

# A Canaanite's Wish to Eradicate Lice on an Inscribed Ivory Comb from Lachish

ושדר לה סריקותא דמקטלא כלמי

**“And he sent to her a comb that kills lice”**

(Babylonian Talmud, Niddah 20b)

Daniel Vainstub<sup>1</sup>, Madeleine Mumcuoglu<sup>2</sup>, Michael G. Hasel<sup>3</sup>,  
Katherine M. Hesler<sup>4</sup>, Miriam Lavi<sup>2</sup>, Rivka Rabinovich<sup>5</sup>,  
Yuval Goren<sup>1</sup>, and Yosef Garfinkel<sup>2</sup>

<sup>1</sup> Department of Archaeology, Ben-Gurion University of the Negev

<sup>2</sup> Institute of Archaeology, The Hebrew University of Jerusalem

<sup>3</sup> Institute of Archaeology, Southern Adventist University

<sup>4</sup> Lanier Center for Archaeology, Lipscomb University

<sup>5</sup> National Natural History Collections, Institute of Earth Sciences,  
Institute of Archaeology, The Hebrew University of Jerusalem

## Abstract

An inscription in early Canaanite script from Lachish, incised on an ivory comb, is presented. The 17 letters, in early pictographic style, form seven words expressing a plea against lice.

**Keywords:** Canaanite inscription, ivory comb, Lachish, Serabit el-Khadem, Wadi el-Hôl, Ugaritic script, South Arabian scripts

Daniel Vainstub, Madeleine Mumcuoglu, Michael G. Hasel, Katherine M. Hesler, Miriam Lavi, Rivka Rabinovich, Yuval Goren and Yosef Garfinkel, 2022. A Canaanite's Wish to Eradicate Lice on an Inscribed Ivory Comb from Lachish. *Jerusalem Journal of Archaeology* 2: 76–119. ISSN: 2788-8819; <https://doi.org/10.52486/01.00002.4>; <https://jjar.huji.ac.il>



## 1. Introduction

The first phase of the Canaanite alphabet, with its archaic, pictographic letters, is not entirely clear to us. On the one hand there are the inscriptions found at the Egyptian turquoise mine site of Serabit el-Khadem in southern Sinai and rock engravings identified in Wadi el-Hôl near Luxor (Gardiner 1916; Darnell et al. 2005), while on the other hand there are the few inscriptions uncovered in Canaan—the incised pottery sherds from Gezer and Shechem and the bronze dagger from Lachish (Naveh 1987; Sass 1988). When we attempt to achieve a higher resolution of the origin and spread of the Canaanite alphabet, we find a lack of consensus on several key issues:

1. How should the inscriptions of Serabit el-Khadem and Wadi el-Hôl be dated? The proposed dates vary between the 14<sup>th</sup> century BCE (Sass 2005), the 15<sup>th</sup> century BCE (Puech 1986b: 187; Naveh 1987: 26–27; and Lemaire 2000 for Serabit el-Khadem), and the 19<sup>th</sup> century BCE (Darnell et al. 2005: 86–90; Goldwasser 2006, 2011, 2022; Puech 2015).
2. Which group of inscription is earlier, the Egyptian group or that from Canaan, as argued by Naveh (1987)?<sup>1</sup>
3. How were the individual alphabetic letters originally chosen? The most likely answer is that they were inspired by the Egyptian hieroglyphic script (Goldwasser 2006, 2010; Hamilton 2006).
4. Who invented this acrophonic<sup>2</sup> system? Were they simple and illiterate Canaanite workers in the mines (Goldwasser 2012, 2022) or members of the Canaanite elite (Colless 2014; Rollston 2010)?

Additional questions of interest are who used the alphabet, and for what purposes.

Up to now there have been no definitive answers to these questions, since apart from a few letters or perhaps a word or two, no real inscription predating the 13<sup>th</sup> century BCE has been found in Canaan in a good context. From the 13<sup>th</sup> and 12<sup>th</sup> centuries BCE more inscriptions (about 15) are known, most of them from Lachish. These inscriptions include a few letters, and sometimes a clear word. The only exception is the inscribed jar known as the “Lachish Ewer”, from the Fosse Temple, which seems to bear a dedicatory text (Cross 1954). Thus, it is very likely that most writing was carried out on perishable materials that have decayed over time. For the convenience of the reader, and to assist in further research, we summarize the Canaanite inscriptions from Lachish in Table 1.

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1 See also Puech (1986b: 187, 195–199) at an early stage.

2 Namely, writing a letter by means of a pictograph that represents a word beginning with the sound that the letter represents; e.g. a drawing of a house, *bayt* in their language, representing the consonant *b*.

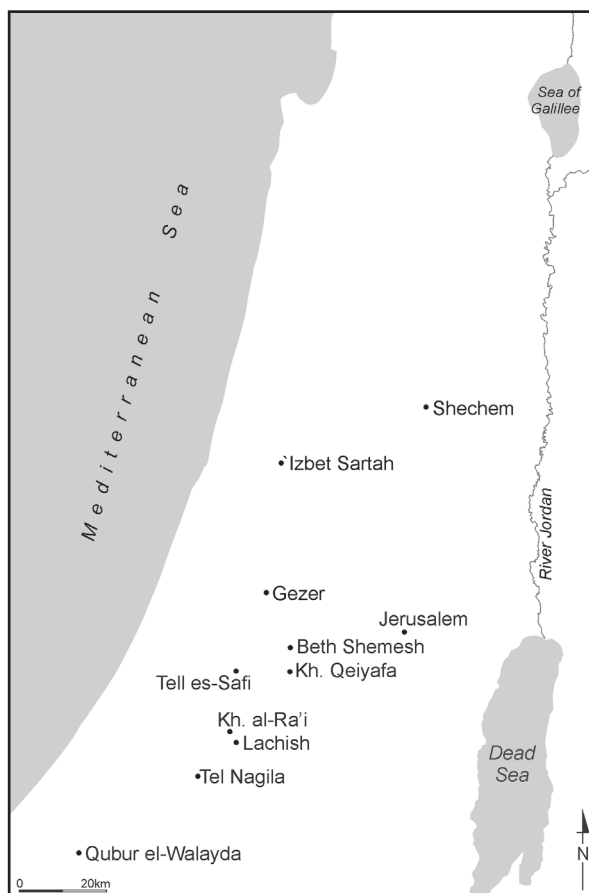
**Table 1.** The Canaanite inscriptions from Lachish, in order of their publication.

No	Year	Type	Material	Location	References
1	1934	Incised before firing	Pottery (Lachish Bowl 1)	Tomb 527	Starkey 1934, Pl. VIII:3; Tufnell 1958: 129, Pls. 43 , 44:2; Puech 1986a, Fig. 2:1
2	1934	Ink	Pottery jar (Lachish Ewer)	Fosse Temple	Starkey 1934, Pl. IX; Tufnell et al. 1940: 49–54; Tufnell 1958:130; Cross 1954: 19–21; Puech 1986a, Fig. 2:2; Sass 1988: 60–61, Figs. 156–160
3	1935	Incised after firing	Pottery (Lachish Bowl 2)	Fosse Temple area	Starkey 1935, Pl. XVI:1; Tufnell et al. 1940: 55, Pl. 29:12; Tufnell 1958: 130; Puech 1986a, Fig. 1:5; Sass 1988, Figs. 166–167
4	1936	Ink	Pottery lid (censer)	Tomb 216	Starkey 1936, Fig. 1, Pl. 2:1; Tufnell 1958: 128, 232–235, Pls. 44:l, 45:4; Puech 1986a, Fig. 1:4
5	1937	Engraved	Bronze dagger	Tomb 1502	Starkey 1937, Pl. VIII:1; Tufnell 1958: 128, Pl. 42; Puech 1986a, Fig. 1:1; Sass 1988: 53–54, Figs. 140–141
6	1958	Ink	Small pottery sherd	Fill, Iron Age palace	Tufnell 1958, Pl. 44:7; Yadin 1959; Puech 1986a, Fig. 1:2; Sass 1988: 60–61, Figs. 161–162
8	1984	Ink	Pottery bowl	Pit 3867, Level VI	Ussishkin 1983:155–157; Cross 1984; Puech 1986a, Fig. 2:3; Sass 1988, Figs. 164–165; Lemaire 2004
9	2014	Incised before firing	Pottery jar	Floor, Northeast Temple Level VI	Sass et al. 2015; Lemaire 2016
10	2019	Ink	Cypriot pottey bowl	Level S-3	Höflmayer et al. 2021
11	2021	Incised	Ivory comb	Pit, Level II	Current publication
12	2022	Incised	Pottery bowl	Level VII	Hoo-Goo Kang, personal communication
*7?	1978	Ink	Pottery bowl	Acropolis Temple	Ussishkin 1978: 20–21; Puech 1986a, Fig. 1:3

\* It is not certain that No. 7 is indeed an inscription (Puech 1986a).

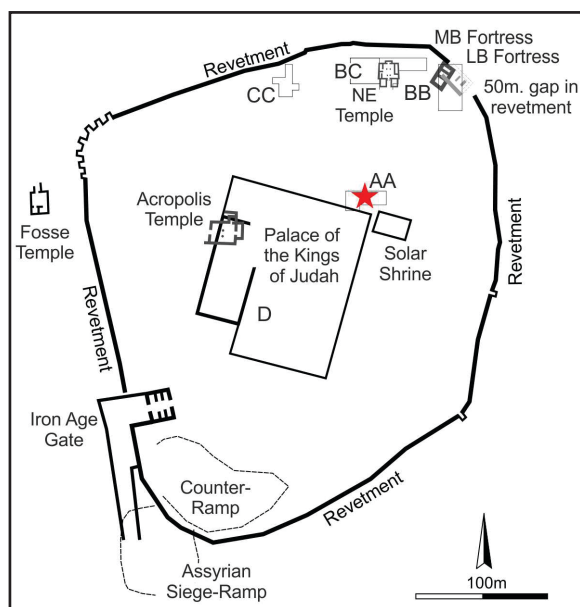
## 2. The Context of the Ivory Comb

Lachish was a key Canaanite city-state in the 2<sup>nd</sup> millennium BCE, the second most important city in the Judean Kingdom after Jerusalem in the Iron Age and a major city in the Persian and Early Hellenistic eras (Fig. 1). The Fourth Expedition to Lachish was initiated at the end of the Khirbet Qeiyafa excavations (Garfinkel et al. 2013). The fieldwork at Lachish was conducted over five years, from 2013 to 2017. So far an extensive interim excavation report (Garfinkel et al. 2021) has been published, as well as studies of specific aspects (Weissbein et al. 2016, 2019; Brandl et al. 2019; Garfinkel, Hasel, Klingbeil et al. 2019; Garfinkel, Kreimerman, Hasel et al. 2019; Klingbeil et al. 2019; Garfinkel 2020; Garfinkel et al. 2021; Kang and Garfinkel 2021). Among the finds was a Canaanite inscription from Level VI, dated to ca. 1200–1150 BCE (Sass et al. 2015).



