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A Cache of Astragali from Tel Nagila

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This paper presents a cache of 31 astragali from the site of Tel Nagila, dating to the Middle Bronze Age. This is the earliest known cache of astragali from the Southern Levant outside tombs, and may be the forebearer of the later caches found in cultic contexts in the Late Bronze and Iron Ages. This paper presents the context in which the cache was found, adjacent to a tower that functioned as part of the site's fortifications; the social mechanisms behind the use of astragali; their deposition in a cache; and how the cache may have related to the function of the context in which it was found.

Keywords: Astragali, Middle Bronze Age, fortifications, cache, divination, game pieces

Introduction

Excavations at Tel Nagila in the 1960s uncovered four strata of domestic quarters, a burial cave, and fortifications dating from Middle Bronze Age II (Areas C and F). This paper presents, for the first time, a cache of 31 astragali discovered next to a tower exposed in Area C. First, the context of this cache is discussed through the stratigraphy, architectural and pottery remains in Area C, followed by a review of the phenomenon of collecting astragali and their use throughout antiquity and into modern times. We explore the social mechanisms behind the use of astragali, the circumstances of their deposition in a cache, and their relation to the building in which they were found.

Tel Nagila lies approximately 32 km north of Be'er Sheva' and 28 km east of Gaza, on the border between the southern coastal plain and the Judean Shephelah (Fig. 1). The rectangular tell (c. 4 hectares; 209 m above sea level) rises approximately 20 m above Naḥal Shiqma. The site and its vicinity were settled as early as the Pottery Neolithic period and through the Chalcolithic period and Early Bronze Age (Paz and Uziel 2016).

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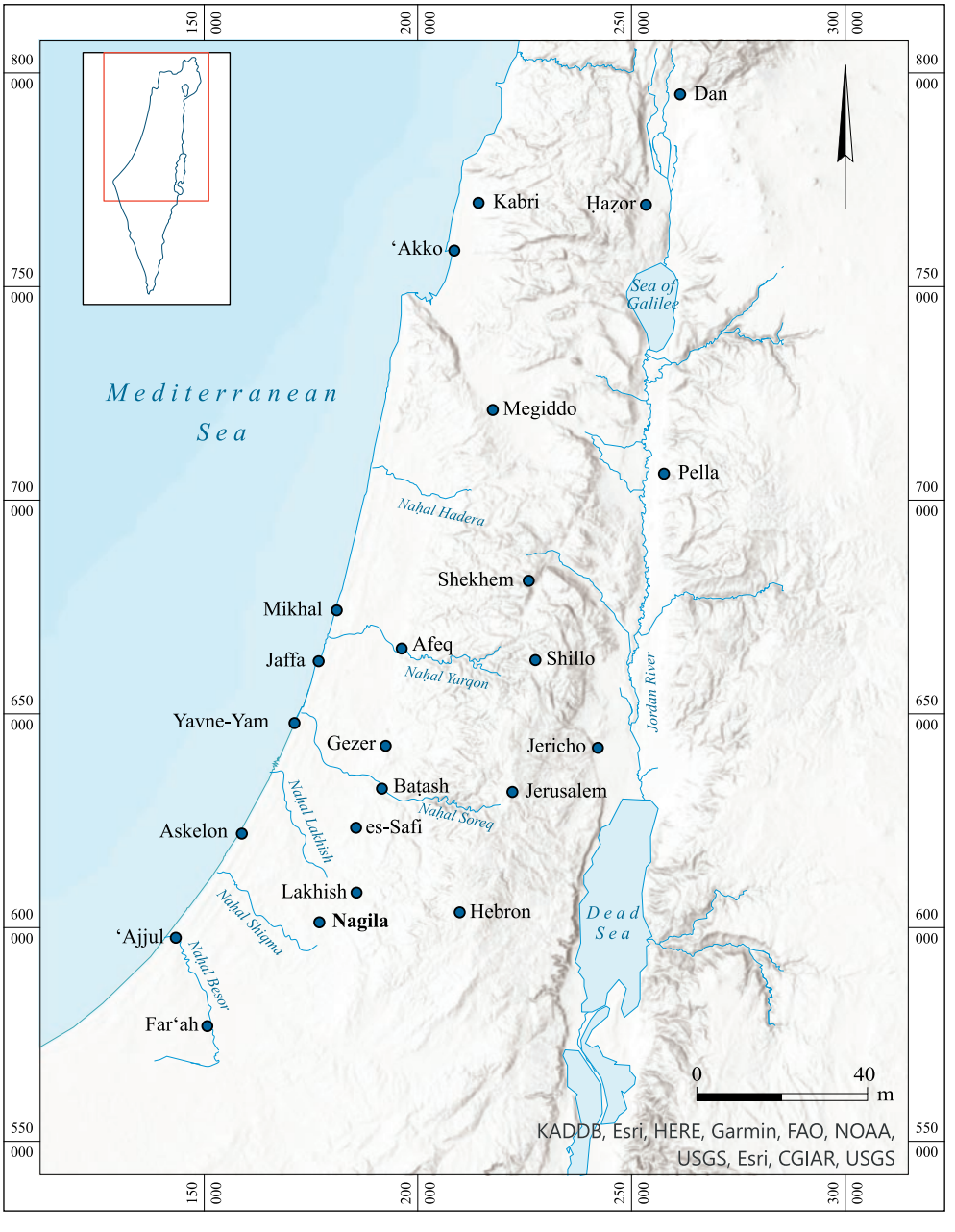

Fig. 1. Map showing location of Tel Nagila and other contemporary sites.

