PROVENANCE STUDY AND RE-EVALUATION OF THE CUNEIFORM DOCUMENTS FROM THE EGYPTIAN RESIDENCY AT TEL APHEK

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INTRODUCTION

Eight cuneiform tablets, two Egyptian inscriptions and a Hittite fragment of a bulla were found in the excavations of Building 1104 at Tel Aphek, dated to the 13th century BCE and interpreted by the excavators as an Egyptian residency (for summary discussions, see KOCHAVI 1990, esp. xiv–xix and plates 29–31; SINGER 1983a; for references, see HOROWITZ *et al.* 2006:29–38; for the archaeology of the site see BECK and KOCHAVI 1993; GADOT 2003). The diversity in the types of documents (lexical and administrative tablets, letters, a bulla, a faience seal and a faience plaque) and languages (Sumerian, Akkadian, Canaanite, Egyptian, and Hittite) uncovered at Aphek is unique in Late Bronze Canaan. This is remarkable since the residency of Aphek is quite small (about 400 square meters), compared to other, much larger Late Bronze Canaanite palaces, which yielded no more than a few cuneiform texts. An exception is Kamid el-Loz, where nine cuneiform tablets have been discovered. However, the latter site was the main Egyptian centre of northern Canaan and its prominent place in the Egyptian administrative system is well documented, unlike the residency of Aphek that is not mentioned in any document.

The documents from Aphek were found scattered throughout the building. This could have been done by whoever assaulted the building, before it was put to the torch, or, the documents could have been stored in the residency's upper storey and scattered when the building collapsed as a result of the heavy conflagration. The documents were all published and discussed in detail, so that only a short presentation is necessary. However, provenance studies carried out on five of the cuneiform tablets and the Hittite Bulla by two of us using microarchaeological (petrographic – Goren) and elemental (neutron activation – Mommsen) methods, supply new data that necessitates some reevaluation and new interpretations of the documents, and of the role of the site in the Late Bronze Age.

METHOD

A. Microarchaeological Analysis

The microarchaeological examination of five of the eight cuneiform tablets and the Hittite bulla followed the method and preparation processes advocated elsewhere (GOREN, FINKELSTEIN and NA'AMAN 2004: 4–22).[1]

In terms of the local availability of clays, Tel Aphek is located in an area dominated by brown alluvial soils, or vertisols. These are brown soils of valleys and plains that developed on ancient alluvium of Terra Rossa in the Mediterranean climatic zones. Their typical color is dark tan, often with reddish or dark gray shade due to the high iron contents (RABIKOVITCH 1981: 153–174). In the hilly area to the east of Aphek, hard limestone and dolomite of the Bina Formation (Turonian) is exposed. This lithology is typically represented by Terra Rossa soils. The petrographic study of selected pottery vessels from Aphek (undertaken by Goren) indicates that brown alluvial or Terra Rossa soils, which cannot be differentiated in petrographic thin sections of ceramics, were constantly used as the raw material for ceramic production at the site. The matrix of these ceramics contains high proportions of quartzitic silt, with high contents of "heavy minerals" including horn-

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blende, mica and feldspar minerals, zircon, epidote, and opaques. The quartz is also represented in the sand sized fraction, together with some limestone and Nari. The external source of the silt-size quartz grains is considered to be an aeolian contribution to the soil. The largest amount of aeolian dust occurs in soils that developed on hard limestone and dolomitic limestone, in which the residual material released from the dissolution of the rocks makes only about 2% (Adan-Bayewitz and Wieder 1992). Hence, this overall profile is expected to represent the local ceramic products at Tel Aphek.