**Fig. 1.** Map of Canaan and the location of sites with Canaanite inscriptions mentioned in the text.

In the Fourth Excavation's season of June–July 2016, an ivory comb incised with an early alphabetic inscription was found. The comb, Basket No. AA3429, was excavated in Pit AA485 in Square Od25, located in the northeastern part of Area AA (Fig. 2).<sup>3</sup> Pit AA485, which contained a number of complete vessels dating from Level II of the 7<sup>th</sup>–6<sup>th</sup> centuries BCE, extended from the Level II occupation and cut through Levels III and IV. The ivory comb was found approximately 0.90 m above the bottom of the pit. Level II, the last Iron Age city at Lachish, was destroyed by the Babylonian in 586 BCE (Ussishkin 2004: 90–92). As the comb's inscription is written in the style that characterized the very earliest stage of the alphabet's development, it is clear that it was in secondary deposition, found in a context dating from about one millennium after the inscription was incised.



**Fig. 2.** Map of Tel Lachish and the excavation areas. The comb was found in Area AA.

Nevertheless, this particular find spot is of some significance, as it is in the highest central area of the site, a preferred location for public buildings such as palaces and temples. Indeed, it is not far from the Solar Shrine of the Persian period, the palace-fort of the Iron Age, the Acropolis Temple of the Late Bronze Age, and the

<sup>3</sup> Square Od25 was excavated by volunteers Catalina Hannah, Edwin Reynolds, and Megan Weingardner, supervised by Katherine M. Hesler. The discovery was made on June 20, 2016, the first day of the excavation season, after removal of the geotextile that had been placed there at the end of the previous season. The object was initially placed in a bone bag and was later identified as an ivory comb by Edward Maher, the expedition's zooarchaeologist.

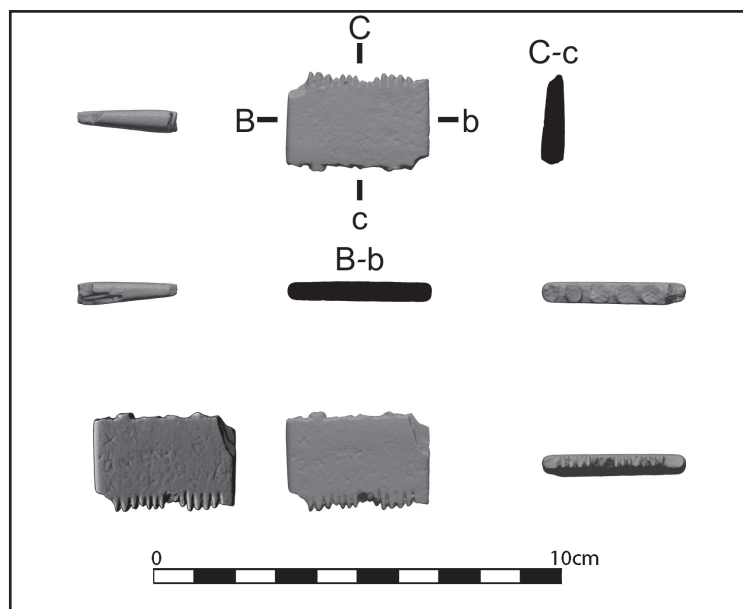
palace of the Middle Bronze Age. An ivory comb is certainly a prestige object that would be expected to derive from such a part of the site.

Although the comb was excavated in 2016, and over the years was examined for the presence of lice and even for louse DNA, the very shallowly incised inscription was noticed only in December 2021 by Dr. Madeleine Mumcuoglu.

### 3. The Ivory Comb

#### 3.1. The Object

The comb is made from elephant ivory, as reported in detail below by Rabinovich and Goren in Section 4. It is 3.66 cm wide and 2.51 cm high (Fig. 3). This comb, like most such objects known from excavations, had teeth on both sides. All of these teeth, although their bases are still visible today, were broken in antiquity. The side with thick teeth appears to be broken with a ragged edge. The top right-hand corner of the comb was slightly damaged during excavation, exposing three layers of the ivory. The central part of the comb is somewhat eroded, possibly by the pressure of fingers holding the comb during haircare or removal of lice from the head or beard. The side of the comb with six thick teeth was used to untangle knots in the hair, while the other side, with 14 fine teeth, was employed to remove lice and their eggs (Mumcuoglu 2008).



**Fig. 3.** Technical scanning of the comb (A. Karasik, Israel Antiquities Authority laboratory).

Altogether four combs are known from Lachish. The first was discovered in Tomb 501, dated to the Late Bronze Age (Tufnell 1958: 236, Pl. 28:16). The second was found in Level VI, dated to the first half of the 12<sup>th</sup> century BCE (Sass 2004, Table 23.35:1, Fig. 23.21:7). The third comb, made of bone and painted with red pigment as reported below in Section 4, was discovered in the Northeast Temple of Level VI dated to the beginning of the 12<sup>th</sup> century BCE until its destruction in the second half of the 12<sup>th</sup> century (Weissbein et al. 2019).

Ancient combs were made from wood, bone, or ivory. As there were no elephants in Canaan in historical periods, ivory combs must have been imported from elsewhere, probably from Egypt. Indeed, in Egypt fine-tooth ivory combs are already known in the Predynastic era (Petrie 1920, Pl. XXIX; 1927: 25, Pl. XX; Martín del Río 2018). They appear later in graves of the First Dynasty and the Old Kingdom, for instance the inscribed ivory comb of King Djet, the fourth pharaoh of the First Dynasty, who reigned in the early 3<sup>rd</sup> millennium BCE (Petrie 1925, Pl. XXI; 1927: 25, Pl. XX). Egyptian ivory combs are also reported from the Middle Kingdom and the Second Intermediate Period (Petrie 1891: 29, Pl. VIII:30–31; 1927: 25, Pl. XX:16; Bietak 1970: 23; Martín del Río 2018, Fig. 5:b).

In Canaan, some 20 wooden combs were found in the Middle Bronze Age cemetery of Jericho (Kenyon 1960, Fig. 201:1–13; 1965, Figs. 142:1–5, 243:1–11). Two similar combs, apparently made from ivory, are reported from the cemetery of Khirbet Kufin (Smith 1962: 26, Pl. XVII:45–46). These are one-sided combs with an opening for the fingers in the opposite side, and the Middle Kingdom Egyptian combs mentioned above were made in the same style.

Ivory combs are known from New Kingdom Egypt (Petrie 1891: 35, Pl. XVIII; Kamal 1967: 120; Ashton 2011: 26; Franzmeier 2017: 1793, 1794; Martín del Río 2018, Fig. 5:c). They were widespread in the Levant during the Late Bronze Age, for example at Gezer (Macalister 1912: 118, Fig. 295:1; Seger and Lance 1988: 196–197, Pl. 13:9), Lachish (the four combs mentioned above), Megiddo (nine combs: Loud 1939: 107–115, Pls. 16–18), and Ugarit (Gachet-Bizollon 2007). Ivory combs were found at Enkomi and Kition in Cyprus (Dikaio 1969–71: 54, 64, 181, 450, 508, Pls. 32:2, 127:23, 42; Karageorghis and Demas 1985a: 79, 1985b: 112, 335–336), and further to the west in Italian sites (Cazzella 2009: 161). Some of the Late Bronze Age ivory combs are engraved with elaborate scenes, although none of them bears an inscription.

Ivory combs have been reported from the Iron Age I Philistine sites of Ekron and Ashkelon (Ben-Shlomo and Dothan 2006, Fig. 14; Stager et al. 2008: 258, Fig. 15.19).



### 3.2. Lice

The comb was examined for the presence of lice under Dino-Lite digital microscope and photographs were taken of both sides. Calibration was used when necessary to enlarge the photograph. Remains of head lice, 0.5–0.6 mm in size, were found on the second tooth. The climatic conditions of Lachish, however, did not allow preservation of whole head lice but only of the outer chitin membrane of a first or second nymph stage head louse (Fig. 4).

Head lice have been reported by archaeologists from as early as approximately 10,000 years ago, in the form of head louse eggs that were recovered on hair from carbon-dated human remains found in Brazil (Araujo et al. 2000). Likewise, in Israel 9000-year-old louse eggs were found on hair samples from an individual in Nahal Hemar Cave near the Dead Sea (Zias and Mumcuoglu 1989) and in combs of the Roman period from the Dead Sea area (Mumcuoglu and Hadas 2011).



**Fig. 4.** Remains of a head louse nymph between the teeth of the Lachish comb.

## 4. The Material

### 4.1. Method

The comb discussed here (henceforth: Comb A), together with an additional comb from the current excavations used for comparison<sup>4</sup> (henceforth: Comb B), were subjected to material analyses.

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<sup>4</sup> The second comb examined for comparison was unearthed at Lachish in 2015, Area CC, Locus CC1186, Basket CC5585.



The study of the two combs was intended to define the nature of their materials, especially since the inscription on the comb under review here refers to the word “tusk”, hence suggesting that this was the material of which it was made. The identification of ivory and ivory substitutes can be accomplished using physical, chemical, or genetic techniques. This study applied only non-destructive testing (NDT) methods, although it was stated prior to it that, if necessary, some minimally destructive testing (MDT) of sub-millimeter-sized samples might be applied. However, the latter was not required since the NDT supplied positive results.

Due to the delicate state of preservation of the objects, they were subjected to conservation processes prior to our examinations.

The overall approach and examination protocol were adopted from the CITES guide (Baker et al. 2020). The analyses were made at the following levels:

**1. Elemental analysis:** The elemental concentrations of the two combs were measured using a portable X-ray fluorescence (pXRF) spectrometer. The instrument was a Thermo Fisher Scientific Niton XL3t GOLDD+ pXRF. This apparatus delivers a feature-rich package enhanced with Geometrically Optimized Large Area Drift Detector (GOLDD™) technology for improved light element (Mg-S) analysis, using an Ag anode 50 kV and 200  $\mu$ A. Because in this case only screening was required, it was sufficient to use the adjustment that Niton provides with its pXRF, of an internal, factory-set calibration program. We employed the “mining” matrix, which includes most of the relevant elements for non-metallic archaeological materials. With this matrix, the apparatus uses four filters for each irradiation session, set to include the main, low, high, and light ranges of elements. The display units were set to weight percent and the instrument was set for the irradiation of 30 seconds per filter, summing altogether in 120 seconds. Due to the NDT requirements, surfaces could not be cleaned of post-depositional coatings, which was not significant for the required information.

**2. Molecular analysis:** Fourier transform infrared spectroscopy (FTIR) and Raman spectroscopy are the best tools to distinguish ivory-looking alternatives from genuine hydroxyapatite-based ivory. The vibrational spectroscopy techniques are non-destructive and quick to perform. Here we used a portable Rigaku™ Progeny™ ResQ™ 1064 nm (NIR) handheld Raman analyzer. However, these analytical tools cannot determine the exact species of the many animals that produce ivory (Baker et al. 2020).