Two seasons of excavation were conducted at the site in 1962 and 1963, directed by Ruth Amiran and Avraham Eitan, on behalf of the Institute for Mediterranean Studies in Jerusalem (Amiran and Eitan 1965).[2] While the site was settled from the Neolithic through

[2] The final analysis and publication of the finds is in preparation (Uziel et al., forthcoming). The analysis of the finds was funded by a grant to Joe Uziel and Aren Maeir, from the Shelby White-Leon Levy Program for Archaeological Publications. The final publication was supported by an Israel Science Foundation grant (ISF #40/23) to Aren Maeir and Joe Uziel.

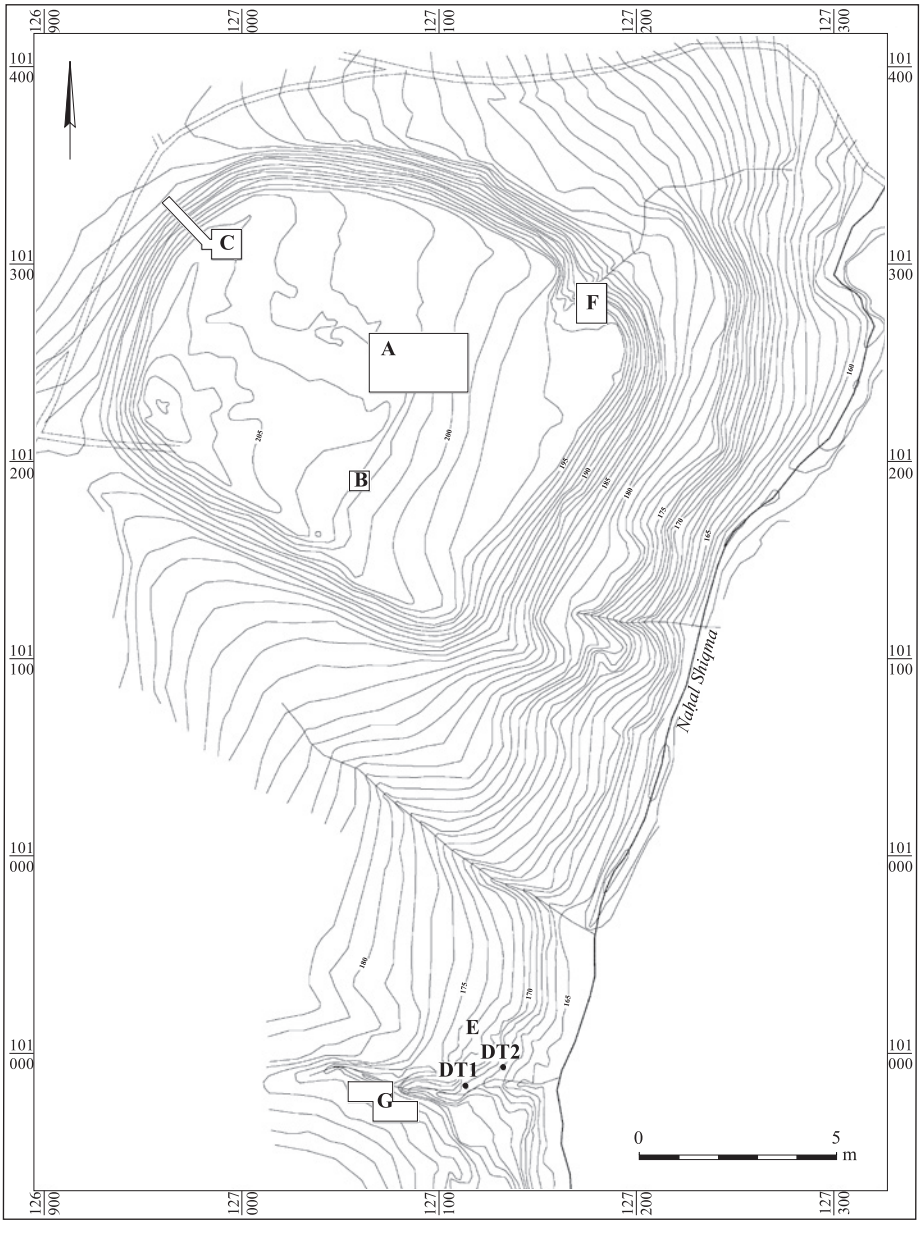

Fig. 2. Map of excavation areas at Tel Nagila (drafting: J. Rosenberg).

Iron Age II, and then again in later periods, the most intensive occupation occurred in MB II, when a fortified town occupied the tell. Four areas were excavated (A–C, F; Fig. 2), revealing a series of Middle Bronze Age domestic structures (Uziel and Avissar Lewis 2013) and fortifications.

Area C: Fortifications and Associated Contexts

Area C was excavated to investigate the fortification system that surrounded the site. A section was excavated down the slope of the tell, along with a small area within the boundaries of the tell, located right above the inner edge of the slope (Figs. 3, 4).[3] A series of architectural

Fig. 3. Aerial view of Area C, with other excavation areas in the background.