B. Elemental Analysis

Neutron Activation Analysis (NAA) of minor and trace elements is much used to characterize and classify clay and ceramics and to determine their provenance (see for example Mommsen 2004). NAA is very well suited for measuring element concentration profiles of clays. It has low detection limits of about = 1 ppm (parts per million) for many elements and it also has small measurement errors of a few percent even for trace elements, since for the main elements of clay (Si, Al, O) only short-lived isotopes are formed by neutron irradiation. They decay after a few days and do not interfere with signals of other, longer-lived isotopes from trace elements. The concentrations of up to 30 elements, if present above detection limits, can be determined with the procedure applied in the NAA laboratory (in our case the Helmholtz-Institut fur Strahlen- und Kernphysik in the University of Bonn). Only a small amount of about 60–80 mg material is needed for the analysis. A few crumbs obtained by peeling (see above) are powdered in an agate mortar or the powder is obtained by moving a small drilling machine with a pure sapphire drill bit across a small area of a broken surface. To guarantee fixed measurement geometry, the powder of each sample is mixed with powder of cellulose (60 mg) and pressed into a pill of 10 mm diameter. Each pill is wrapped with a sheet of pure aluminum-foil to avoid loss of material. A set of 36 pills is then sent to the research reactor (in our case at Geesthacht near Hamburg), together with 4 pills of the pottery standard of known composition and a blank cellulose pill. The concentrations of this standard have been calibrated with the well-known Berkeley pottery standard (Perlman and Asaro 1969) and checked with various commercially available and other standards (Hein *et al.* 2002). The whole set is then irradiated for 90 min at a thermal neutron flux of $5 * 10^{13}$ neutrons/(cm^2*s). After the transport of the samples to the laboratory (in Bonn), each sample is measured in varying energy ranges in the time period 5–24 days after the irradiation (these measurements are described at length in Mommsen *et al.* 1991). The measurement of 4 spectra of each sample allows many concentration values to be determined repeatedly on the basis of different gamma lines and the results to be confirmed. The final result is the elemental composition pattern of each sample, which is added to the (Bonn) data bank, which now constitutes more than 6000 samples from the entire eastern Mediterranean. This pattern of about 30 concentration values is assumed to be unique and characteristic for the production place or region. Local concentration patterns of different places have to be determined by reference material of known provenance like kiln wasters of pottery or, in the case of tablets, letters of archives known to have been locally produced.

To compare the elemental patterns of samples and reference material and to form groups of samples of similar composition statistical grouping methods like cluster analysis (CA) or Principal Component Analysis (PCA) are usually applied. In Bonn a statistical filter method has been developed (Beier and Mommsen 1992), which has the advantage, in comparison to usual methods, of being able to consider the experimental measuring errors of individual concentration values. Moreover, a possible dilution of a sample, for example as a result of a refinement procedure of the clay, can be corrected during the group forming procedure. This method, using statistical criteria, allows the hypothesis that a sample might belong to an already formed group that can be checked directly during the comparison. Only the concentration values are taken into consideration; no archaeological criteria are used as this could bias the results.

Textual Comments and Analytical Results

Two Lexical Tablets

Two lexical tablets were discovered in the excavations of Aphek. The first fragmented tablet is a lower left part of a lexical text (Rainey 1975:125–128; Horowitz *et al.* 2006:29–31 [Aphek 1, IAA 90–251]). Two columns have been preserved: Sumerian words in the left hand col-

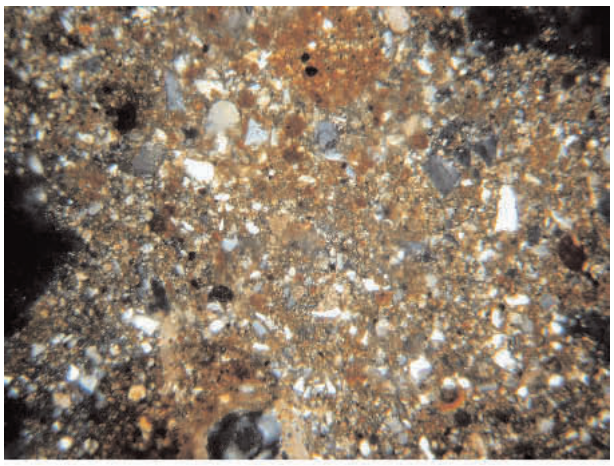

Fig. 1 Microscopic view of the letter from Ugarit in thin section, crossed polarizers. Field length: about 2.5 mm

Fig. 2 The Hittite bulla from Aphek

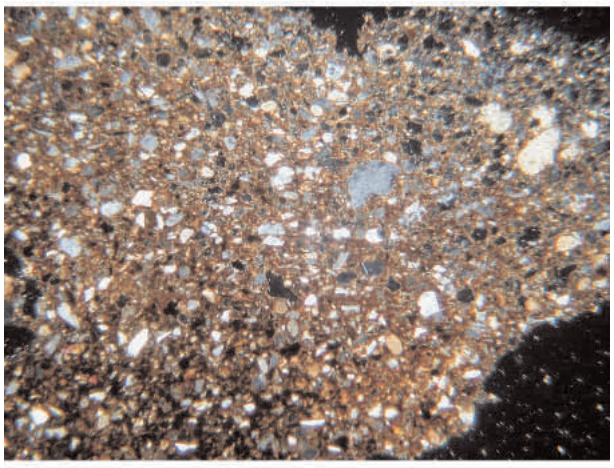

Fig. 3 Microscopic view of the Hittite bulla in thin section, crossed polarizers. Field length: about 2.5 mm