**3. Microscopical surface study:** This was made using a Zeiss Stemi 200-C stereomicroscope equipped with a reflected light LED ring, under magnifications of 6x–50x. Additionally, a Dino-Lite™ Edge digital microscope was employed,

using white, plain-polarized, and long-wave ultraviolet (365 nm) light sources, with the compatible Dino Capture™ computer application. As opposed to other bone-like materials, the chemical composition of ivory, other teeth, and bones (hydroxyapatite) is such that it fluoresces brightly under long-wave ultraviolet light.

4.2. Results

The pXRF results are presented in Table 2. The elements having values below or near the limits of detection (LOD) level of 2-sigma were cleared from the list. In addition, elements that are known to be affected by post-depositional processes were also omitted. These include S, much affected by the presence of gypsum in arid soils; Cl, which is increased by surface enrichment by salt; and Ba, which is enriched as barite in some clays. The results for both items indicate apatite (calcium phosphate), with some clay (alumino-silicates) that may result from the environmental coating. As the pXRF is not capable of inspecting C (namely, organic substances such as collagen), this aspect is not represented by these results.

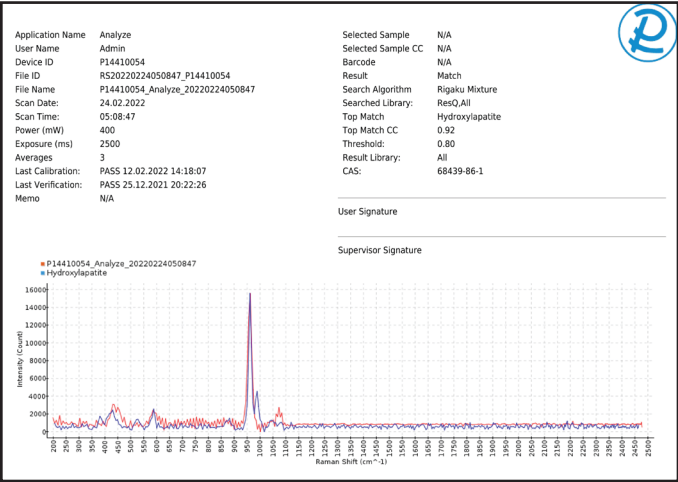
Comb B also presents a higher concentration of manganese, most likely due to surface enrichment by post-depositional processes, as indeed was observed microscopically.

**Table 2:** Results of the pXRF analysis of the two combs

Comb	Bal	Bal ±	Sr	Sr ±	Fe	Fe ±	Mn	Mn ±	Ti	Ti ±
A	43.219	0.326	0.08	0.001	0.109	0.009	< LOD	0.018	0.069	0.013
B	44.477	0.292	0.132	0.002	0.137	0.009	0.105	0.012	0.066	0.012

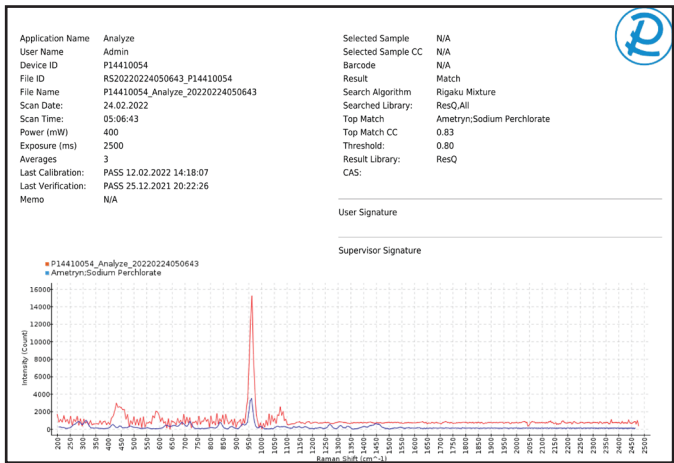
Comb	Ca	Ca ±	K	K ±	Al	Al ±	P	P ±	Si	Si ±
A	37.109	0.274	0.101	0.016	0.773	0.254	14.798	0.122	2.881	0.112
B	36.894	0.254	0.174	0.017	0.582	0.247	13.406	0.115	2.672	0.11

The Raman spectra are shown in Fig. 5. The first spectrum also indicates as the presence of sodium perchlorate, NaClO<sub>4</sub>, a salt naturally created in many soils. The analyses repeatedly presented hydroxyapatite with the general formula Ca<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>(CO<sub>3</sub>)H<sub>2</sub>O. Hydroxyapatite is the general inorganic compound of bones and teeth.



**Fig. 5.** The results of Raman spectra analysis of the surface of Comb A.

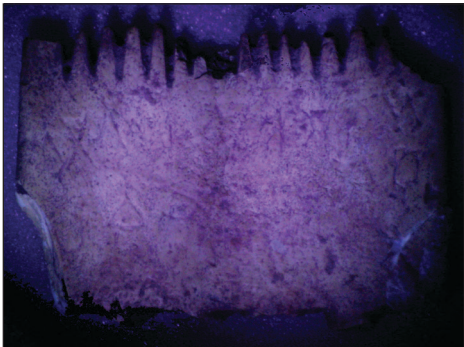
Under the optical and digital microscopes (Fig. 6), Comb A reveals a homogenous and smooth surface on the plane sides (Figs. 7–8). On the planes of break of the bigger comb teeth, Schreger lines, a diagnostic morphological feature seen in elephant and mammoth ivory cross-sections, can be readily recognized (Figs. 9–10). This denotes that the comb was created of elephant tusk, with the broad surface cut parallel to the tusk’s elongation. Due to the small exposure of the Schreger lines, it was impossible to suggest any taxonomic determinations using the common method of measurement of Schreger angles in proboscidean ivory cross-section (Baker et al. 2020).



**Fig. 6.** The results of Raman spectra analysis of the fresh breakage of Comb A. (see attached figure, upper right corner).



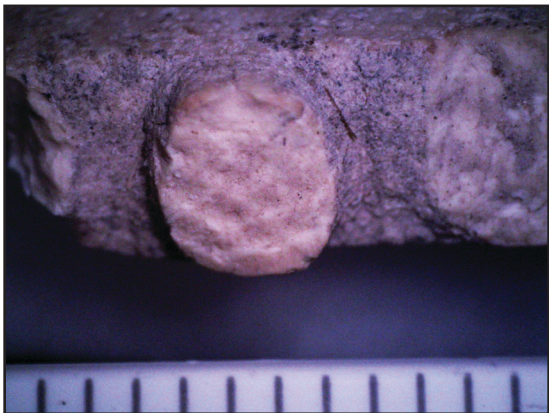
**Fig. 7.** General view of Comb A, oblique illumination.



**Fig. 8.** General view of Comb A under ultraviolet light.



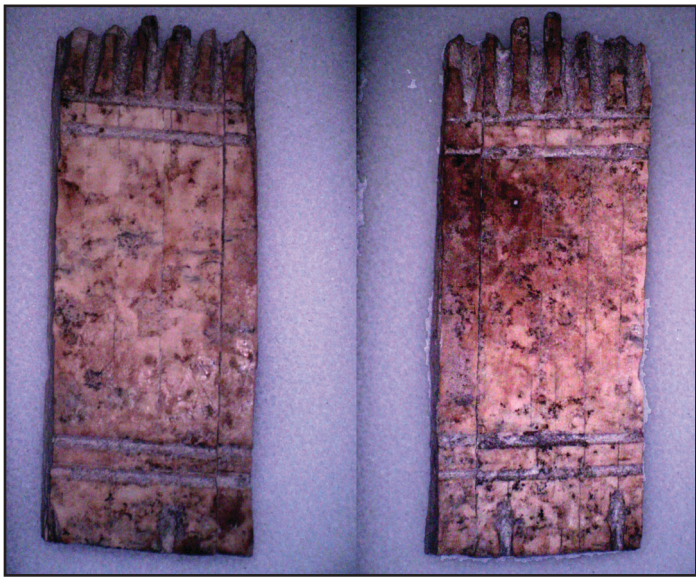
**Fig. 9.** Comb A: Schreger angles in the breaks of the teeth.



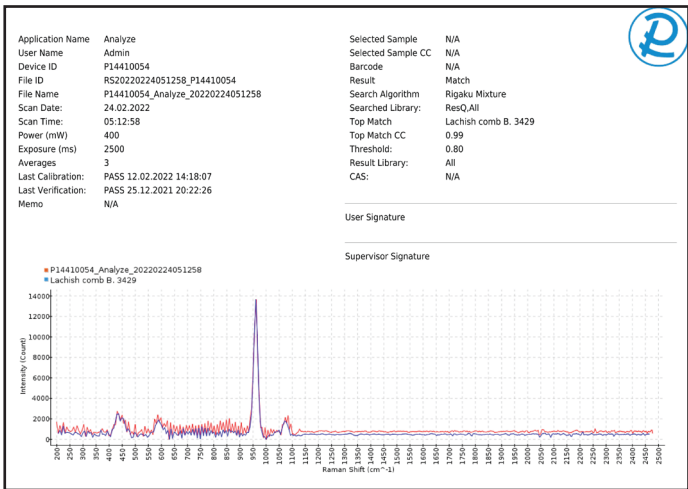
**Fig. 10.** Comb A: Schreger angles in the breaks of the teeth under long-wave ultraviolet light.



Comb B is presented in Figs. 11–12. Looking at it under the microscope reveals a structure with hairline cracks parallel to the long axis of the object. The natural break, providing a cross-section parallel to this axis, discloses a structure of longitudinal tubes typical of the bone Haversian system of osteons. It may be concluded that this comb was made of the compact part of a mammalian long bone. Further taxonomic classification will require some robust sampling.

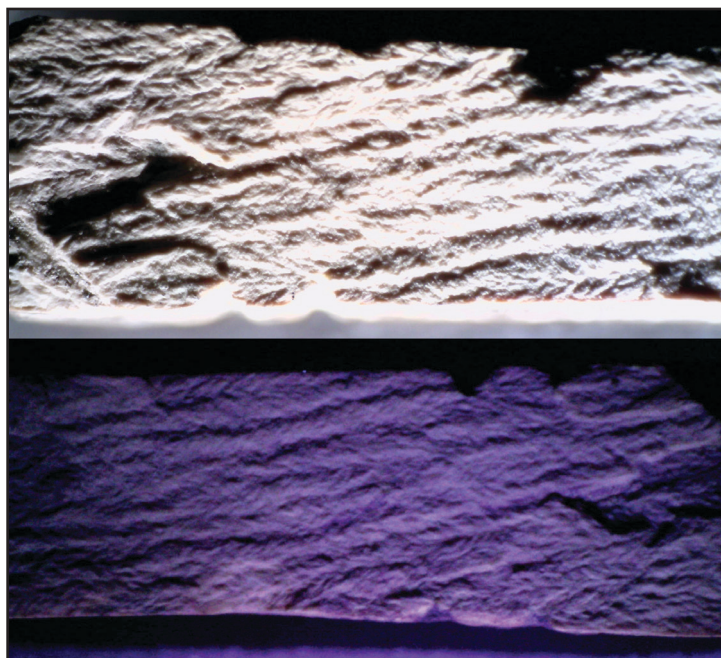


**Fig. 11.** Comb B: view of both sides under epi-illumination.



**Fig. 12.** The results of Raman spectra analysis of Comb B.

The microscopical examination of this comb under white and UV light (Fig. 13) suggested that it was coated with some reddish-tan pigment, but our attempts to identify it with the Raman were in vain. At the same time, a closer look under UV light (Fig. 13) reveals the dark manganese “flowers” on the surface, highlighted by the weak fluorescence of the bone material below. Such surface growth of manganese is normally the result of environmental processes in soil.