Fig. 4. Close-up of Area C, looking east.

[3] Figs. 3 and 4 were taken by the Amirna-Eitan Excavation Project at the site. The photographs were found with their documentation; we were not able to trace the name of the photographer(s).

elements relating to the fortifications was revealed, including (from the base of the fortifications to the top) a fosse, a rampart (L4032), a stone glacis along the outer face of the

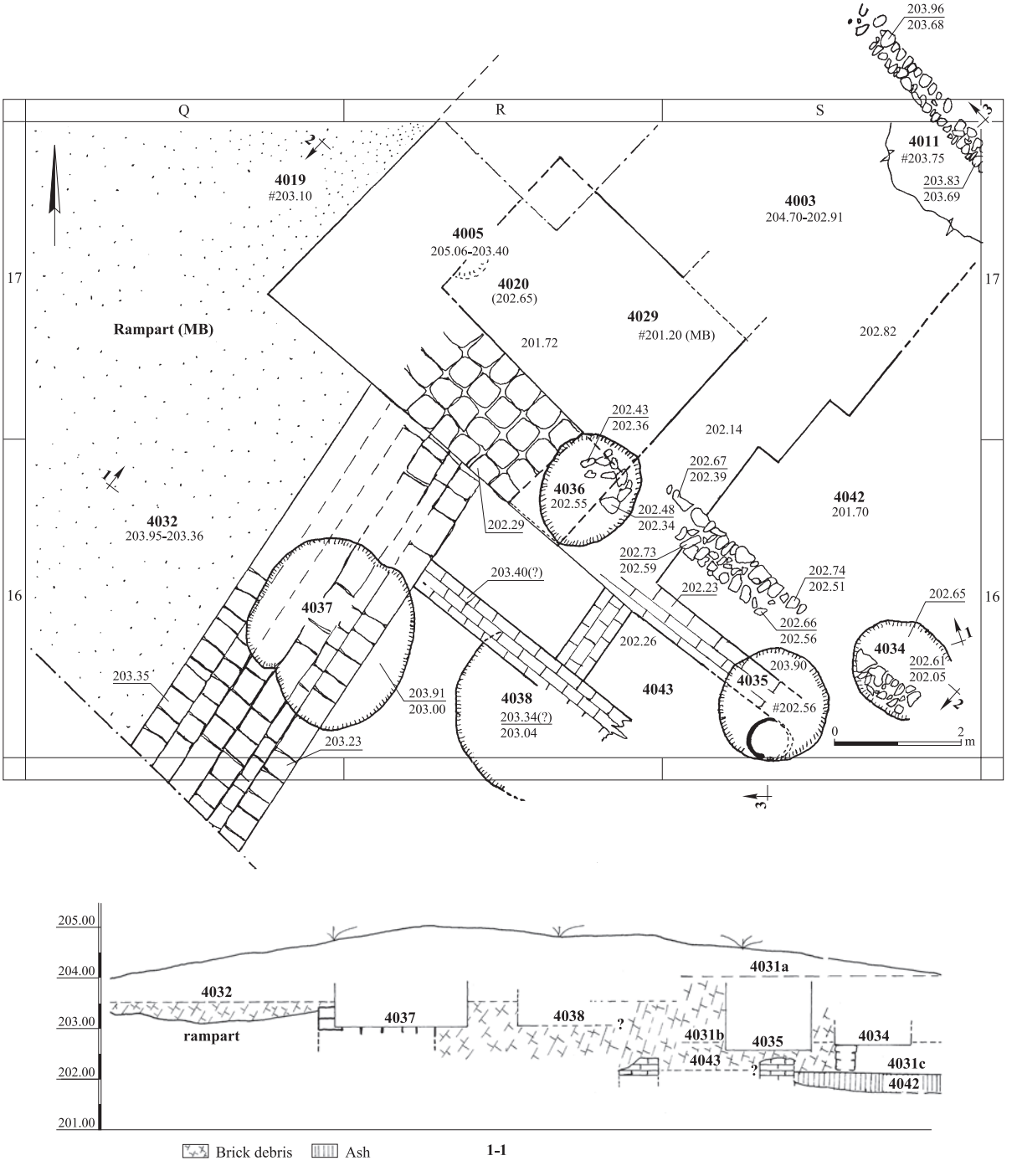

Fig. 5. Area C, the Middle Bronze Age tower and wall, plan and sections (drafting: J. Rosenberg).