umn followed by a double *Glossenkeil* and a column of Akkadian words. The Sumerian sequence of words includes some agricultural terms (ploughing, wheat, spade?, ox) as well as some other nouns and adjectives (god, hand, large, battle?). Most of the Akkadian words are broken, the three extant words may be restored thus: ^{giš}mar : *gi*-[i*š*$^{?}$-*mar*$^{?}$-*ru*$^{?}$], 'spade'; ^{lú}kúr : *ta-a*[*m*$^{?}$-*ḫa*$^{?}$-*ru*$^{?}$], 'battle' (Röllig 1979:126) or *ta-á*[*r*$^{?}$-*gi*$^{?}$-*gi*$^{?}$], 'evil-doer' Horowitz *et al.* 2006:30; gu$_4$: *al-p*[*u*], 'ox'. The first restoration is based on the assumption that the determinative is included in the transcription (see below the writing ^{d}UTU-*ši*). The second restoration, if correct, indicates unusual Akkadian equivalent for the Sumerian word. Another irregular trait in the Sumerian column is the complement -*ši* after ^{d}UTU ('my Sun', i.e., Majesty). It reflects the influence of letter correspondence on the lexical scribal tradition at Aphek (Singer 1983a:20–21). We may assume that originally there was a third column with Canaanite words, like the other lexical tablet (see below).

Petrographic examination of this tablet reveals that it was made of Terra Rossa soil with sand-sized inclusions of rounded quartz, *nari* and limestone (Fig. 1). The firing temperature is estimated at 800° due to the alteration of hornblende into oxyhornblende and the partial decomposition of the calcite in the inclusions that occur at this temperature. As we stated above, the combination of Terra Rossa soil with this inclusion suit is typical to the local ceramic production. Although Terra Rossa soil is widespread, the mineralogical composition of the silt and sand within it is typical to the western foothills of the Central Hill Country of Israel. Indeed, the distribution of this petrographic group in ceramic assemblages is typical to the western foothills of the Judean Ridge (cf. Goren, Finkelstein and Na'aman 2004: 284–285, with references). Hence a local provenance for this text can be readily suggested.

The second text is a fragment of a prism in which five broken lines are preserved (Rainey 1976: 137–139; Horowitz *et al.* 2006:31–32 [Aphek 3, IAA 90–254]). The three columns are partly preserved and contain a trilingual (Sumerian-Akkadian-Canaanite) list of liquids: water (Canaanite *mu-mi*), wine (Canaanite *ye-nu*), oil (Canaanite word missing) and honey (Canaanite [*d*]*u-uš-pu*). Petrographically it is similar to Aphek 1 (Fig. 2) and should also be considered a local product.

A fragment of a trilingual (Sumerian-Akkadian-Canaanite) lexical text was discovered at Late Bronze Ashkelon (Huehnergard and van Soldt 1999). However, unlike the tablet of Ashkelon, whose first two columns appear in the Ḫar-ra = *ḫubullu* Mesopotamian lexical series, the trilingual

text of Aphek does not belong to a known series. The addition of a Canaanite column – the vernacular language of Canaan – to the Sumerian and Akkadian columns, may be compared to the addition of the vernacular language in the trilingual (Sumerian-Akkadian-Hurrian) and quadrilingual (Sumerian-Akkadian-Hurrian-Ugaritic) lexical texts from Ugarit and the trilingual (Sumerian-Akkadian-Hittite) texts from Boghazköy. We may further mention the Egyptian-Akkadian vocabulary discovered at Amarna (EA 368). However, unlike the other lists in which the Sumerian column is written on the left side and the vernacular language on the right side, in the Amarna vocabulary the Egyptian appears on the left side, indicating that it was written as an aid for learning this language (Izre'el 1997:77–81).

The double *Glossenkeils* written in the two lexical tablets of Aphek usually appear in Ugarit and Phoenicia and are unusual in southern Canaan, whereas the single *Glossenkeils* that appear on the Ashkelon tablet are common in this area (Artzi 1963:33–35).