**Fig. 13.** Comb B under oblique illumination (top) and long-wave ultraviolet light (bottom).

#### **4.3. Summary of the Material Analyses**

The study reveals that the two combs are technically different: while Comb A is made of proboscidean ivory, Comb B is made of bone. While the first bears an inscription, the second was seemingly decorated with some unidentified reddish pigment.

## 5. The Inscription (Figs. 14–18)

*ytš ḥt d lqml š'[r w]zqt*

**“May this tusk root out the lice of the hai[r and the] beard”**



**Fig. 14.** RTI photograph of the comb (Dafna Gazit, senior photographer, Israel Antiquities Authority).

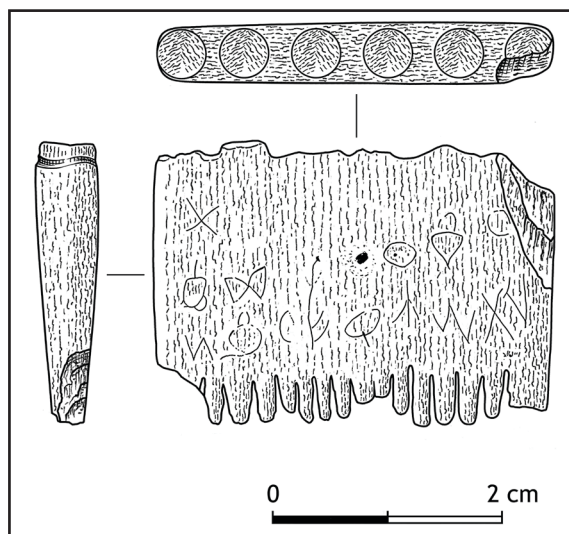
The inscription contains 17 tiny letters that vary in width from 1 to 3 mm, engraved on the not-completely-smooth surface of the comb. The letters form seven words that for the first time provide us with a complete reliable sentence in a Canaanite dialect, written in the Canaanite script.



Most of the letters survive to some degree, except for letter 13, which was totally damaged, and letter 14, of which only a few parts remain. The engraver did not maintain alignment of the letters or uniformity of their size. In the first row that he wrote, the letters become progressively smaller and lower. In this row the script runs from right to left, and when the engraver reached the edge of the comb, he turned the comb through 180° and wrote the second row from left to right, in such a way that the rows are arranged “heads on heads”, with the heads of the letters in the middle of the comb and the bases of the letters facing both lines of teeth. When the engraver reached the edge of the comb at the end of the second row, not enough space remained for another letter, and so he engraved it below the last letter of the row. Because of the change of orientation, both rows start on the same side of the comb, unlike in the boustrophedon method.






### 5.1. Paleography

**Letter 1.** The letter is a standing “curved palm” *yod* (Hamilton 2006: 108–112) with considerable disproportion between its parts: the thumb, which was most probably engraved first, is longer than would be expected (Table 3). *Yods* executed in a similar fashion are known from Serabit el-Khadem inscription 375c (Hamilton 2006: 377) and the Tel Nagila sherd (Sass 1988, Figs. 143–144). The stratigraphic dating of the Tel Nagila sherd is not entirely clear; initially it was dated tentatively to the end of the Middle Bronze Age or the beginning of the Late Bronze Age, but this is now controversial (Sass 2005: 159; Finkelstein and Sass 2013: 156).



**Fig. 15.** Technical drawing of the comb. The drawing of the inscription is based on Fig. 18.

**Table 3.** Various depictions of the letter yod.

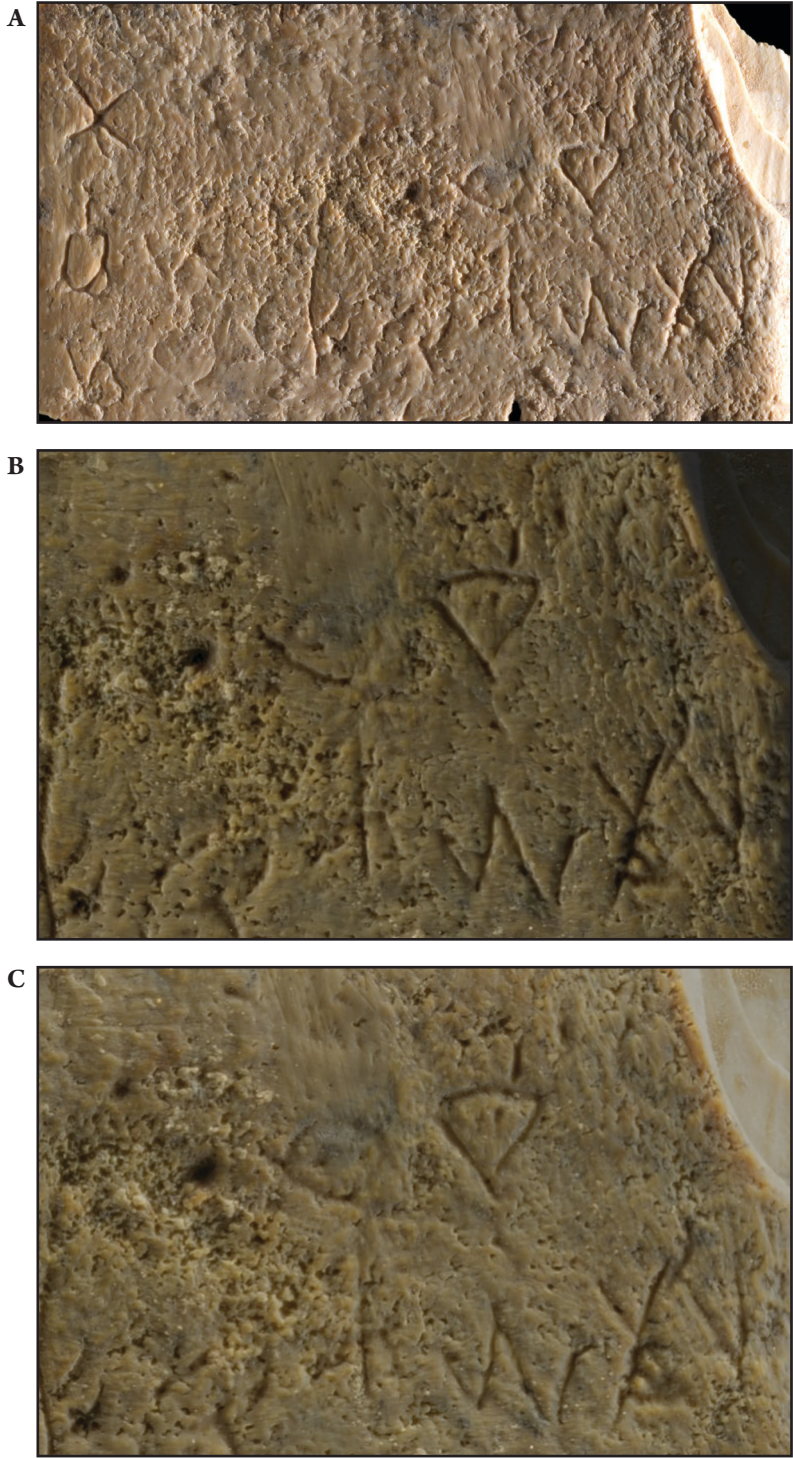
				
Lachish comb	Nagila (Sass 1988, Fig. 143)	Skh 375c (Hamilton 2006)	Lachish (Sass 1988, Fig. 166)	Lachish (Lemaire 2004)

**Letter 2.** The letter is a fully preserved common “X-shaped” *tav*.

**Letter 3.** The letter is a fully preserved common “W-shaped” *shin*.

**Letter 4.** This letter is composed of a central axis and a short ascending oblique stroke approaching it on each side, giving the letter the look of a sort of tripod. As can be seen in the close-up RTI photographs (Figs. 16–17), despite the damage to the surface on the left side of the letter, there is no indication that the letter had additional components, and it seems that the tripod look is its final and intended form. Nor can the letter be interpreted as an upside-down execution of the developed *kaf* with a long axis that appears for the first time in the ‘Izbet Šarṭaḥ ostracon and became standard in the Iron Age, as this type appeared after the orientation of the letter with the fingers facing up was already fixed as the only possible one. Moreover, this orientation was prominent from the beginning, with only a few exceptions in Sinai of *kafs* facing sideways, but never down.

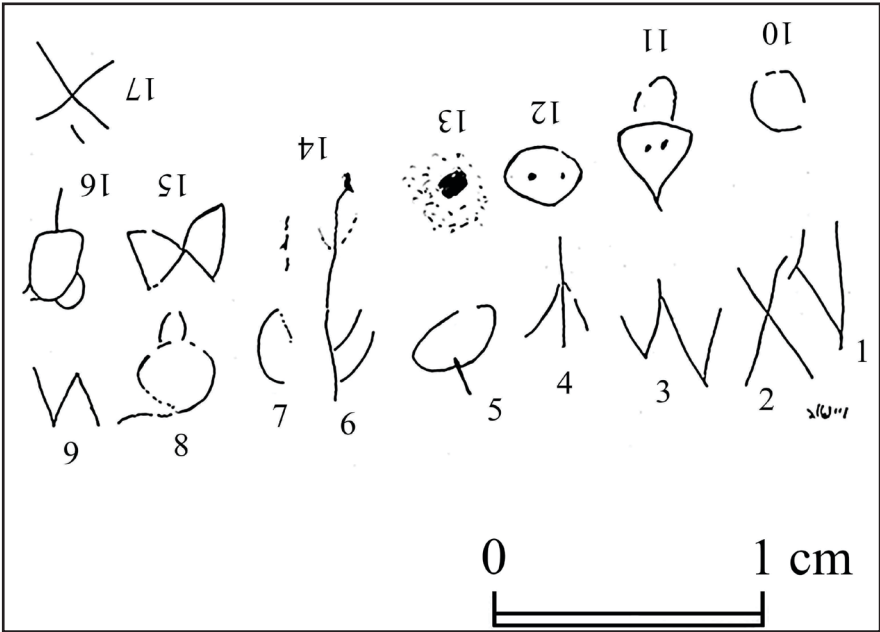
Although this tripod-shaped letter has no equivalent in the inventory of Canaanite letters known to date, it has parallels in the ancient South Arabian alphabet, which derived from the Canaanite one (Table 4).



