing a chronological framework.

The Tell Ta‘yinat excavations also produced an extensive corpus of Akkadian, Aramaic and Neo-Hittite (or Luwian) inscriptions. Luwian hieroglyphic inscriptions accounted for the largest number, a total of 85 fragments, 32 of which have been shown to come from seven distinct monumental inscriptions (Gelb 1939: 38-40). One of these, preserved as six basalt fragments, had been carved on a colossal statue seated on a throne. The inscription makes reference to Halpapa-runta-a-s(a), very probably a Neo-Hittite ruler of the Kingdom of Patinu/Unqi, whose capital was Kunulua (almost certainly Tell Ta‘yinat), and who is listed in the royal annals of Shalmaneser III as having paid tribute to the Neo-Assyrian king during the mid-ninth century (for a more thorough review of the historical sources, see Harrison 2001).

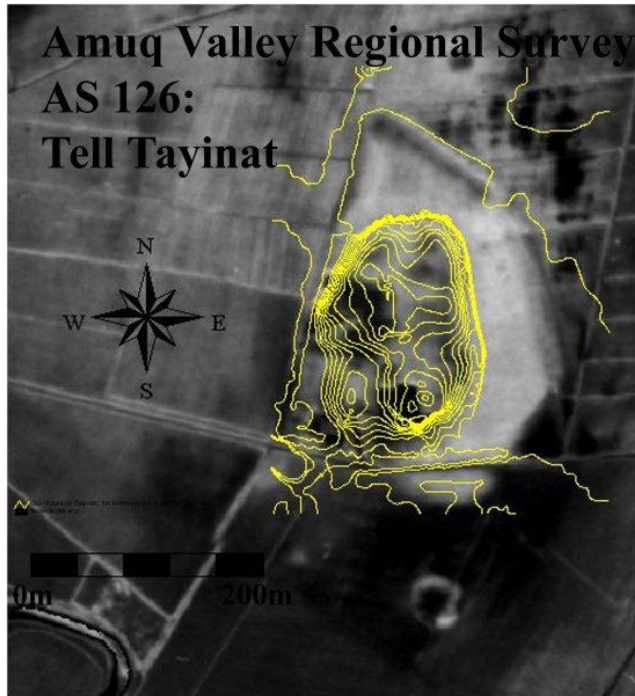
If this historical correlation is correct, it provides a secure date for the remainder of the Luwian inscriptions found at the site, and raises the possibility of isolating the Building Period, and cultural horizon, in which they were erected. With only a few exceptions, all of the fragments appear to have been found in the fill or foundation trenches of structures dating to the Second Building Period; in other words, in secondary and tertiary contexts. Moreover, with only one exception (an altar in obvious secondary reuse in the temple, Building II), all of the inscriptions clearly had been smashed and destroyed before being discarded. The Qalparunda inscription, therefore, would appear to date the Luwian epigraphic remains at Tell Ta‘yinat to the mid-ninth century or earlier, while their stratigraphic context places this material in the First Building Period.

### *The Amuq Valley Regional Project (AVRP) Survey*

Today, Tell Ta‘yinat forms a large, low-lying mound 1.5 km east of Demirköprü on the Orontes River. The site consists of an upper and lower mound, with the lower mound now hidden by a thick alluvial accumulation characteristic of the Orontes floodplain within the Amuq. The upper mound sits just north of the modern Antakya-Reyhanli road, and measures approximately 400 m (E-W) by 500 m (N-S).

Sherd density distributions, recorded by means of walking transects conducted during the 1999 field season (Harrison and Batiuk 2001), delineated the parameters of the lower mound, and indicate that it extended north of the upper mound approximately 200 m, and east approximately 100 m, bringing the overall size of the site to 500 x 700 m (or 35 ha). These measurements differ slightly from those of the Chicago excavation team, who estimated the size of the site at 500 x 620 m (Haines 1971: 37), but match the earlier estimates of the Braidwood survey (Braidwood and Braidwood 1960: 13). The surface sherd collection indicates that settlement expansion

occurred in the lower mound during the Iron Age, most likely corresponding with the Second Building Period identified by the Chicago excavations.



A Corona satellite image of the site confirms the settlement pattern delineated by the 1999 surface survey, with a clearly discernable “shadow” documenting the northward and eastward extension of the lower mound. Following the 2001 AVRP season (see report in Yener et al. 2002), when the topographic survey results were overlaid, a further correspondence was evident. The high sherd densities recorded by the pedestrian transects declined at almost the precise point delimited by a contour in the topographic profile of the site, and the shadow reflected on the satellite image.