An Administrative Text and Three Additional Fragments

One tablet found at Aphek (IAA 90–252) is typically administrative and contains the beginning of four lines (Rainey 1975:128; Kochavi 1990:29): (1) "one thousand x [....]"; (2) "four hundred (measures of) w[heat?? ...]" (G[IG$^{meš??}$...]); (3) "two hundred c[attle? ....] (*a*[*l*?-*pu*?-*ú*?]);[2] (4) "five thousand [....]". It indicates that at least part of the administrative work at Aphek was done in Akkadian. Petrographic analysis of this tablet indicates that it is identical by its clay, temper and firing temperature to Aphek 1 and 2 (Fig. 3). Therefore, it should be considered a locally produced document.

A few 15th–14th century administrative tablets have been discovered so far at Taanach (six tablets), Hazor (one tablet) and Jericho (one tablet) (see the literature cited by Horowitz et al. 2002:757 [Hazor 12], 758, 760–761). 13th century administrative tablets have been discovered so far only at Aphek.

Two fragmented tablets discovered at Aphek are so small and the inscribed signs are so few that their character cannot be established (Rainey 1976:139–140; Horowitz *et al.* 2006:32–33). A third tablet is fragmentary and in a fragile state of preservation (Owen 1981:15; Horowitz *et al.* 2006:38). It is uninscribed, except for a few signs that open three lines and include the measurements PA (*parīsu*) and BANES (*ṣimdu*) possibly followed by fragmented personal names.[3] Singer (1983a:26) suggested that this tablet was prepared for further writing in the future.

The Letter from Ugarit

The Ugarit letter (IAA 90–271), the only complete tablet found at Aphek, has 41 lines written on both sides and on the edge of an unbaked clay tablet (Owen 1981; Arnaud 1981/82:214; Singer 1983a:22–26; Horowitz *et al.* 2006:35–38). It was sent by Takuhlinu, a high official *(sakinu*) in the court of Ugarit, to Haya, the Egyptian governor of Canaan (for the offices, careers and date of the two officials, see Singer 1983b:6–23; 1999:654–655; van Soldt 2001:588– 590). Its contents may be summarized as follows:

In the past Adduya, possibly a man of Acco (line 33 LÚ [*A*?]-*ak-ka-a-a*; Arnaud 1981/82:214) and a commercial agent of Takuhlinu, delivered about 15 metric tons (250 *parisu*) of wheat to Turshimati, probably a commercial agent of Haya, in the Egyptian centre of Joppa ([^{uru}*Ia-p*]*u-ú*) (lines 13–17). The wheat was sent at the request of Haya who promised to give back the same amount of wheat (lines 18–21). In return to his good will in delivering the wheat Takuhlinu asks Haya to fulfill a certain request (*mereštu*) that is not specified in the tablet (lines 22–27). In light of the Amarna letters we may guess that the 'request' refers to a dispatch of gold. However, Haya neither gave back the 250 *parisu* of wheat nor fulfilled Takuhlinu's 'request', and the latter implores him to keep to his promises (lines 28–33). Takuhlinu further asks Haya to deliver (favorable) judgment in a financial affair that Adduya, his agent, had with a certain 'enemy' (line 35 ⌊ù⌋? [L]Ú? *na-ki-ri*) (lines 34–38). The background of the dispute is not specified in the letter. The letter ends with details of the present that Takuhlinu dispatched to Haya: one hundred shekels of blue wool and ten shekels of red wool (lines 39–41).

[2] Compare the broken sign in line 3 with the sign *al* in the lexical text in the photograph published by Kochavi 1990:29.

[3] It is impossible to see anything on the published photograph of the tablet.

The delivery of wheat from Ugarit to Canaan is exceptional. According to other historical records it was Egypt that supplied large quantities of grain to Hatti in the closing decades of the Empire, when there was severe food shortage and famine in vast areas of Anatolia (KLENGEL 1974; SINGER 1983b:4–5; 1999:715–719). Noteworthy also is that a man of Acco (Adduya) was the agent of the prefect *(sakinu)*) of Ugarit in his commercial affairs. The maritime connection between Ugarit and Acco is attested in the Ugaritic tablets (HELTZER 1978:151; XELLA 1995:257–258), and Takuhlinu must have deliberately selected a local Canaanite agent to promote his transactions in the land of Canaan.

There are other remarkable traits in the letter. For example, the tablet is unbaked, unlike all other international letters. Among the orthographic and linguistic peculiarities we may note the writing *ša-ki*-LUGAL for the title *sakinu* (line 5); the omission of the determinative URU before the city Acco (line 33); and the unusual logogram SA_5 (instead of ḪÉ.MED/ME.DA) for *tabarru* (line 40). Exceptional also are the expressions "my father (and) my lord" (line 2) and "your son (and) your servant" (line 5) in the introductory section. They do not fit the hierarchic relations of the Ugaritic *sakinu vis à vis* the Egyptian governor of Canaan. Also remarkable is Takuhlinu's twice repeated request (*mereštu*) from Haya whose content is not specified. Finally, the discovery of a letter sent to Haya, the Egyptian governor of Canaan, at Aphek is unexpected since the governor's seat was at the Egyptian centre of Gaza.