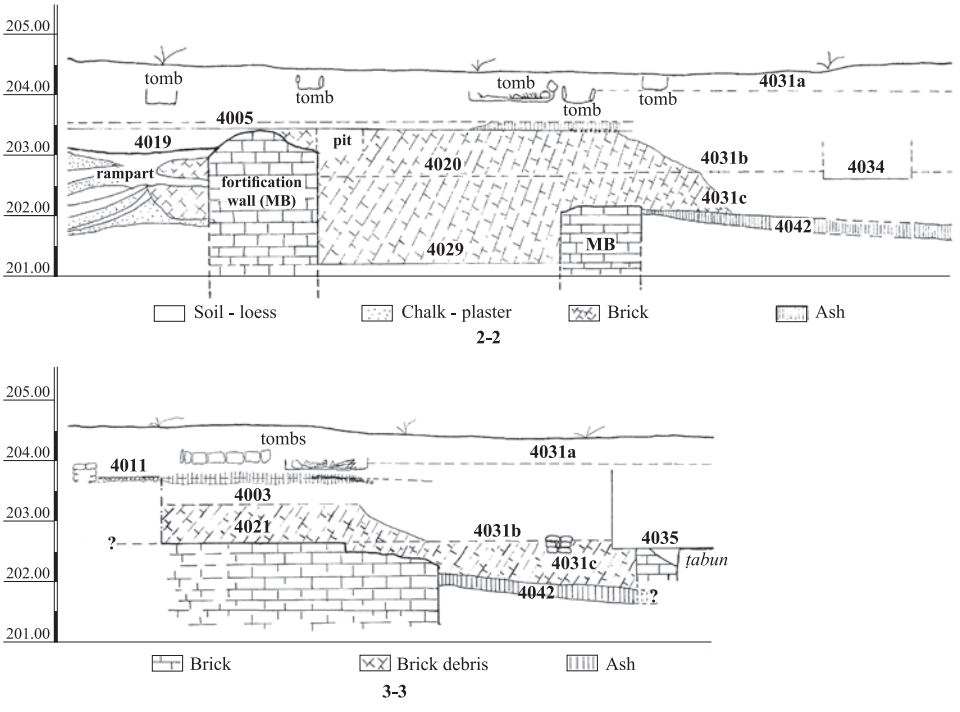

Fig. 5. (cont.).

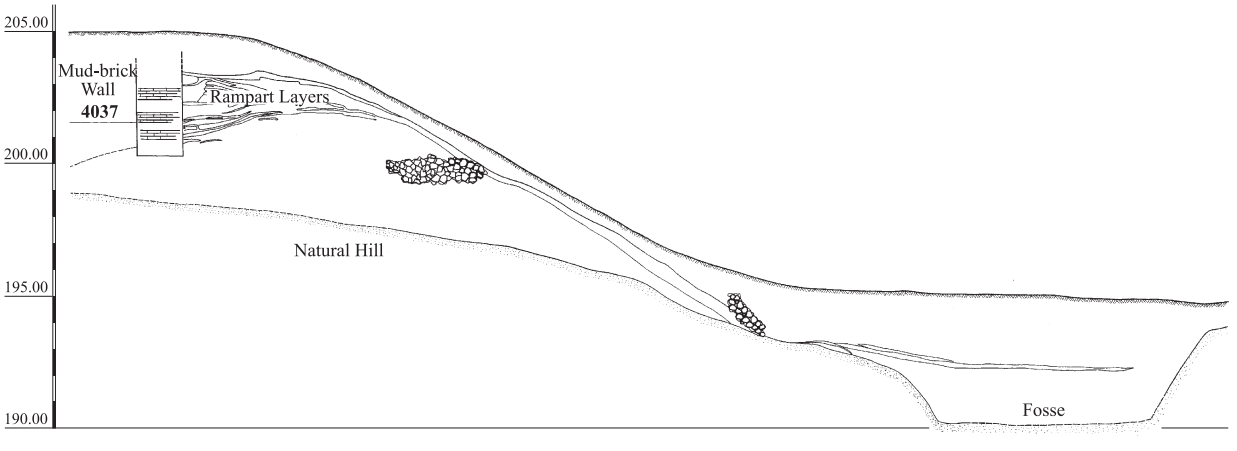

Fig. 6. Area C, schematic section of the Middle Bronze Age fortifications (drafting: J. Rosenberg).

rampart, a city wall (L4037; the remains of which were also discovered in Area F, see Fig. 2) and a tower (Figs. 5, 6).

The Middle Bronze Age fortifications were constructed on a natural hill which stood 8 m above its surroundings. Layers of earth were dumped upon the hill to augment the tell. The mud-brick fortification wall was built on this artificially elevated tell and additional layers of earth and crushed chalk were piled against it (Fig. 6), raising the external slope by an

Table 1. Tel Nagila Area C Fortification Dimensions

Element	Height (m)	Depth (m)	Width (m)	Angle of Approach
Fosse	-	4.0	8.0	60°
Rampart	7.0	-	20.0	40°
Wall	2.5	-	2.5	90°

additional 7 m. The height of the enclosure was then c. 15 m above the lower levels of the base of the fosse, resulting in an impressive fortification (Table 1).

The remains of the tower found in Area C were disturbed by Iron Age pits (Stratum IV; Loci 4034, 4035, 4036, 4038; see Shai et al. 2011), as well as by Mamluk-period burials (Stratum I; Fig. 5). The mud-brick walls of the tower were 2 m wide and bonded with the city wall. Of the loci excavated inside the fortification, only three can securely be dated to MB II without any intrusions and disturbances: L4029, L4042 and L4043 (Fig. 5). Loci 4042 and 4043 were described by the excavators as MB II floors bearing ash. It seems that these represent two rooms alongside the fortifications, separated by a thin mud-brick wall, with four courses preserved to a height of approximately 0.6 m (Fig. 5: Section 1–1). Locus 4029 is the floor of the tower (Fig. 5: Section 2–2).