The 1999 and 2001 field seasons also produced a number of unexpected discoveries. Although much of the monumental stone architecture uncovered during the Chicago excavations has long been removed (or covered), surprisingly, the door jambs of a southern gate system (their Gateway III) were found intact and in situ at the southern base of the tell, just north of the Antakya-Reyhanli road. In addition, fragments of a decorated (incised) stone architectural fragment and an inscribed basalt stele (Luwian/Neo-Hittite) were recovered in the course of surveying the lower city (see Harrison and Batiuk 2001: fig. 4). Thus, the results of the 1999 and 2001 survey seasons not only confirmed the regional predominance of Tell Ta‘yinat during the third and first millennia, but demonstrated that considerable portions of the site remained to be investigated, and should be the focus of any future effort to document the history of the Amuq during these cultural periods.

### *THE REMOTE SENSING SURVEY* *Geomagnetometry*

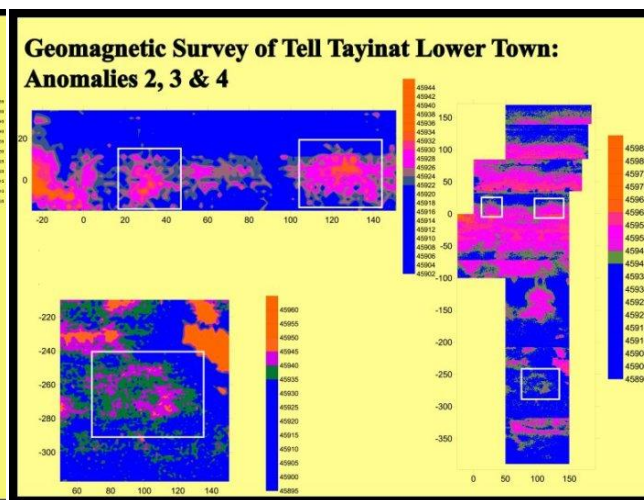
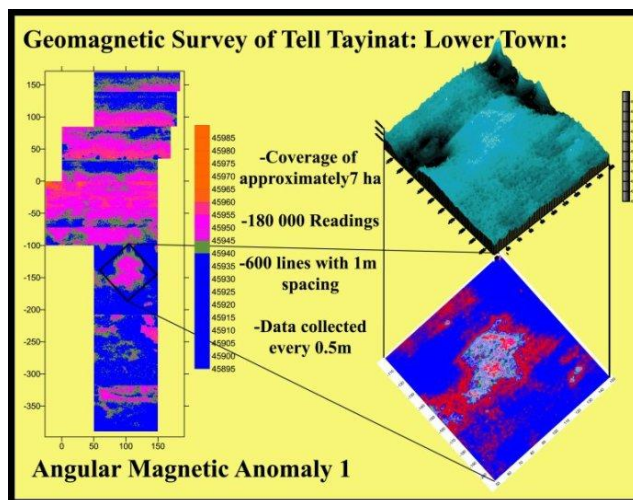
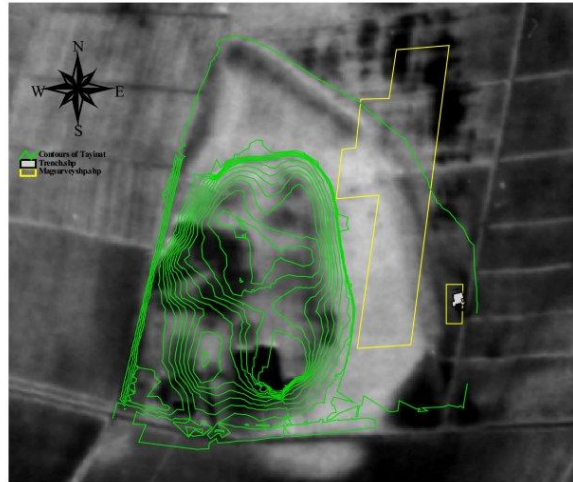
Given Tell Ta‘yinat’s considerable size, its complex settlement history, and the extensive excavations that have been conducted previously at the site, a remote sensing survey was considered the most prudent and effective way to assess the archaeological potential of the various components of the site. When combined with the results of the topographic and surface surveys, these layered data will permit focused investigations of those areas of the site, such as the West Central Area, which to date have indicated the greatest archaeological potential.