Petrographic analysis of this tablet reveals the same matrix and inclusions as in all the previous documents, but the minerals are lacking any sign of change due to heating. Moreover, a tiny fragment of its clay tested in the laboratory easily crumbed when wetted with distilled water; hence this tablet has never been fired. Therefore, we are confident that this letter was made at Aphek. A confirmation to this conclusion came from our examination of the Ugaritic letters EA 45–48 from the Amarna archive (GOREN, FINKELSTEIN and NA'AMAN 2004:88–91), as well as thirty tablets from Ras Shamra-Ugarit now deposited in the Louvre Museum (carried out by GOREN, yet unpublished). They all presented petrographic features of the Ras Shamra region, features which are very different from those of the letter from Aphek.

There are two alternatives to interpret these findings. According to the first, the latter is a copy of an original Ugaritic letter deposited in another place; for instance, an emissary with a letter from the *sakinu* of Ugarit on the way to the Egyptian governor in Gaza could have stopped at Aphek, where the letter was copied and stored for administrative reason (or copied in order to be sent to nearby Jaffa – see below). According to the second interpretation, this is a literary model letter that imitated authentic Ugaritic letters. According to this explanation the text was based on various authentic elements that the scribe borrowed from the reality of his time. Model letters intended to teach young scribes and to serve for future correspondences are known from Egypt, in particular under the Ramesside XIXth–XXth dynasties (CAMINOS 1954; 1982: 243–244 with earlier literature). Recently one of us suggested that some letters discovered in the Amarna archive served as such models (NA'AMAN 2002:80–81). Thus, the assumption that the Aphek document is a kind of a model letter fits well into a common practice in Egyptian scribal schools in the time of the New Kingdom.

A Fragment of a Tablet of unclear Nature

HALLO (1981) published a fragment of a tablet from Aphek, in which only the ends of the lines have been preserved (IAA 90–212). The script of the tablet looks archaic compared to all other tablets from Aphek. Hallo deciphered the text (eight line-ends on the obverse and five on the reverse) and interpreted it as a letter dealing with real estate. HOROWITZ *el al.* (2006:33–34), on the other hand, identified it as a school text preserving Sumerian and Akkadian entries. They did not bring evidence to support this interpretation. The content of the tablet is therefore unclear and we concur with Edzard's judgment (EDZARD 1985:252) that the text is "völlig unbestimmbar".

Petrographic examination of this tablet reveals that the matrix is dense, yellowish-tan in plane-polarized light, containing hematite particles. The inclusions are made of badly sorted, single rhombs of clear, idiomorphic dolomite, sizing between 25μm and 250μm. Based on the extensive body of reference material, this petrographic group is identified as originating from clay of the upper member of the Moza formation, mixed with dolomitic sand that was quarried from the capping 'Amminadav formation. It is well known from pottery assemblages from sites of different periods spread throughout the central hill coun-

try anticline. In the Amarna archive, it is typical of the letters sent by 'Abdi-Ḫeba of Jerusalem and Lab'ayu of Shechem (GOREN, FINKELSTEIN and NA'AMAN 2004:262–269 with references). The origin of the tablet from the highlands east of Aphek supports the identification of this text as a letter. Whether it was sent from Shechem or from Jerusalem, the two main city-states of the central hill country, remains unknown.

A HITTITE BULLA

The bulla (IAA 90–268), about half of which was preserved, carries the stamp of a Hittite prince or princess whose name probably begins with *Ar*[…] (SINGER 1978; 1983b 5, n. 4). It was impressed on a document, a royal gift or a commercial artifact. This is the only royal Hittite bulla discovered so far outside the Hittite empire. Singer dated it to the second half of the 13th century BCE, following the signing of a piece treaty between Egypt and Hatti (1258 BCE).

The possible source for the royal Hittite bulla could be first and foremost in one of the Hittite administrative centers of the 13th century BC, namely Hattusha (Boghazköy), Ugarit or Carchemish.