**Fig. 16.** The right side of the comb with three different types of lighting. Selected RTI photographs.











**Fig. 17.** The left side of the comb with a different type of lighting. Selected RTI photograph



**Fig. 18.** Drawing of the inscription.



**Table 4.** Various depictions of the letter *het*. The South Arabian letters are selected from earlier publications (MacDonald 2000, 2004: 496; Stein 2013, Figs. 1–3).

							
Lachish comb	Dispersed ONA	Dadanitic	Thamudic D	Thamudic C	Hismaic	Safaitic	Ugarit

Unlike the letter *het* as known hitherto from the Canaanite inscriptions, which is always rectangular in shape, in the South Arabian scripts it almost always has a trident shape without a fixed direction, sometimes with the teeth facing up or down, and sometimes lying horizontally. The letter sometimes consists only of three strokes joining in a point, but at other times the central stroke is elongated to form an axis (MacDonald 2000: 34; Kootstra 2016: 74). This latter type, which looks exactly like our letter, appears consistently in both the northern and southern branches of the South Arabian alphabet from their earliest inscriptions onward, possibly pointing to a primary Canaanite prototype from which they derived. In our opinion, the word that gave rise to the letter acrophonically is (PS *\*h<sub>2</sub> >*) *hs*, the common West Semitic word for “arrow”, as it represents in a very schematic way a bow and arrow.

The combination of the lack of the letter’s shape among the known letters in inscriptions found in Canaan and its consistent presence in the South Arabian alphabet leads us to conclude, albeit cautiously, that the letter in our inscription is a prototype of the Canaanite *het* from which descend the South Arabian similar types. Moreover, the Ugaritic letter *het* ✠/✡ very possibly descends from this prototype, as it is made up of four strokes differing from the tripod shape only in the angle of the sidestrokes.<sup>5</sup>

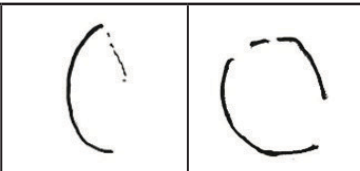
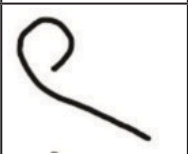
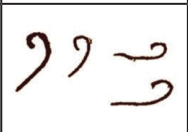
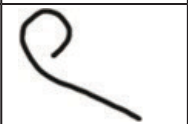

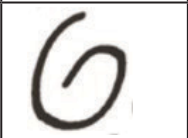


**Letter 5.** Two elements of the letter, a circle and a small oblique stroke crossing its bottom, have survived almost entirely. Clearly, the tiny 0.8 mm stroke was intended to be engraved in the middle of the circle (itself only 1 mm high), forming a defective *tet* that lacks the second oblique stroke crossing the first one. The absence of the second stroke is most probably due to lack of space, rather than being a prototype of the one-crossing-stroke *tet* very widespread in South Arabian scripts alongside the two-crossing-strokes *tet* (MacDonald 2000: 34).

**Letter 6.** The two parallel oblique strokes make up a *d* very similar to the well-attested examples in Sinai (Sass 1988, Table 4; Hamilton 2006: 147). The long vertical stroke to the left of the letter does not belong to the inscription, since it was more deeply engraved, is thicker, and runs over both rows of letters).

<sup>5</sup> See especially Ellison 2002: 629–661 on the great diversity of executions of the angles of the letter due to the small dimensions of the strokes.

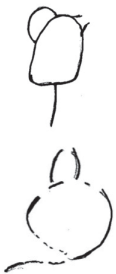

**Letters 7 and 10.** Both letters are clearly semi-rounded non-coiled *lameds* executed by two curving strokes. This type of *lamed* has good parallels in Sinai (e.g. Serabit el-Khadem 345–346) and lacks the coiled character that characterizes most of the *lameds* in the inscriptions dated to the 13<sup>th</sup>–12<sup>th</sup> centuries BCE (Table 5), such as the Lachish bowl (Cross 1984; Lemaire 2004), the Beth Shemesh sherd (McCarter et al. 2011), and those given in the comparative tables in various studies (Cross 1984: 73; Maeir et al. 2008: 51). This feature persists in the *lameds* of Iron Age Canaanite inscriptions, like that from Khirbet al-Ra’i (Rollston et al. 2021).

**Table 5.** Various depictions of the letter *lamed*.

		Lachish comb
?		el-Hôl (Hamilton 2006)
?		SKh 346 (Hamilton 2006)
?		SKh 357 (Hamilton 2006)
13th–12th centuries BCE		Lachish bowl (Lemaire 2004)
		Qubur el-Walayda (Sass 1988, Figs. 180–181)
11th–10th centuries BCE		‘Izbet Şarṭaḥ (Sass 1988, Fig. 175)
		Beth Shemesh (Kyle et al. 2011)

**Letters 8 and 16.** These letters are *qofs* very similar to the *qofs* in Sinai (Serabit el-Khadem 346, 349–351, 375) but look earlier than them, as they are more akin to the image of a monkey that gave rise to the original letter and bestowed its name (Table 6). The linking of the letter to the hieroglyphic E32 “sacred baboon” is problematic (Hamilton 2006: 209–214). The original *qof* was inspired by the schematic figure of a monkey composed of a small circle representing the animal’s head, a larger circle representing its body, and a line representing its tail. The *qofs* in our inscription are the most complete found so far, as they clearly contain all three elements. Most examples of *qof* in Sinai lack the tail, and only Serabit el-Khadem 349 possibly includes it (Hamilton 2006: 214–220). Unfortunately, after Sinai there are no further occurrences of the letter until the ‘Izbet Šarṭah ostracon of the Iron Age, in which it has a highly developed shape composed of a vertical axis with a circle at its top, the type that gave birth to the *qofs* of the Iron Age scripts.

**Table 6.** Various depictions of the letter *qof*.

						
	Skh350	Skh375	Skh376	346b	Skh349	Skh351
Lachish comb	Serabit el-Khadem (Hamilton 2006: 213)					

**Letter 9.** The letter is a reduced *mem* consisting only of three small strokes. The basic shape behind the original *mem* is the general appearance of waves on the surface of water. Consequently, the letter does not have a fixed number of “waves” during the Bronze Age and the first part of the Iron Age, with the number of strokes varying from eight to five even in the same context, as in Sinai. The number of “waves” seems to have become stabilized by the 11<sup>th</sup> century BCE in some arrowhead inscriptions, and only from the 10<sup>th</sup> century onward in the “Phoenician” script do the waves receive a fixed four-stroke “W” shape attached to a long vertical spine on the right. In our inscription it seems that the engraver did not add more strokes to the left of the letter simply because he had reached the edge of the flat surface. The letter clearly cannot be a *shin*, since if this were the intention the first stroke on the right side of the letter would have been executed in the opposite direction.



**Letter 11.** This letter shows no resemblance to any letter known so far in the corpus of Canaanite inscriptions, although in Serabit el-Khadem 367 the fourth letter shows some resemblance to it (Sass 1988, Figs. 81–82; Hamilton 2006: 370). This fact leads us to conclude that the letter represents one of the Proto-Semitic consonants that we assume existed (or possibly existed) in the language of the inventors of the Canaanite alphabet and later shifted to other consonants, leading to the abandonment of the grapheme that represented it.



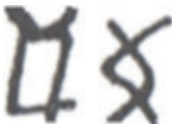

Today we have evidence of three or four consonants whose graphemes were abandoned in the process that led to the reduction of the number of consonants to 22 in the language of the people from whom the Israelites, Arameans, and others borrowed the alphabet. These graphemes represented the phonemes  $\underline{d}$  (no. 6 in our inscription) that shifted to  $z$  or  $d$ ;  $\underline{h}$  that shifted to  $h$ ;  $\underline{l}$  that shifted to  $\dot{s}$ ; and possibly  $\dot{g}$  that shifted to  $\dot{c}$ . The Proto-Semitic consonants whose representations are unknown today among Canaanite letters are  $\underline{d}$ ,  $z$ , and the sibilant  $s^3$ , conventionally transcribed  $\acute{s}$ . We interpret the “W-shaped” Canaanite letter as representing  $s^2 = \dot{s}$  from its beginning, and a triangular Canaanite letter as always representing  $\underline{l}$  (Vainstub 2016). To avoid confusion, in this study we use  $s^1$  to refer to  $s$ ,  $s^2$  to refer to  $\dot{s}$  ( $\acute{s}$ ), and  $s^3$  to refer to the sibilant preserved only in some South Arabian languages, expressed in Hebrew as  $\psi$  and conventionally transcribed  $\acute{s}$  (MacDonald 2000: 34). The reason for the lack of representation may be either of the following for each of the three letters:

1. By the time the originators of the alphabet invented it, the consonant no longer existed in their dialect because it had already shifted,  $\underline{d}$  and  $z$  to  $s$ , and  $\acute{s}$  to  $s$  or  $\dot{s}$ .
2. The limited vocabulary of the known Canaanite inscriptions does not include words containing these consonants.

The only source at our disposal for discerning and comparing a possible newfound Canaanite letter representing one of the three currently non-represented consonants ( $\underline{d}$ ,  $z$ , and  $\acute{s}$ ) is the South Arabian alphabet, since it separated from the Canaanite alphabet before those consonants shifted to others. In some of the languages of the users of the South Arabian alphabet the shifts described above did not occur, and some of its branches have 29 letters for 29 original Semitic consonants, including  $\underline{d}$ ,  $z$ , and  $\acute{s}$ . Caution is essential when comparing with South Arabian alphabets because of the long gap between the point of separation of this branch from the Canaanite alphabet and the earliest known South Arabian inscriptions dating from the 10<sup>th</sup> or 9<sup>th</sup> century (Stein 2013: 187–189), a gap that led to the development and changing of the letters. Nevertheless, the letter representing the consonant  $s^3$  in two of the sub-branches

of the South Arabian alphabet (Table 7), the “Dispersed Oasis North Arabian”, considered the oldest of these sub-branches, and the Taymanitic alphabet (MacDonald 1991, 2000: 43; Hayajneh 2011: 758–759; Kootstra 2016: 74–78), shows very similar characteristics to those of our letter. In the South Arabian scripts the main part of the letter is generally an elliptical or ovate body that sometimes becomes a rectangle. From the body bifurcated lines emerge upward and downward. The lines protruding down are somewhat reminiscent of the lower lines in our letter. The lines protruding up may be developed continuations of the two strokes meeting at an angle at the top of our letter.

**Table 7.** Various depictions of the letter *s*<sup>3</sup>.

			
Lachish comb	Dispersed ONA	Taymanitic	Ugarit

The general similarity between our letter and the South Arabian letter for *ś*, as well as the fact that both the textual context of the inscription (below) and the function of the comb point to the reading “hair”, lead us to the conclusion that our letter is most probably the first known example of the Canaanite letter *ś*. This is also the first discovery of a word that etymologically contains the consonant *ś* in a Canaanite inscription, and it is for this reason that the letter has not appeared previously.