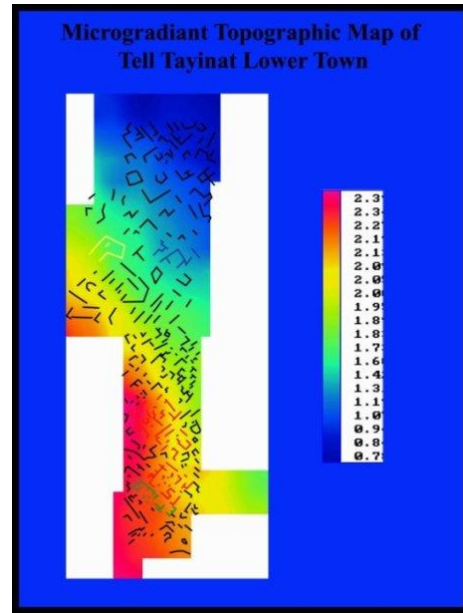
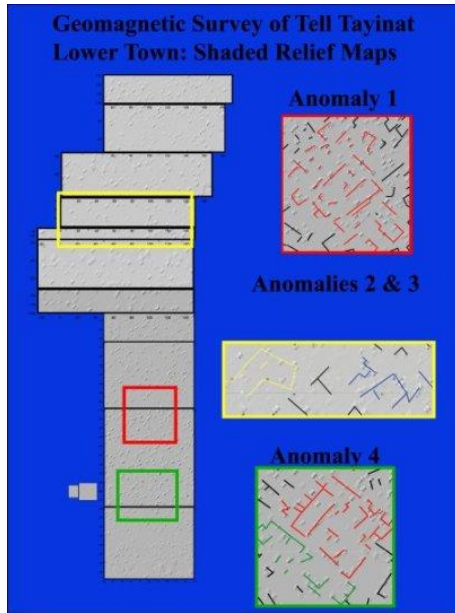
The primary goal of the 2002 field season, therefore, was to conduct a preliminary pilot study, and determine the most effective remote sensing method (and strategy) to use in the field at Tell

Ta'yinat, before embarking on a more comprehensive survey of the site. As a relatively low-cost yet effective (and widely used) remote-sensing technique, magnetometry was our first choice for the pilot study. Our primary concern was whether we would be able to isolate the magnetic lateral contrast created by settlement structures against the background noise of local geophysical conditions. Accordingly, a 7 ha area in the northeast sector of the lower settlement was marked off and mapped by pacing east west transects spaced approximately 1 m apart, carrying a hand-held magnetometer. To provide a control, a second magnetometer was set up as a base station. In all, more than 600 pedestrian transects were completed, and more than 195,000 magnetic readings recorded, with a coverage density of approximately one reading every 0.5 m.

Although a comprehensive analysis of these data is still in progress, a number of preliminary observations can be made. Most importantly, the magnetometer succeeded in recording numerous magnetic anomalies that appear to represent artificial, rather than natural, sub-surface features. Furthermore, when the magnetic data are plotted spatially, these anomalies consistently translate into sharply delineated angular structures. Four magnetic anomalies are highlighted as examples in the figures below. In each case, the anomaly preserves a series of rectilinear features that appear to form a coherent structure or set of structures. When geo-referenced with the site base map, the anomalies also appear to form a composite plan with a shared gradient and orientation toward the northeast. While additional analysis is still needed to clarify the precise nature and function of these anomalies, it nevertheless seems clear that they represent the product of human activity, and very likely delineate part of the lower (or outer) settlement of Tell Ta'yinat.

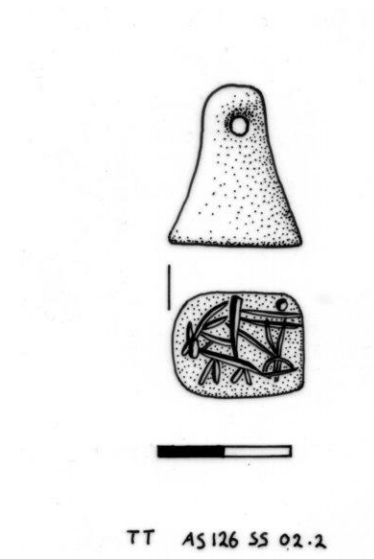
### Tell Tayinat Magnetometry Survey, 2002





### *Miscellaneous Surface Finds*

During the course of the geomagnetic survey, a number of isolated surface finds were discovered by the survey team, or brought to their attention by local farmers, including in particular a fragment of a limestone stele inscribed with Luwian hieroglyphs and an Iron Age stamp seal. In addition, one of the team members discovered a bronze coin while pacing the agricultural fields immediately to the north of the site.



## *CONCLUDING OBSERVATIONS*

The positive results of the 2002 pilot survey clearly validated the choice of magnetometry, and justify using this remote sensing method to complete a more comprehensive survey of the site. In addition, despite the limited area covered, the survey further substantiated the existence of an extensive, and well-preserved, lower settlement at Tell Ta'yinat. According to the original Chicago excavations, the settlement at Ta'yinat expanded off the upper mound and into the lower city during the Second Building Period. As noted earlier, the epigraphic and artifactual evidence would appear to assign this phase in the settlement history of the site to the late ninth and eighth centuries B.C., while confirming its identification with ancient Kunulua, capital of the Neo-Hittite/Aramean Kingdom of Patina/Unqi. The 2002 survey, therefore, has helped to lay the groundwork for a more systematic investigation of the cultural remains preserved in the lower city at Ta'yinat during this important phase of settlement expansion.

## *ACKNOWLEDGEMENTS*

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