The environs of Boghazköy are characterized by a Mesozoic ophiolitic suit containing limestone, spilite, dolerite, basalt, marl, radiolarite and serpentine (KETIN 1962:74). Nearby there are exposures of Neogene continental deposits of various lithologies, and Eocene flysch containing mainly sandstones and sandy schists (KETIN 1963:48). As reference for the clay used in Boghazköy for tablet production we used the Hittite tablets in the Amarna archive (GOREN, FINKELSTEIN and NA'AMAN 2004:31–32) and tablets from Boghazköy which have been checked by one of us (GOREN, yet unpublished). The Ugarit clay was described in detail elsewhere (GOREN, FINKELSTEIN and NA'AMAN 2004:88–91).

As some reference for the clay that was used in Carchemish for document production, we used a letter from the King of Carchemish to the King of Ugarit (RS 8.333, see GOREN, FINKELSTEIN and NA'AMAN 2004:56–57). The general as well as detailed geological mappings of the area between Gaziantep and Carchemish indicate that the sediments around the site and upstream the Euphrates are very homogeneous (TOLUN and PAMIR 1975; ULU 1996a; 1996b). The site is located on recent Euphrates fluvial sediments. Immediately next to it lays the Gaziantep Formation of the Upper Eocene, composed of silty, clayey or chert-including limestone or chalk with glauconite concentrations. North of Carchemish one finds the Quaternary "Old alluvium" with partly consolidated clay, sand and gravel.

Our petrographic examination reveals that the clay of the Aphek bulla does not fit any of these environs. Rather, the bulla was made of Aphek's local clay; it is identical to the above-discussed lexical tablets.

The Aphek bulla was also subjected to Neutron Activation analysis. The elemental concentration pattern of the Hittite bulla is given in Table 1, column 1, multiplied by a factor (dilution factor) of 1.21. After application of this best relative fit factor the pattern is statistically similar in composition to a sample N48 in the Bonn data bank, which has been taken from a krater from the fortress of Kadesh-barnea in northeastern Sinai, dated to the seventh-sixth century BCE (column 2). This vessel has a unique seal impression consisting of a rectangle with 3 Xs, topped by a crown (chemical single in GUNNEWEG *et al.* 1991, 249 and Tab. 2). The chemical pattern of these 2 samples cannot be located exactly, but it is quite close to the composition of reference material from the sites Yavneh, Ashdod and Ashkelon. The chemical pattern of this group (labeled PALJ), consisting in total of 23 samples, is shown in column 3. It was first detected in material from Qantir (MOUNTJOY and MOMMSEN 2001, there called JPAL), where, at that time, only a probable provenance from Palestine could be suggested. The general similarity of the pattern of the bulla to Group PALJ points to its origin in the general region of the coastal plain of Palestine. The elemental composition of clay from Boghazköy shown in column 4 is very different, so a Boghazköy provenance can be excluded. Therefore, the NAA supports the results of the petrographic examination – that the bulla was made at Aphek. This conclusion opens the way for various speculations to account for the presence of the bulla at Aphek. For example, that a Hittite prince(ss) arrived at Aphek with his/her stamp, sealed there a certain object, and that the bulla was then broken and left at the site. Or that he/she arrived at a nearby place such as Jaffa, sealed there his/her present and dispatched it to an Egyptian official who was based at Aphek. Another possibility is that the bulla was an (ancient) fake made by a local artisan who knew how a royal Hittite seal looked like. Needless to say, these assumptions

are highly speculative, and we can suggest no conclusive explanation for this unique find.

Discussion

The diversity in the kind of texts and languages of the documents discovered in the relatively small residency of Aphek is without parallel in second millennium BCE sites excavated so far in the land of Canaan and calls for an explanation. To introduce the discussion, let us first compare the corpus of Akkadian texts unearthed at Aphek with that of Kumidi (Kamid el-Loz), the Egyptian centre located in the Beqa' of Lebanon.

Nine tablets and fragments from Kumidi have thus far been published. Eight of them are letters exchanged with neighbouring rulers (Edzard 1970; 1976; 1982; Wilhelm 1973; 1982; Arnaud 1991; 2003; Huehnergard 1996). Most (or all) of the letters were written in the second half of the 14th century BCE, shortly after the Amarna period (Na'aman 1988:179–191; Huehnergard 1996: 98–100). They demonstrate the centrality of Kumidi in the Egyptian system of government of northern Canaan after the conquest of êumur and Ullasa by Aziru of Amurru. The governor of Kumidi supervised the areas of northern Canaan and the coast of Lebanon, and whenever necessary the local rulers addressed him as the higher Egyptian authority in this vast area. The ninth tablet is a school text, the only tablet unearthed so far that was probably written in Kumidi (Edzard 1980; Hallo 1992: 80 n. 109; Na'aman 2005).