As noted above, the “Phoenician” script that eventually consolidated and became dominant in the region lacks a letter for the consonant *ś* because the original phoneme that the letter represented it no longer existed in the language of its developers. The language of the Israelites, however, still retained that consonant, and consequently, they used the letter *shin* for writing the phoneme *ś* in addition to the phoneme *š*, the original phoneme represented by the letter. This was the solution that they used for writing other phonemes preserved in their tongue and not represented in the adopted Canaanite abecedar.

Support for our hypothesis comes from the Ugaritic abecedar. As many have observed (e.g. Segert 1983: 202; Sass et al. 2015: 242), in this abecedar the letter generally called “*ś*” or “*s*” has the characteristic shape of the Canaanite *samekh* (Ellison 2002: 818–838) but does not stand in the normal place of the *samekh* in the abecedar before *‘ayin*, instead coming at the end of the abecedar as an added letter (13 abecedar lists, Segert 1983: §3.1). Curiously, in the place

before the 'ayin is another letter that represents (as expected) the consonant  $s^1$ , but it completely differs in shape from the Canaanite *samekh*. Its shape is that of a triangle  $\nabla$  (Ellison 2002: 340–349), frequently with a short line emerging from its base  $\nabla$  (Ellison 2002: 340, Fig. 538), generally reminiscent of the letter in our inscription. In our opinion it descends from the Canaanite letter  $s^3$ . The historical phonological development of the Proto-Semitic sibilants in the Ugaritic language and its reflection in the use of the Ugaritic letters are issues on which questions still remain open, but in the context of our study the following assertions can be made:

1. The use of the additional letter  $\nabla$  at the end of the alphabet is very limited (Segert 1983: 203) and in fact, as Segert has shown, it mostly serves as a variant of the letter  $\nabla$  for rendering the vocalization *su*, rather than *sa* and *si*.
2. As etymological Proto-Semitic  $s^3$  is generally rendered by the letter  $s^2$   $\nabla$ , it is assumed that over time  $s$  completely shifted to  $\dot{s}$  in Ugaritic (Sivan 2001: 25).
3. However, a careful in-depth look at the data reveals two important points:
  - a. Despite what is said in assertion 1, the letter  $\nabla$  sometimes reflects an original Proto-Semitic consonant different from  $s$ : a Proto-Semitic  $\dot{t}$  as in  $\nabla\nabla$  “six” instead of  $\dot{t}\dot{t}$ ,  $\nabla/\nabla$  “three” (f.) instead of  $\dot{t}\dot{t}$ ,  $\nabla/\nabla\dot{t}$  “three” (m.) instead of  $\dot{t}\dot{t}\dot{t}$ ,  $\nabla q\dot{t}$  “shekel” instead of  $\dot{t}q\dot{t}$ ; or a Proto-Semitic  $\dot{s}$  as in  $\nabla mn$  “oil” instead of  $\dot{s}mn$ . At least once the opposite occurs, and the letter  $\dot{t}$  was used for etymological  $s^3$   $\dot{t}q$  “sack” (Hebrew שַׁק) (Halayqa 2008: 314).
  - b. In some cases the letter  $\nabla$ , which in our opinion descends from the Canaanite letter  $\dot{s}$ , indeed stands for etymological  $\dot{s}$  as in  $\dot{h}\nabla p$  (Hebrew חֶפֶץ),  $kr\nabla$  (Hebrew כֶּרֶשׁ),  $\nabla mkt$  “blanket” (Hebrew שְׂמִיכָה), and  $\nabla n$  “shoe” (Hebrew שֹׁאֵן) (Halayqa 2008: 164, 190, 297, 317).

The development that led to this situation can be explained in the following way:

1. The Ugaritic alphabet was inspired by the Canaanite one, which contained three different letters for the sibilants  $s^1$ ,  $s^2$ , and  $s^3$ . For the first one the Ugaritic letter  $\nabla$ , made with three horizontal strokes and a vertical spine in the middle, was created in imitation of the Canaanite letter; for the second one the letter  $\nabla$  was created in imitation of the “W-shaped” *shin* (Vainstub 2016: 55–58); and for the third one the triangular  $\nabla/\nabla$  was created.
2. In a later stage the consonant  $s^3$  ( $\dot{s}$ ) gradually disappeared because it shifted to another sibilant, mostly to  $s^2$  ( $\dot{s}$ ) (Tropper 2000: §32.122.1) but sometimes to  $s^1$  ( $s$ ) (Tropper 2000: §32.122.3, 32.143.23). In this way, texts written with the letter  $\nabla$  (originally representing  $s^3$ ) were read sometimes as  $s^1$  and sometimes as  $s^2$ . In other words, two letters served at this stage for writing  $s$ :

𐤀, which was the one originally built for this purpose, and the triangular 𐤁 originally created for  $s^3$ .

3. At this point the triangular letter consolidated its status as the main letter representing the consonant  $s^1$  ( $s$ ) and took its place in the abecedy before the 'ayin, most probably because of the oral transmission of the order of letters, while the letter made up of three horizontal bars and a vertical spine was displaced to the end of the abecedy as a complementary letter also expressing the consonant  $s$ , but only when vocalized  $su$ . In the same way two other letters, 'i and 'u, were added at the end of the abecedy, while the letter 'a retained its place at the head of the abecedy. This distribution of the letters representing the sibilants was not carried out all at once or consistently, and it possibly represents dialectal differences; hence the picture of the final distribution shows anomalies, one of them —the use of 𐤁 for  $s^3$ — rendering the original phonetic representation of the letter an historical spelling.

A more difficult task is to find out the figure that gave rise to the letter acrophonically. If the two dots in the middle of the letter body represent eyes, either the original figure behind the letter is an animal with a slightly triangular head, or its head is figuratively perceived by the observer as being somewhat triangular, like the head of a serpent, which could fit Biblical Hebrew שָׂרָף. Although *šārāp* is frequently used for a winged serpent, it seems that sometimes, as in Deut 8:15, it expresses a non-winged one (Rüterswörden 2004: 226), and this is possibly its original meaning. The lines below the head could represent the coiled body of the serpent from which the head rises, or the legs of a mythological legged serpent (Hornung 1982: 81). Another possible original animal figure is that of a שָׂלִי/שָׁלִי “quail”.<sup>6</sup>

**Letter 12.** The letter is a 'ayin. It is impossible to determine if the small point inside the letter on the left is really engraved or is a defect in the surface. The second possibility seems to us the most probable, with the large point on the right representing the expected “pupil” of the letter. Another possibility is that the one on the left is a first, unsuccessful attempt. In any case, in accordance with some evidence (Starr and Butin 1936: 33; Sass 1988, Fig. 86), we cannot rule out the possibility that a double-pupiled eye appears in Serabit el-Khadem 375, and that this is a sub-prototype of 'ayin.

**Letter 13.** This location is completely damaged.

6 Other less probable figures are those of a שִׁיח “shrub”, or terms expressing different types of vines, parts of vines, or items used in growing vines: שָׂרִי, שָׂרָקָה, שָׂרִי.

**Letter 14.** This location is badly damaged. It seems that the redundant long stroke along the two rows was in place before the second row was engraved, and that the following letter, a *waw*, was engraved after it.

**Letter 15.** The letter is a fully preserved *zayin*. Despite the damage in the center of the letter, all its traces can clearly be seen. *Zayin* is among the least frequently attested Canaanite letters. In fact, apart from the present one, we know of only two others: a poorly preserved one in Serabiṭ el-Khadem 375a and another in the 'Izbet Ṣarṭah ostrakon. The letter in our inscription is the best preserved among the three and seems archaic and close to the original design of the letter, as it has the form of an ax blade; this was the instrument chosen by the inventors of the alphabet to represent the letter acrophonically, and the name of the letter means “weapon” in Aramaic and in Rabbinic Hebrew.

## 5.2. Chronological Conclusions

Since the comb was found in a late Iron Age II context that is clearly later than its original date by hundreds of years, it must be dated by paleographic analysis. For this analysis we cannot use non-diagnostic letters like *shin*, *mem*, or *tav*, which did not change over the centuries. Letters that appear in the inscription for the first time and have no parallels in other inscriptions cannot be used either. Thus, we are left with the letters *yod*, *lamed*, *zayin*, and *qof*, and these letters share the epigraphic horizon of the inscriptions from Serabiṭ el-Khadem at least. All of them preserve their original pictographic properties and lack later developments known from inscriptions dated to the 13<sup>th</sup> or 12<sup>th</sup> century BCE.

The dating of the Serabiṭ el-Khadem inscriptions, which has long served as a chronological anchor, is now hotly debated (Haring 2020). Until the beginning of the current century they were generally dated to around 1500 BCE, and the assumption was that the Canaanite alphabet was invented about two centuries earlier, in the 17<sup>th</sup> century BCE. Hence, the three short inscriptions from Gezer, Shechem, and the “Lachish dagger”, which are slightly more pictographic in character, were dated to the Middle Bronze Age (Naveh 1982: 26; Sass 1988). This picture changed when Sass (2005: 157) modified his view and proposed to lower the date of the Serabiṭ el-Khadem inscriptions to around 1300 BCE, while at the same time Goldwasser (2006) proposed to date them to the 19<sup>th</sup> century BCE, a dating also proposed later by Puech (2015) and earlier by Darnell et al. (2005: 86–90) for the Wadi el-Hôl inscriptions.

The only Canaanite pictographic inscription with a good context is the “Lachish dagger”, which was found in Tomb 1502 (Tufnell 1958: 254). This is

a rather small shaft tomb, probably a burial of only one or two individuals. The grave goods were quite limited, consisting of 11 pottery vessels, three scarabs, two metal objects, one tripod mortar, and fragments of an ostrich egg. As discussed by Tufnell (1958) and Sass (1988, Fig. 142), the pottery vessels and the scarabs date from the later part of the Middle Bronze Age, ca. 1700–1550 BCE. The ivory comb probably dates from this period as well. It cannot be much earlier, as Lachish was not inhabited in the earliest part of the Middle Bronze Age, which lasted from ca. 2000 to 1800 BCE.

The archaeological horizon of the Lachish dagger fits the paleographic character of the comb inscription. The letters in our inscription are pictographic in character, especially with regard to the *šin*, the *qof*, and the *lamed*, and there is no letter in it that looks more developed than its counterpart in Serabit el-Khadem. In other words, the inscription is at least as old as the Serabit el-Khadem inscriptions, a fact that should be taken into account in the debate on their dating. Our comb inscription, together with the dagger inscription, makes Lachish the only site so far that has yielded two Middle Bronze Age Canaanite inscriptions. In an attempt to obtain a radiometric date for the ivory comb, which is made from organic material and thus in theory can be dated directly, we sent a sample to the radiometric laboratory of Oxford University. This sample unfortunately could not be dated, due to the poor preservation of carbon. A second sample was sent later, but this attempt too was unsuccessful.

### 5.3. Vocabulary

The inscription includes the following words, each discussed in detail below.

