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Neutron activation and petrographic analysis of selected Late Bronze and Iron Age pottery from Tell es-Safi/Gath, Israel

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Abstract

Thirteen sherds from the site of Tell es-Safi/Gath (Central Israel) were analyzed by neutron activation; six of these were also analyzed by thin section petrography. These include mostly Late Bronze II and early Iron Age II imports (and possible imports) from Greece or Cyprus, as well as a sherd with a Late Bronze Age Egyptian Hieratic inscription. The details of the results are reported and discussed with their possible archaeological implications.

Keywords: Ceramics; Provenancing; Late Bronze Age; Iron Age; Tell es-Safi/Gath; Philistia; Israel; Greece; Cyprus; Egypt; Imports; Neutron activation analysis; Petrography

1. Introduction and background

Tell es-Safi/Gath is situated in central Israel, approximately halfway between Jerusalem and Ashkelon, on the border between the southern coastal plain and the Judean foothills (Shephelah) (Fig. 1). The site was settled virtually continuously from the Chalcolithic period until modern times. The Late Bronze Age (LBA) settlement is identified as Canaanite Gath/Ginti, known from the el-Amarna letters, while during the Iron Age I–II (ca. 1200–586 BCE), the site is the location of Philistine Gath, well known from biblical and Neo-Assyrian texts. To date, eleven seasons of survey and excavation have been conducted. In Fields A and E (Fig. 2), a stratigraphic sequence spanning the latter part of the LBA (ca. 13th cent. BCE) through to the Iron Age IIB (ca. late 8th cent. BCE) was excavated (Maeir, 2003a). Four of the LBA samples analyzed by Neutron Activation Analysis (NAA) were found in Field E, Stratum E4b, dating to the end of the Late Bronze Age, ca. 1200 BCE. The architectural evidence of this well-defined stratum was found in a number of squares in Field E, including several units. Of particular importance is a large, well-made building, of possible public function, in which a wide range of finds were discovered, including quite a few of cultic-oriented types. All told, the associated finds support a terminal Late Bronze Age II dating, including local Canaanite pottery types, various Mycenaean and Cypriot imports, characteristic figurines and a collection of Egyptiaca (glyptics and two Egyptian inscriptions; Maeir et al., 2004; Wimmer and Maeir, 2007). It is noteworthy that wherever this level was exposed, the evidence indicated that it had been destroyed in a fire.

In the main area of excavation, Area A, located on the eastern slopes of the tell, Stratum A3 was uncovered to an extent of over 1200 sq m. This was an extraordinarily well-preserved destruction layer, with a wide range of finds, including over 500 complete pottery vessels on the floors. Most of the buildings seem to have had some industrial/agricultural function with several agricultural installations (Maeir, 2003a). This stratum was dated to the late 9th century BCE, based on