The pottery found in the abovementioned loci of the tower is typical of MB II, comprising open bowls, carinated bowls and cooking pots, pithoi, a chalice and a cylindrical juglet.

The Pottery

Open Bowls (Fig. 7:1–3).— These bowls are similar to those found at Afeq Stratum A XII (Beck 2000: Fig. 10.20:8), Lakhish L7015 (Singer-Avitz 2004: Fig. 16.4:2–6), Gezer Stratum 9A (Dever et al. 1974: Pl. 14:14) and Yavne-Yam (Uziel 2008: Fig. 17:2).

Carinated Bowls with a Straight Side and Everted Rim (Fig. 7:4–8).— These bowls are typical of the terminal stages of the Middle Bronze Age and the very early stages of the Late Bronze Age, e.g., at Gezer (Panitz-Cohen and Maeir 2004: Pl. 3:5) and Lakhish Level P-4 (Singer-Avitz 2004: Fig. 16.24:1).

Carinated Cooking Pots (Fig. 7:9–11).— Such cooking pots are common at MB II sites, e.g., Lakhish Level P-4 (Singer-Avitz 2004: Fig. 16.20:8), Tel Baṭash Stratum X (Panitz-Cohen 2006: Pl. 11:18, 19) and Yavne-Yam (Uziel 2008: Fig. 20:11), continuing into the Late Bronze Age. Note the rope decoration on the cooking pot in Fig. 8:11.

Pithoi (Fig. 7:12–16).— These pithoi, with molded rims, resemble those found at Lakhish Level P-4 (Singer-Avitz 2004: Fig. 16.14) and Tel Baṭash Stratum XI (Panitz-Cohen 2006: Pl. 8:1–3).

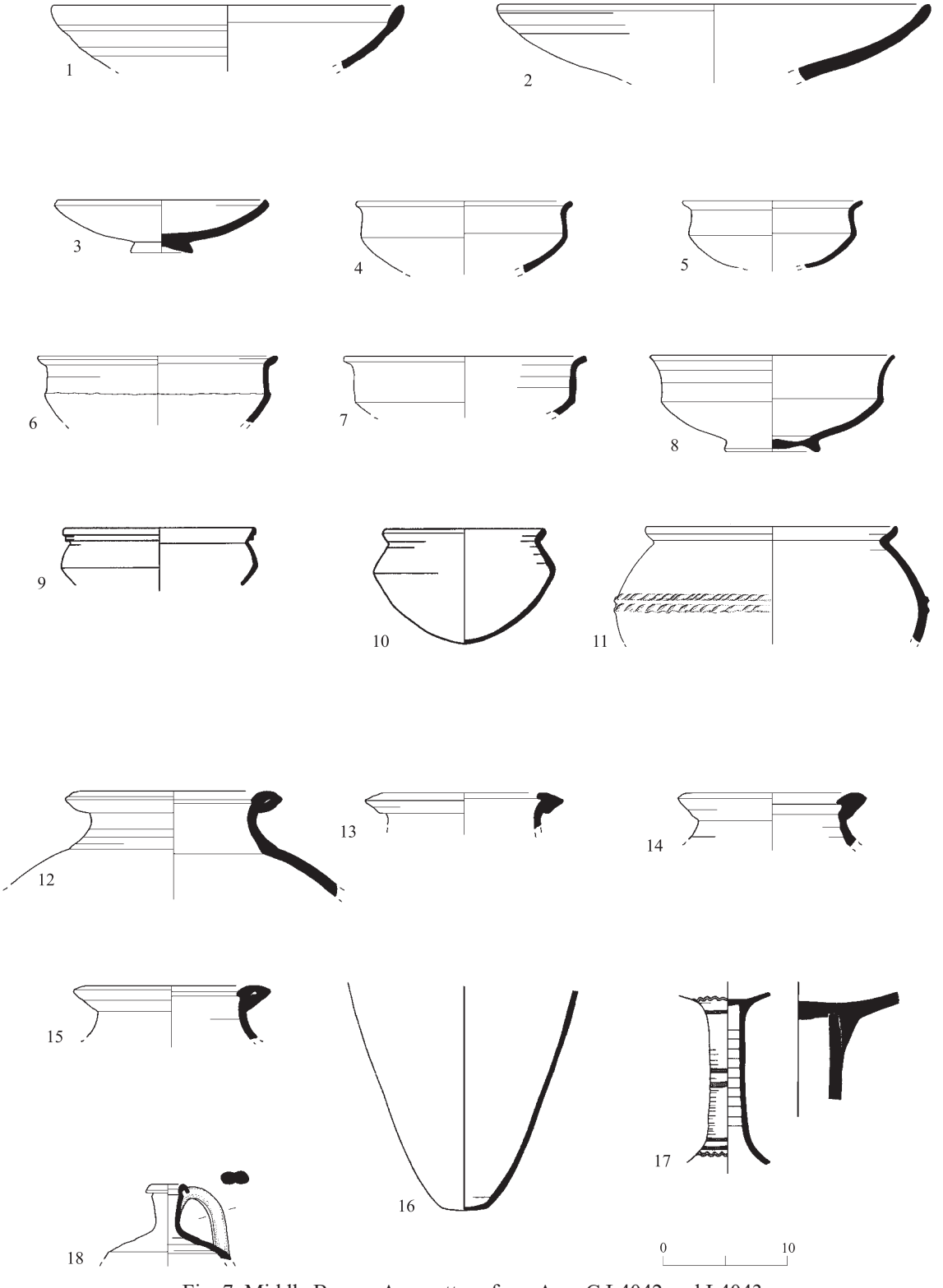

Fig. 7. Middle Bronze Age pottery from Area C L4042 and L4043.