#### *ytš*

Jussive 3<sup>rd</sup> m. singular (see the section on grammar below) of the root *ntš* with the first radical assimilated *\*yntš* > *y(t)tš*, Hebrew “to root out”, “to remove”. In Biblical Hebrew it is used to express the rooting out of people (e.g. Deut 29:27; 2 Kgs 14:15; Jer 12:14, 18:7), animals (Ezek 19:12), plantations (e.g. Jer 24:6, 42:8, 45:2, Amos 9:15), buildings, and objects (e.g. Jer 18:14, 31:40; Mic 5:13).

#### *hṭ*

This word, or a possible word or root from which it could have developed, is not known in any ancient Semitic language predating the Hellenistic period, or in ancient Egyptian either. However, there is an unexpected parallel in Rabbinic Hebrew from the Roman period that fits well semantically with *hṭ* in our



inscription. The word חט in Tannaitic sources,<sup>7</sup> spelled חײט in some manuscripts (Bar-Asher 2015: 239–240), signifies a certain type of teeth in animals, and since חײ here refers to the comb made on elephant ivory the connection seems inescapable. Because of its absence from sources that precede the Roman period, the origin of the isolated word חט in Rabbinic Hebrew is considered a lexicographical enigma. Now everything points to its ancient West Semitic origin. Certainly, as has emerged from the research of Moreshet (1972, 1980), Rabbinic Hebrew preserved ancient West Semitic roots and words absent from Biblical Hebrew and not loaned from Aramaic or other languages (Moreshet 1980: 85–86; Rendsburg 2021: §4.1).<sup>8</sup> The use of the term “tooth” or “tusk” here for ivory is parallel to Biblical Hebrew, in which שן “tooth” is the common term for “ivory” (1 Kgs 10:18, 22:39; Ezek 27:6, 15; Amos 3:15, 6:4; Ps 45:9; Song 5:14, 7:5; 2 Chr 9:17),<sup>9</sup> with the single exception of 1 Kgs 10:22 = 2 Chr 9:21, in which שנהבים is used.<sup>10</sup>

Calling the comb metonymically by the name of the material from which it is made is in line with uses in Biblical Hebrew, such as “iron” for objects made of iron (e.g. Josh 8:31; Isa 10:34) or “wood and stone” for idols made of these materials (e.g. Jer 2:27, 3:9; Ezek 20:32; Hab 2:19).

## d

The common West and South Semitic masc. sing. demonstrative “this”, preserved in Arabic and partially in Ugaritic (Del Olmo Lete and Sanmartín 2003: 285), and in their respective shifted forms זה in Hebrew and 𐤏𐤃/𐤃 in Aramaic and mostly in Ugaritic.

## l

*Lamed* as a *nota objecti* introducing a direct object is generally considered characteristic of Aramaic, especially Imperial Aramaic (Folmer 1995). It does not occur in Phoenician and Ugaritic, and its occurrences in Biblical Hebrew (Malessa 2006: 61–66) are generally considered characteristic of late Biblical material, most probably influenced by Aramaic (Gesenius: §117n; Joüon and Muraoka

<sup>7</sup> Mishna Bekhorot 6:4, 12; Sifre 'emor 113. In these sources only the plural occurs. In the 9th century CE, in a manuscript from the Geonim era found in the Cairo Geniza, “Sefer Berakhot uShetarot”, the singular חײט occurs, although we cannot know whether this is a secondary development or continues a more ancient tradition. In Modern Hebrew the word usually expresses the tusk of an elephant or hippopotamus.

<sup>8</sup> See especially a similar phenomenon in the preservation of northern Israelian Biblical Hebrew words and roots in Rabbinic Hebrew and the Samaritan Aramaic dialect of the Roman and Byzantine periods.

<sup>9</sup> Generally translated שן דפיל “elephant’s tooth” by the Targum.

<sup>10</sup> This word is in itself a blend composed of the Hebrew שן “tooth” and the Egyptian 'bw “elephant”.



2006: §125k, especially note 2; Waltke and O'Connor 1990: §10.4, especially note 37). However, it also occurs in texts produced in the First Temple period like 2 Sam 3:30 (Malessa 2006: 61–63, with more than 20 occurrences in Samuel and Kings). Moreover, although this is controversial, it is probably also present in the Song of Deborah, considered to be one of the most ancient passages in the Bible and dated to the 13<sup>th</sup>–12<sup>th</sup> century BCE, in אֶז יֵרֵד שָׁרִיד לְאֹדִירִים “Then the remnant domineered the mighty”, in a text that lacks the classical preposition אֶת, as in most of the archaic or lyric material in the Bible. Its occurrence in our inscription is now the earliest one attested in all the ancient languages of the region, and can contribute to any reassessment of the historical development of the verbal syntax in West Semitic languages. The present inscription may well stimulate and assist inquiry into the historical development of the subordination of direct objects to verbs in West Semitic, a task that is beyond the scope of this study. With respect to *lamed* as *nota objecti* in this context, the following facts should now be taken into account:

1. It has now been found in a single occurrence in Canaan in the Bronze Age, introducing a definite animate direct object.
2. In Aramaic, except for one possible occurrence in the 8<sup>th</sup> century BCE,<sup>11</sup> it first occurs in the Achaemenid period, when it is widely used to connect verbs with animate definite direct objects (Folmer 1995: 340–369, but not in Biblical Aramaic), especially when the verb precedes the object, as in our inscription (Folmer 1995: 362–363).
3. In Biblical Hebrew as a rule, one of the characteristics of archaism, especially in poetry, is the absence of any *nota objecti* connecting the verb with the object. However, attention should be paid to cases of *lamed* as *nota objecti* in texts not suspected of being produced in the Persian period, since, as in the aforementioned case in the Song of Deborah, they mostly introduce animate definite direct objects. Hence, rather than being, as is generally assumed, a product of late Aramaic influence, they possibly continue an ancient common West Semitic practice, a practice whose continuation can be seen in Rabbinic Hebrew (Mor 2015: §5.24).

### *qml*

A collective noun “lice” based on Arabic قَمَلَة, Akkadian, and Aramaic, all with this meaning. In Aramaic the word occurs in the Sefire inscription (iA:31) “an ant’s mouth, a moth, and a louse (קמל)” (Gibson 1975: 30–31, 40), although in later

11 Fales 1986: 157–161, Text 13: ]רחם ליש in lines 2–3 possibly interpreted as “pledged Š[...].”

dialects the word underwent metathesis: קלמחא, קלמה, קלמא, קלם.<sup>12</sup> In Akkadian it is attested from Old Akkadian onwards with the same metathesis as in Aramaic and with a slight phonetic change: the *q* of the word lost its emphatic condition and shifted to *k* *kalmatu* (CAD Vol. 8, K: 86–87). In Sabaean it comes both as *qml* and *qlm* (Biella 2004: 457–458).

The word is not hitherto attested in Hebrew, Ugaritic, or Phoenician, and the present occurrence of the word is the first one in the region.

### ś[r]

The common word for “hair” in all Semitic languages.

### zqt

“Beard”, as is obvious from the context. There are two different, but externally very similar, Semitic roots related to the concept of “chin”, “beard”, and in semantic extension “old man”:

1. The most common and widespread of them is Proto-Semitic \**dqn*, present in all the known Semitic languages, with the first radical *d* being preserved in those languages in which it remained unchanged as in Arabic, or shifted to *z* or *d* in others as expected; hence, in the languages of the region, *dqn* in Ugaritic, זקן in Hebrew and Phoenician, and דקן in Aramaic. These spellings do not of course necessarily mean that the Israelites and the Arameans pronounced the first radical as shifted from the beginning of their presence in the region; they may just have spelled it so because they adopted the alphabet from people in whose language these sounds had already shifted.
2. The less common root is *zqt*, or *zq* with a formative *t*. Today this root is reliably attested only in Akkadian in the Old Babylonian, Standard Babylonian, and Neo-Assyrian dialects as \**zuqatu*, *zuqtu* > *sugtu* with the meaning of “chin” (CAD Vol. 15 S: 399–400; Vol. 21 Z: 166). Less certain is the connection of some Aramean terms with this root, sometimes offered as a possibility to be taken into account. The main reason for this hypothesis is the spelling *z* instead of the expected *d*: ܠܚܝܬ “chin” in Syriac (Sokoloff 2009: 389 ܠܚܝܬ), ܠܚܝܬ “beard” in Mandaic (Drower and Macuch 1963: 109 for *dīqna*, 167 for *zīqna*).<sup>13</sup> There are many examples of the spelling ܐ for original Proto-Semitic

12 In Syriac see Sokoloff 2009: 1372 ܠܚܝܬ. In Jewish Babylonian Aramaic see Sokoloff 2002: 1021 קלמחא. In Targumic Aramaic קלמחא translates the Hebrew כְּנִים/כְּנִים in Ex 8:12–14. On an earlier proposal (and its rejection) of an etymological connection between Hebrew כְּנִים and Akkadian and Aramaic *qml/qlm*, see BDB: 487–488.

13 The use of ܐ instead of ܕ in the Jewish dialects of Aramean is considered a result of Hebrew influence.

*d* in Mandaean (Abudraham 2017: 118–119, §4.4.1.4). The possibility of an ancient common source of both roots was raised by Militarev in his reflection “one wonders whether these two terms, if related, may reflect an original opposition in pre-SEM: the form in *\*-at-* meaning ‘chin’, while the form with the *\*-an-* suffix having acquired the meaning ‘bearded chin, beard’”.<sup>14</sup> If indeed they originated in a common root *\*dq̄n*, the forms without *n* as in our inscription are the result of its assimilation to a formative *t*: *dq̄nt* > *dqt* (see Garr 2004: 40–44). Nevertheless, as the language and the alphabet of the engraver of our inscription make a clear distinction between *d* and *z*, and given the exact correspondence both semantically and morphologically between *zqt* in the inscription and “*zuqatu*”/“*zuqtu*” in Akkadian, we can conclude that *zqt* in the inscription is related to root no. 2.