Comparison of the two groups of texts emphasizes the differences between the two sites. Firstly, whereas the vast majority of tablets from Kumidi are letters, the tablets from Aphek are of mixed nature. Secondly, though the Kumidi letters have not been examined in a microarchaeological method, it is logical to assume that they were dispatched to the Egyptian center from nearby locations; in contrast, our work has shown that the Aphek tablets were nearly all written at the site. Indeed, though Egyptian officials controlled both sites, Aphek had a different function than the Egyptian government centre of Kumidi.

Late Bronze Aphek was a small settlement, which was restricted to the acropolis of a much larger mound (Beck and Kochavi 1993). A series of monumental buildings were constructed there in the Late Bronze II (Gadot 2003), the last one – Building 1104 in which the Aphek tablets were found – shows clear evidence in both architecture and finds for Egyptian presence. Aphek is located at the headwaters of the Yarkon River, on the main international road that crossed the Land of Canaan (the so-called *Via Maris*). As such, it is mentioned already by Thutmose III and Amenophis II. Only a very small section of a Late Bronze IIA building (Stratum X-14) was unearthed, and its nature remains unknown. In a later phase of the Late Bronze II it was replaced by a monumental building which does not feature Egyptian characteristics yet (Stratum X-13). The Egyptian residency was built in the Late Bronze IIB (the 13th century BCE) over part of the previous building, incorporating the rest of it. The residency must have served as an Egyptian stronghold – a garrison and administration center, as well as a caravanserai. The site was selected by the Egyptians due to its strategic position on the vital international artery, in a place where the road goes through a relatively narrow pass between the Yarkon River to the west and the hills to the east. Other considerations could have been the site's location in the centre of fertile agricultural land and next to a major water source.

Jaffa, the main Egyptian administration center and harbor in this region (Goren, Finkelstein and Na'aman 2004: 322–325; for the archaeology see Kaplan 1972), is located on the coast, away from the international road. In other words, officials and caravans on the way from the north to Egypt did not go via Jaffa. For this reason, in the 13th century BCE Aphek was annexed to the territory of Jaffa (which now extended from the sand dunes on the coast to the sources of the Yarkon River in the east), and a command center was built there in order to supervise and serve the Egyptian interests along the international road.

The inscriptions discovered at Aphek point to an additional aspect of the Egyptian presence at the site. The scholarly – including trilingual – texts prove that scribes of Canaanite origin were active there. Their role must have been to supervise the dispatch of letters and merchandises brought by foreign envoys and merchants who traveled along the international road to southern Canaan and Egypt. The administrative texts in Akkadian discovered in the site were part of the registration of agricultural output and livestock brought to the place or passed nearby. The scholarly tablets probably reflect their activity in training young apprentices, probably as part of an Egyptian attempt to monopolize the training of local scribes – in this way the Egyptian adminis-

	Hittite Bulla 1 sample factor 1.21 C ± d(%)		N48 1 sample factor 1.00 C ± d(%)		PALJ 23 samples factor 1.00 M ± s(%)		Hattusha 15 samples factor 1.00 M ± s(%)	
As	3.22	3/1	8.62	2/1	4.49	14.	61.3	55.
Ba	369.	8/1	286.	3/5	524.	29.	540.	21.
Ca %	9.68	2.0	5.44	2/1	7.24	43.	3.57	30.
Ce	62.8	1.0	61.0	0.7	63.6	5/8	80.6	4/7
Co	15.5	0.7	15.3	0.7	17.0	6/5	22.1	13.
Cr	107.	0.8	114.	0.8	98.5	4/1	190.	17.
Cs	1.55	4/4	1.53	4/6	1.29	18.	17.9	20.
Eu	1.27	1/9	1.18	2.0	1.32	3/2	1.23	2/6
Fe %	3.40	0.4	3.26	0.5	3.77	4/5	4.24	10.
Ga	14.3	17.	10.4	25.	14.2	14.	25.4	9/3
Hf	15.6	0.7	13.7	0.8	10.9	14.	5.35	4/5
K %	2.20	1/4	2.34	2/2	1.12	19.	3.08	10.
La	29.0	0.4	28.3	1/7	28.4	3/4	37.4	4/6
Lu	0.53	3/4	0.43	2/9	0.44	5.0	0.49	5/6
Na %	0.72	0.6	1.35	1/7	0.62	32.	0.55	26.
Nd	22.5	6/5	26.8	1/9	26.1	3/3	29.2	6/4
Ni	91.8	32.	58.0	12.	54.4	21.	152.	24.
Rb	53.6	3/7	39.2	4.0	40.9	11.	143.	8.0
Sb	0.27	19.	0.48	9/5	0.48	19.	1.28	47.
Sc	11.6	0.2	11.6	0.2	12.5	4/9	20.1	3/2
Sm	4.51	0.4	5.10	0.4	5.03	3/3	5.33	5/7
Ta	1.27	2/7	1.14	2/2	1.13	5/6	1.05	3/4
Tb	0.85	5/7	0.70	4/7	0.76	4/6	0.70	6/7
Th	8.15	0.8	8.32	0.7	7.23	5/4	13.3	4/6
Ti %	0.87	8/5	0.49	2/6	0.65	9/4	0.55	15.
U	1.63	4/9	2.74	0.9	1.83	22.	2.56	5/1
W	1.50	11.	1.33	14.	1.29	19.	2.37	12.
Yb	3.47	1/6	3.22	1/8	2.91	3/7	3.06	3/5
Zn	88.5	2/5	92.0	2/4	74.1	34.	258.	62.
Zr	578.	4/4	574.	4/7	365.	22.	126.	26.