Chalice (Fig. 7:17).— One chalice was found in the assemblage. It is decorated with red, white and blue paint, common in the Middle Bronze Age (e.g., Maeir 2002; Uziel 2008; Quail-Gates 2022). While chalices are found in a variety of contexts, Red, White and Blue chalices (or stands) have been found, for example, in the MB III temple at Tel Haror (Oren 1993; Nahshoni 2015). Undecorated chalices were found in the Lakhish Area D open-air cultic space (Singer-Avitz 2004: Fig. 16.1:19) and in the Middle Bronze Age fortifications at Shillo (Bunimovitz and Finkelstein 1993: Fig. 6.21).

Cylindrical Juglet (Fig. 7:18).— One such juglet was found in Area C. The juglet is a common MB II form, e.g., at Lakhish Level P-4 (Singer-Avitz 2004: Fig. 16.22:10), Shekhem Stratum XIX (Cole 1984: Pl. 28:s), Yavne-Yam (Uziel 2008: Fig. 24:4) and Tell ed-Dabʻa Stratum b/3–2 (Aston 2004: Pl. 145:573). It exhibits typical Middle Bronze Age features, such as a two-stranded handle and out-folded rim.

On the whole, the assemblage can be securely dated to MB II, with similar assemblages found in Lakhish Level P-4 (Singer-Avitz 2004), Tel Baṭash Stratum XI (Panitz-Cohen 2006) and Tell es-Safi/Gath Stratum F16 (Chadwick et al. 2020). Other than the chalice, the assemblage is typical of domestic contexts dating to MB II (see, e.g., Daviau 1993; Gadot and Yasur-Landau 2006; Uziel 2008).

The Cache of Astragali

A small cache of 31 polished astragali was retrieved from L4042 (Fig. 8).[4] All the astragali were of caprines (sheep [*Ovis aries*] and goat [*Capra hircus*]), the most common livestock at Middle Bronze Age Tel Nagila (Sapir-Hen, in press); thirteen could be identified as belonging to sheep (following Zeder and Lapham 2010: Fig. 6). Fifteen of the astragali were from left feet, while 16 were from right ones. Under the microscope (max. magnifier ×80), it was determined that the astragali display different levels of polishing: 11 are polished on both the lateral and medial sides, 14 on one side, and 7 are only partially polished on one side. None exhibit cut marks or signs of burning. This is of interest, as while most astragali from other sites show no signs of burning, they do very often bear cut marks due to the disarticulation of the bone from the carcass (e.g., Susnow, Horowitz and Yahalom-Mack 2021; Susnow et al. 2021).[5] Overall, the astragali are well-preserved, bearing no signs of weathering or deterioration due to other post-depositional processes. This stands out in

[4] Unfortunately, in the materials retrieved during the re-analysis of the finds from the excavations, no further information about the astragali emerged. It is unclear, therefore, whether the astragali were found in a container or vessel. This, however, seems unlikely, as we assume that the excavators would have noted this.

[5] The absence of cut marks is somewhat surprising. It is possible that visible signs of cutting were removed (perhaps unintentionally) as a result of extensive handling and anthropogenic smoothing of the sides of the astragali.

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Fig. 9. Astragali from Area C L4042 (photography: L. Sapir-Hen).

stark contrast to the rest of the faunal remains from other areas of Tel Nagila, which were generally not as well-preserved (Sapir-Hen, in press).

It is also noteworthy that the astragali account for almost the entire faunal assemblage from Area C. Only five other bones were recovered from the entire area: four caprine bones, and one cattle (*Bos taurus*) astragalus, not found in association with the cache. Although the excavations were conducted nearly 70 years ago, the predominance of the astragali in Area C seems to be a reliable reflection of the area's faunal breakdown.[6] Thus, the astragali in the cache seem to have been intentionally selected and curated.

[6] This conclusion is based on the fact that bones were systematically collected in other areas of the excavation (see, e.g., Ducos 1968:115; Sapir-Hen, in press), so it is reasonable to assume that they were collected in the same manner in Area C. Furthermore, while the excavation was conducted 70 years ago, a close reading of the excavation journals indicates maximal retrieval (Uziel 2008).

Following an analysis of the faunal remains from the site, it appears that (1) the inhabitants of Middle Bronze Age Tel Nagila collected astragali and kept them grouped together; (2) the astragali were carefully selected—goat and sheep astragali were deemed suitable, but not cattle; and (3) the astragali were extensively handled, as evidenced by the polish. As will be shown below, when considering the different sites and contexts from which astragali have been retrieved, it is clear that they were special and meaningful objects, particularly when found grouped together.