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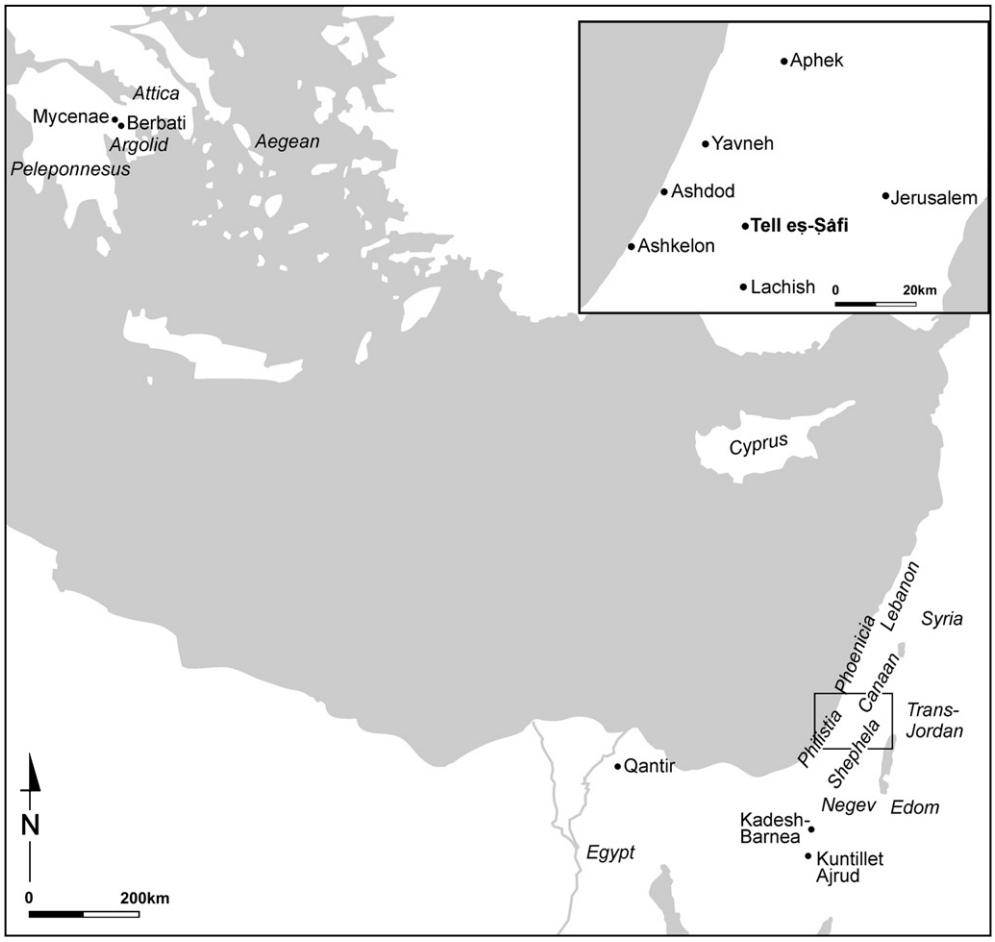

Fig. 1. Map of the eastern Mediterranean with sites and regions mentioned in text, with inset enlarged map of the southern Levant with sites mentioned in the text.

a typological study of the local and imported pottery (including Cypriote 'Black on Red' juglets), and radiocarbon dates (Sharon et al., 2007: 44, Table 8). Three of the Iron Age samples analyzed here derive from Stratum A3.

This limited study is a provenience analysis of eight LB II and five Iron Age pottery vessels from Tell es-Safi/Gath (Table 1). This analysis complements a larger chemical and petrographic study of the Iron Age pottery (Ben-Shlomo, 2006: 183–187) and a petrographic study of Late Bronze Age pottery from Tell es-Safi/Gath. The main questions of this study were: (1) what was the origin of the Mycenaean IIIB pottery and various Iron Age II vessels imported to the site?; (2) What was the provenance of a sherd with a Hieratic inscription (Sample SF160; Fig. 3:1), which according to macroscopic and microscopic investigation was not made from a known Egyptian fabric (Maeir et al., 2004: 130)?; (3) Determining the provenance of several vessels which were suspected to be imported, or yielded indefinite results according to petrography. One example is a heavily red slipped sherd of a closed vessel with incised decoration (Sample SF149). This vessel has no known parallels, although the incised decoration resembles a 13th/12th century vessel from a rock-cut chamber tomb from Beirut, identified as 'Grey Burnished Ware' (possibly a globular bowl; Badre et al., 1998: 76, Fig. 4).

Greek Iron Age imports at Iron Age sites in the Southern Levant have drawn much attention, due to their potential to serve as chronological markers for both the Greek and Levantine sequences of the early 1st millennium BCE, as well as indicators for Greek contacts with the Levant during this period (see, e.g. Waldbaum, 1994; Fantalkin, 2001). Late Iron I/early Iron II Greek imports are very rare in Palestine, and thus, the 'Proto-Geometric' sherd (Sample SF105) was included in this study, also as its typological identification was inconclusive: it was either a Proto-geometric Ionian (East Greek) vessel, or a Proto-geometric/Sub-Mycenaean vessel from the mainland.

2. Analytical procedures

The NAA performed in Bonn is a modified version of the procedure given by Perlman and Asaro (1969) and is described in more detail in Mommsen et al. (1991). The thirteen samples were drilled from the sherds using a diamond point, and weighed to about 80 mg. The samples were irradiated at the research reactor at Geesthacht (GKSS). The concentration of thirty elements was obtained by comparison of the Bonn standard, calibrated against the well-known Berkeley Pottery Standard. The assignment of individual samples to established chemical groups was made according to the statistical filtering method developed in Bonn (Beier and Mommsen, 1994;