#### 5.4. Grammar

Despite the brevity of the sentence, our inscription reflects some grammatical characteristics that are important for our knowledge of the tongue of the ancient inhabitants of Lachish:

1. The word order in the phrase—volitive verb-subject-object—is very common in West Semitic, including Biblical Hebrew and Canaanite-Akkadian (the language used by the scribes of the city-state rulers in Canaan in the el-Amarna letters from the 14<sup>th</sup> century BCE). It differs from the order in regular Akkadian, in which the verb normally comes at the end of the sentence. The Canaanite scribes of the el-Amarna letters adapted the order of the words to what was normal in their language (Izre’el 1978: 68–71; Rainey 1996, Vol. II: 249).
2. *qml š[‘r w]zqt* “the lice of the hai[r and the] beard” is built in a construct state of one *nomen regens* and two juxtaposed *nomina recta*, as is common in Biblical Hebrew (Joüon and Muraoka 2006: §129.b).
3. The definite subject *h̄t d*, as well as the definite objects *š[‘r w]zqt*, lack an article, as is usual in archaic texts and poetry in Biblical Hebrew (Gesenius: §126h) and in Ugaritic.<sup>15</sup>
4. Since *\*yntš* > *y(t)tš* is clearly a verbal volitive expressing the wish that the lice will be rooted out, it is most probably constructed in a shortened form as the Biblical Hebrew jussive, generally considered to descend from Proto-

14 <https://starlingdb.org/cgi-bin/response.cgi?root=config&morpho=0&basename=%5Cdata%5Csemham%5Csemet&first=101>

15 See Garr 2004: 89 on its first appearance in the early first millennium BCE.

Semitic *\*yaqtul* (Waltke and O'Connor 1990: §34.2.1). If this is the case, and assuming that it is conjugated in the plain stem, the verb in our inscription was realized as *yattuš*. Verbal expressions beginning with a jussive and with a similar word order to that of the inscription are well known in Biblical Hebrew, e.g. יְאֵר יְהוָה פָּנָיו אֵלַי וַיְחַנֵּן "May the Lord make His face to shine upon thee and be gracious to thee" (Num 6:25), יַעַשׂ-יְהוָה עִמָּכֶם חֶסֶד וְאֱמֶת "May the Lord show you true faithfulness" (2 Sam 2:6), יְקַם יְהוָה אֶת-דְּבָרֶיךָ אֲשֶׁר נְבִיאָתְךָ "May the Lord fulfill what you have prophesied" (Jer 28:6), יַכֶּרֶת יְהוָה כָּל-שִׁפְתֵי חֲלָקוֹת לְשׁוֹן "May the Lord cut off all flattering lips, every tongue that speaks arrogance" (Ps 12:4). Similar jussive forms are used in Canaanite-Akkadian in el-Amarna letters (Rainey 1996, Vol. II: 245–254; Baranowski 2014: 253, 321), including letters written in Gezer, another city of the Shephelah (Izre'el 1978: 61–62, §7.2.3.2).

Another possibility is to interpret *ytš* as the volitive form *yaqtula* generally considered to be reflected in the Biblical Hebrew cohortative, where it occurs only in the 1<sup>st</sup> person singular and plural, apart from a few cases in the 3<sup>rd</sup> person (see, for example, וַיִּשָּׂא; Waltke and O'Connor 1990: §34.2.2; Joüon and Muraoka 2006: 127, note 1). The very existence of Proto-Semitic *\*yaqtula* in the dialects spoken in Canaan in the Late Bronze Age is in dispute. Its presence in those dialects was proposed by Moran (1960), who detected it in Canaanite-Akkadian, especially in the letters from Byblos. Blau (1971: 135–138) agreed with him, while other researchers, such as Rainey (1991–1993; 1996, Vol. II: 254–263), denied the existence of a Canaanite form of *yaqtula* in the el-Amarna corpus, stating that the alleged cohortative examples are in fact Akkadian ventives (Rainey 1996, Vol. II: 202–211). Nevertheless, the consonantal writing of our inscription cannot solve the dispute and, as stated above, *ytš* most probably reflects the shortened form of the jussive (Baranowski 2014: 5–15).

5. The use of *l* to express the subordination of the object to the verb is attested here for the first time, as noted above.

## 6. Discussion

### 6.1. The Comb Inscription

Despite its small size, the inscription on the comb from Lachish has very special features, some of which are unique and fill in gaps and lacunas in our knowledge of many aspects of the culture of Canaan in the Bronze Age:

1. This is the first time that a Canaanite inscription engraved on a C14 datable material has been found in an archaeological excavation. This is extremely important because of the hotly debated date of the inscriptions of Serabit el-Khadem and the unreliable stratigraphic data associated with the other Canaanite inscriptions from the Bronze Age. Indeed, we sent samples for radiometric dating to Oxford University, but unfortunately the laboratory was unable to extract datable material.
2. For the first time we have an entire verbal sentence written in the dialect spoken by the Canaanite inhabitants of Lachish, enabling us to compare this language in all its aspects with the other (indirect and partial) sources for it.
3. The inscription on the comb sheds light on some hitherto poorly attested aspects of the everyday life of the time, haircare and dealing with lice.
4. This is the first discovery in the region of an inscription referring to the purpose of the object on which it was written, as opposed to dedicatory or ownership inscriptions on objects. Such cases are rare; among the very few known examples are the "Pūru of Yaḥali" engraved on a clay lot in Akkadian and dated the 9<sup>th</sup> century BCE (Hallo 1983) and "Nestor's Cup" found in ancient Pithekoussai and dated to the 8<sup>th</sup> century BCE (Faraone 1996).

The inscription expresses the wish that the comb on which it is engraved will eradicate the lice from the hair and beard of the owner of the comb. In all its aspects the language of the inscription shows parallels with other known sources of the Canaanite dialects of the Late Bronze Age, including on the one hand the Canaanite-Akkadian of the el-Amarna letters and on the other hand the most archaic strata of the Biblical Hebrew.

The engraver's skill in successfully executing such tiny letters (1–3 mm wide) is a fact that from now on should be taken into account in any attempt to summarize and draw conclusions on literacy in Canaan in the Bronze Age.

## **6.2. The Prominent Role of Lachish in the Early History of the Alphabet**

The ancient city of Lachish (Tell ed-Duweir) has been extensively excavated by seven different expeditions:

1. The First Expedition. In 1932–1938 large-scale excavations delineated the main phases in the history of the site, which are still relevant today. They uncovered an archaic inscription on a dagger, probably dating from the Middle Bronze Age, and five other inscriptions dating from the Late Bronze Age (Table 1).

2. The Second Expedition. In 1966 and 1968 a small-scale project took place in and around the Persian-period Solar Shrine and a sequence of Levels I–VI was uncovered (Aharoni 1975). No Canaanite inscriptions were found.
3. The Third Expedition. In 1974–1994 large-scale excavations took place at the site, which clarified various aspects of the site's history (Ussishkin 2004). Canaanite remains, including a section of the Middle Bronze Age palace and the Late Bronze Age Acropolis Temple, were found in the higher part of the site. A small pottery fragment was initially published as bearing a Canaanite inscription (Ussishkin 1978: 20–21); this sherd was discussed by Puech (1986: 17), but in the later publications of Sass (1988) and Lemaire (2004) it was not even mentioned. One undisputed Canaanite inscription, however, was found by this expedition (Ussishkin 1983: 155–157; Cross 1984; Puech 1986a, Fig. 2:3; Sass 1988, Figs. 164–165; Lemaire 2004).
4. The Fourth Expedition. This field project was carried out in five seasons (2013–2017), concentrating on the earliest Iron Age city of Level V. During the excavations two earlier public buildings were unearthed: a Middle Bronze Age fortress and a Canaanite temple (Garfinkel et al. 2021). Two Canaanite inscriptions were uncovered, one incised on a pottery storage jar before firing (Sass et al. 2015; Schniedewind 2020) and the other incised on the ivory comb described in this article.
5. The Fifth Expedition. In 2015–2016 excavations took place in the Iron Age gate as part of the development of the site as a national park (Ganor and Kreimerman 2019). No Canaanite inscriptions were found.
6. The Sixth Expedition. An Austrian-Israeli expedition is currently working at Lachish, focusing mainly on the dating of the Middle Bronze–Late Bronze Age transition. One Late Bronze Age Canaanite inscription has been found (Goldwasser 2021; Höflmayer et al. 2021).
7. The Seventh Expedition. In 2022 a new expedition, a cooperation between the Hebrew University of Jerusalem and Seoul Jangsin University, South Korea, started excavation at Lachish. One Late Bronze Age Canaanite inscription has been found (Hoo-Goo Kang, personal communication).

Four of the seven expeditions uncovered twelve Canaanite inscriptions altogether. No other site in the southern Levant has revealed so many inscriptions from the Bronze Age. Inscriptions dated to the Middle Bronze Age have otherwise been found only at the following sites, one inscription each: Shechem (Naveh 1987, Fig. 18; Sass 1988, Figs. 148–149), Gezer (Naveh 1987, Fig. 19; Sass 1988, Figs. 145–147), and perhaps Tel Nagila (Sass 1988, Figs. 143–144).



From the Late Bronze Age, including here Level VI of the early Iron Age I, nine inscriptions were found at Lachish. Most other sites with Canaanite inscriptions, like Beth Shemesh (Naveh 1987, Fig. 29; Sass 1988, Figs. 169–174), have produced one inscription each. These findings may indicate that Lachish was the primary location in Canaan in which the early alphabetic tradition was in use (Puech 1986a; Goldwasser 2016). Until recently this was clear for the Late Bronze Age, but it can now be said for the Middle Bronze Age as well.

The central role of Lachish in the history of the alphabet is also demonstrated in the next chronological phase, the Iron Age I. A Canaanite inscription written around 1100 BCE, after the destruction of Lachish in ca. 1150 BCE, was found at the Iron Age I site of Khirbet al-Ra'i 4 km west of Lachish (Rollston et al. 2021). South of Lachish an inscription was found at Qubur el-Walayda (Cross 1980: 1–4; Naveh 1987, Fig. 30).

From the next phase, the early Iron Age IIA, alphabetic inscriptions in Canaanite script have been found at various sites: Khirbet Qeiyafa (Misgav et al. 2009; Garfinkel et al. 2015), Tell es-Safi (Maeir et al. 2008), Beth Shemesh (Naveh 1987, Fig. 29; McCarter et al. 2011), and Jerusalem (Mazar et al. 2013). Farther north, the Izbet Šarṭah ostrakon may date from this phase (Misgav et al. 2009).

In summary, the wealth of inscriptions in the Canaanite script from the Middle Bronze Age, Late Bronze Age, Iron Age I, and early Iron Age IIA point to the leading role played by Lachish and its region in the early history of the alphabet.

## **Acknowledgments**

We are most grateful to Dr. Uri Melammed for reading this study and making useful comments. We are also most grateful to the two reviewers (one of them anonymous and the other Prof. Christopher A. Rollston, who renounced his anonymity after reviewing) for their very helpful comments and suggestions. Likewise, we should like to thank Ms. Dafna Gazit, senior photographer of the Israel Antiquities Authority, for the RTI photographs and Susan Gorodetsky for her editing and improvement of the English.

The Fourth Expedition to Lachish was co-sponsored by the Institute of Archaeology, The Hebrew University of Jerusalem and the Institute of Archaeology, Southern Adventist University under the direction of Yosef Garfinkel, Michael G. Hasel, and Martin G. Klingbeil. Consortium institutions include The Adventist International Institute of Advanced Studies (Philippines), Helderberg College (South Africa), Oakland University (USA), Universidad Adventista de Bolivia (Bolivia), Virginia Commonwealth University (USA),



and Seoul Jangsin University (Korea). The excavation work was in cooperation with the Israel Antiquities Authority, the National Parks Authority, the Israel Exploration Society, and was affiliated with the American Schools of Oriental Research. The team in 2016 consisted of 108 staff and volunteers from eighteen different countries. Israel Antiquities License G-20-2016.

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