Astragali in Archaeological Contexts

The textual, archaeological and ethnographic records attest to a millennia-long phenomenon of humans collecting, modifying and utilizing astragali for specialized purposes (Susnow, Horowitz and Yahalom-Mack 2021; Susnow et al. 2021). The earliest astragali to be retrieved in archaeological excavations from the Southern Levant are from two different Middle Bronze Age burials at Megiddo: Tomb 251, which contained 70 caprine astragali (two of which were reportedly polished), and Tomb 258, with a pierced faience model of an astragalus (Guy 1938:59, 177, Pl. 115:11, 24). The astragali from Tomb 251 may represent the earliest such hoard known in the region. Artificially modified astragali were also reported from Middle Bronze Age Shekhem (Seger 1972:29–30) and second-millennium BCE Tell el-Ajjul (Petrie 1931: Pl. 29), although the nature of these contexts is uncertain.

Beginning in the Late Bronze Age, astragali begin to appear in non-mortuary cultic contexts, such as the large group recovered near the altar of Phase I of the LB I Lakhish Fosse Temple (Tufnell, Inge and Harding 1940:94), and the six astragali (five deer, one cattle) found in Bet She'an Levels VIII–VII, near the Egyptian-style temple (James and McGovern 1993:198, Figs. 137.1, 139.1). This phenomenon was not restricted to the Southern Levant, as contemporary Late Bronze Age examples of astragali in cultic contexts were found also at Kition in Cyprus (Gilmour 1997) and Kilise Tepe in Anatolia (Popkin 2013).

A second phenomenon are astragali hoards, which appear to have reached their peak in Iron IIA, when hundreds of astragali comprise a single hoard (Susnow et al. 2021). The common features of these hoards are: a predominance of sheep and goat (although sometimes including a few deer) astragali; some of the bones are often worked, many have signs of use-wear or polishing; and they are generally deposited in cultic contexts.

Regarding function, the use of astragali has been extensively studied (e.g., Lovett 1901; Reese 1985; Gilmour 1997; Dandoy 2006; Sasson 2007; Lowrey 2014). The two prevalent theories regarding their function are that they relate to either games or divination (e.g., Hesse and Wapnish 1985; Gilmour 1997:171), although many other suggestions have been posited. Regarding games, their use as dice has been demonstrated in iconography, in ethnographic research, and in texts (see Susnow et al. 2021), and the fact that many of the astragali have smoothed sides would contribute to making them more suitable (and fair) dice.

Classical sources relate astragali to divinatory practices (e.g., in Pausanias *Description of Greece* 7.25.10), but a recent study has shown that as early as the Old Babylonian period

in western Asia (e.g., during the early second millennium BCE and thus contemporary with the Tel Nagila material), astragali were already significant in divinatory practices, inspected for signs during extispicy (Susnow, Horowitz and Yahalom-Mack 2021). In addition to these two hypotheses, it has been argued that astragali were used as tokens (Sasson 2007),[7] tools, shuttles, loomweights, decorative pieces or as talismans (reviewed in Susnow et al. 2021). In fact, it is likely that astragali were multifunctional, and thus they could have been used for different purposes in different contexts. How then might the tower context at Tel Nagila help determine their function?

Ritual Objects and Fortifications

The assemblage of Loci 4029, 4042 and 4043 closely resembles the types of assemblages found in domestic contexts. The bowls, pithoi, cooking pots and *ṭabun* fragments are evidence of consumption, food preparation and storage.[8] The chalice and astragali suggest possible ritual activity, but this is still somewhat hypothetical (for a discussion on the definition of cultic contexts, see Susnow 2021). The tower's location at the edge of the tell and the fact that it is connected to the city walls, suggest that it served military purposes. However, research on Middle Bronze Age ramparts over the past few decades has increasingly associated them with various social phenomena beyond their defensive capabilities (see, for example, Bunimovitz 1992; Finkelstein 1992; Herzog 1997:132–135; Uziel 2010). As symbols of authority, power and social status, the tower and its vicinity may represent areas inhabited by the city's elites, and specifically, inhabitants of high social status who had time available for other activities beyond those related to sustenance and survival (e.g., food related). The tower may therefore be a symbol of prestige, and the acts within that tower may be seen as prestigious acts.

When reviewing the data from the Southern Levant, there appear to be several Middle Bronze Age contexts suggestive of an association between ritual practice and fortifications. At early MB III Ashqelon, in Phase 11, a small courtyard complex located on the terraced construction of the exterior rampart yielded a bronze calf inside a cylindrical pottery vessel identified as a 'model shrine' (Stager 2006; 2018).[9] Stager and others have referred to this structure as a wayside sanctuary (Stager 2006:577; cf. Nakhai 2001:105–106), or following Bietak, a *bet marzeah* (Bietak 2003). Aside from the figurine and 'model silo shrine,' the assemblage includes two beehive ovens, grinding stones, bowls (the most common vessel type) and cooking pots (the second-most common vessel type). In fact, the assemblage,

[7] At Tel Sheva', Sasson (2007:179) suggested that astragali functioned as tokens, either to count merchandise or as an early form of currency, due to their abundance near the storehouses at the site.

[8] *Ṭabun* fragments were recorded by the excavators but not recovered in our analysis of the finds.

[9] Ilan (forthcoming) suggests identifying this as a model silo shrine and the calf–as either the deity Ba'al or Dagan.

along with the proximity to the city's fortifications, is quite similar to that found in Area C at Tel Nagila.