Table 1 Samples from the Hittite Bulla, N48, the PALJ group and Hattusha Concentrations of elements measured by NAA in µg/g (ppm), if not indicated otherwise; given for the samples are concentrations C and measuring errors d in percent of C, for groups averages M and spreads s (root mean square deviations) in percent of M. The data of the Bulla are multiplied with the best relative fit factor 1.21 with respect to sample N48, a krater from the Kadesh-barnea fortress of the 7th/6th century BCE of similar paste

tration system could increase its control over the local Canaanite rulers. Significantly, no text written in hieratic was discovered at the site.

Scribal activity in the time of the XIXth Egyptian Dynasty increased due to the tightening of the relations between Egypt and Hatti. We refer especially to the extensive correspondence and commercial exchange held between the two royal courts after the 21st year of Ramesses II (1259 BCE). Only later, possibly in the time of the XXth Dynasty, did the Egyptians start promoting the use of hieratic for writing administrative texts in southern Canaan (Gilula 1976; Goldwasser 1982; 1984; 1991a; 1991b; Goldwasser and Wimmer 1999; Maeir, Martin and Wimmer 2004). The developments in the time of the XIXth–XXth Dynasties may explain the unique assemblage of texts written in cuneiform signs discovered at Tel Aphek and the replacement of cuneiform Akkadian by hieratic texts in later decades. Yet, any discussion of this matter depends on the dating of the Aphek residency – mainly its end days.

Singer (1983b:23) tentatively dated the Ugaritic letter from Aphek to about 1230 BCE. Most of

the references to Takuhlinu are dated to the reign of 'Ammishtamru II (*ca.* 1335–1260) (SINGER 1999:678–683) and there is no evidence that he was in office in the time of 'Ammishtamru's successor (VAN SOLDT 2001:588–590). Haya was probably appointed to his mission in Canaan in the 34th year of Ramesses II (1246 BCE) (SINGER 1983b:21–22). In this light we may tentatively argue that the assumed original letter was dispatched by Takuhlinu to Haya in about 1240 BCE, and that this date is a *terminus post quem* for the destruction of the Aphek residence.

The *terminus ante quem* depends on the original stratigraphic affiliation of the Ramesses IV scarab found in a Stratum X-10/9 pit together with Philistine bichrome pottery (KEEL 1997: 85, No. 17) – pottery which no doubt postdates the days of this monarch. Two possibilities present themselves: that the scarab originated from Stratum X-12 (the residency) or from Stratum X-11 (simple houses built over the destroyed residency). Ramesses IV scarabs found at other terminal Late Bronze Egypto-Canaanite centers would favor the former alternative (UEHLINGER 1988; FINKELSTEIN 2005), while the pottery assemblage from the residency could favor the latter alternative (see BECK and KOCHAVI 1985 who date the Stratum X-12 assemblage to the late 13th century, and a recent, more cautious approach by GADOT 2003). The first solution would mean that the distinction in the use of Akkadian and hieratic is geographical and not chronological. It is noteworthy in this connection that the XXth Dynasty strata at the Egyptian center of Beth-shean (Level Lower VI), as well as nearby Megiddo (Stratum VIIA) did not produce hieratic inscriptions. This may support the conclusion that the hieratic writing in the time of the XXth Dynasty did not extend beyond the area of southern Canaan and hence did not reach the Aphek residency.

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