At late Middle Bronze Age Shillo, a series of storerooms was built into the city's fortifications in Area F, in which a number of cult stands and miniature vessels were recovered (Finkelstein and Lederman 1993:62, Fig. 4.16; Bunimovitz and Finkelstein 1993: Fig. 6.21). Since these were storage rooms, they probably do not represent the space in which the cultic vessels were used. But their location next to the settlement's fortifications might indicate a nearby location for ritual activity associated with the fortifications.

Following this line of reasoning, it is possible that a temple was built into the fortifications near the city gate at Shekhem in the Middle Bronze Age (Wright 2002:7) and the Orthostat Temple in Ḥaẓor Area H was constructed in the late MB III within the city's northern fortifications (Susnow 2022). Also, a late MB I deposit from Tel Dan, which consisted of bronze weapons and tools, beads, a silver plaque figurine and miniature vessels, was found ensconced in the interior rampart embankment. This deposit was interpreted as a kind of cultic offering to a protective deity, meant to enhance the rampart's efficacy (Ilan 1992). Similarly, in an earlier, Early Bronze Age context, Paz and Shoval (2012) suggested that miniature bowls may have been used as votive offerings within a settlement's fortifications for protective purposes during times of danger.

At Middle Bronze Age Ebla, over 200 astragali were recovered from various contexts (Minniti and Peyronel 2005). A number of these were found together in the Western Fort, a huge public complex built on the top and inner slope of the city's ramparts (Mardikh IIIB2, 1700–1650/1600 BCE). Minniti and Peyronel (2005:20) suggest various interpretations of the site's astragali, including that they may be gaming pieces. Interestingly, despite the broad distribution of astragali at Ebla, none were reportedly found in any of the site's many Middle Bronze Age temples.

Nothing in the Tel Nagila Area C architecture or installations suggests any special 'cultic' nature; rather, the finds point to food preparation and consumption, storage, and some activity related to the astragali (and perhaps the chalice). However, in light of the contemporary phenomena reviewed above, which illustrate an association between ritual objects, fortifications and, at times, cultic spaces, a cultic interpretation for the Tel Nagila astragali cache is suggested here. Further support for this suggestion can be found, for example, in a later stone relief from the temple of Amun at Karnak, showing the Egyptian conquest of Ashqelon in the New Kingdom (thirteenth century BCE). The relief shows one of the defenders of the city standing atop a tower that rises above the city's fortifications and holding in his hand a chalice with burning incense (Fig. 9), attesting that 'protective rituals' were conducted atop a city's defensive system. This notion is also echoed in a late second-millennium BCE prayer text from Ugarit, which was apparently intended to be recited by the city's defenders when enemies were attacking the city's gate and walls (*KTU* 1.119:26'–36'; Pardee 2002:50–53). A further link between fortification towers and cultic activities appears in the Ugaritic Epic of Kirta, where Kirta is portrayed climbing one of the towers carrying an offering and walking along the walls of the city as an act of prayer and

Fig. 9. The conquest of Ashqelon under Pharaoh Merenptah, stone relief, Karnak (after Wreszinski 1935: Pl. 58).

sacrifice (*KTU* 1.14: ii:21–26; iv:2–8; see also Ginsberg 1946; Knoppers 1994).[10] These accounts are further attestation to cultic practices occurring in the vicinity of fortifications, particularly towers, in the ancient Near East.

Conclusions

The astragali cache from Tel Nagila is the second largest such deposit from the Middle Bronze Age. One possible interpretation of the function and context of this cache is that the astragali were related to gaming activities that were conducted in (or in the vicinity of)

[10] We wish to thank the anonymous reviewer for calling our attention to this source.

the tower. The tower could have been a prosaic, domestic space, where it was common to play games in many periods (e.g., Albaz et al. 2023), or perhaps a space where soldiers or combatants were stationed and played games (e.g., Mulvin and Sidebotham 2015).

While considering whether the astragali were used in gaming or divination, it is important to note that in antiquity these two practices were frequently intertwined, as both were believed to be in the hands of deities. Race games, e.g., Senet, and games of chance, which used dice and other randomizing devices, were intricately intertwined with the realm of cult (Susnow, Horowitz and Yahalom-Mack 2021:95–96).[11] Given the contextual, albeit circumstantial, evidence from other Middle Bronze Age and Late Bronze Age contexts, we hypothesize that the astragali (and the chalice) were cached/hidden in a ritual action intended to promote the efficacy of the fortifications, or the defense of the city in general.

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[11] One can also observe an interesting similarity in the number of astragali found and the number of playing pieces (32) in modern versions of games like chess and checkers. Although this might be mere coincidence, it can also be pointed out that thirty appears in Egypt as well, such as the Egyptian game of thirty which comprised a game board with thirty spaces (Bell 1979:26). Although the cache contained 31 astragali, this may have been in order to have an extra piece, should one go missing. It is also worth pointing out that in the Hebrew Bible, objects associated with chance-ordained decision-making are supervised by the deity (e.g., Joshua 18:10; Numbers 16:8; Esther 3:7; Jonah 1:7; Proverbs 16:33). We thank Lilach Peled Charny for this information.

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