

Fatimid- and Crusader-Period Pithoi in Palestine: New Insights on Their Typo-Chronology, Production Techniques and Provenance

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Abstract

This article examines the large ceramic storage vessels known as pithoi, used in the Islamic and Medieval periods in the Southern Levant. It focuses on pithoi from five excavation sites dated to the Fatimid period and the early Crusader period (11th–12th centuries). The research analyses the morphological, technological, and contextual features of these vessels, evaluates their origins through petrographic analysis, and discusses their typology, usage, and reuse practices from an economic perspective.

Keywords: *Fatimid and Crusader periods, Palestine, pithoi, typo-chronology, production techniques, petrographic analysis, provenance, function*

1. Introduction

The archaeological evidence from the southern Levant¹ indicates that the use of large-sized stationary ceramic storage containers (commonly termed pithoi; sing. pithos) in that region began in the Pottery Neolithic and early Chalcolithic periods (6th–5th millennia BCE; Garfinkel, 1999: 37, 127) and continued until the late 20th century CE (e.g., Dalman, 1935: 251, figs. 75, 77; Hirschfeld, 1995: 141–142, figs. 90, 131). These pithoi varied in size but were always at least two times larger than the regular and usually portable storage jars used in each period or region. Pithoi were produced locally during virtually every period, but in certain periods imported pithoi from neighboring or overseas regions were also used and sometimes even exceeded local pithoi due to their higher quality and/or larger size. Also, the extent of pithoi use was uneven from temporal and geographical perspectives, with pithoi being used during a given period more frequently in certain regions (or sub-regions) than in others.

As demonstrated below, these patterns also characterized material culture and daily life in the Islamic and medieval periods, on which the present study focuses. More specifically, this study discusses a group of pithoi dated to the 11th and 12th centuries or to the main part of the Fatimid period and the early part of the Crusader period from five excavated sites in central and southern Israel. In the following sections, the morphological, technological and contextual aspects of these pithoi, including the results of their petrographic analysis and provenance implications, are presented in detail, followed by a concluding discussion on their typo-chronology, use and re-use practices and economic aspects. As such, this study contributes to the knowledge about Islamic-/medieval-period pottery (and related aspects) in the southern Levant, particularly regarding the hitherto lesser-studied subject of pithoi.

1.1 The Terminology of Pithos-Type Jars in the Medieval Islamic Near East

Before describing the case study pithoi, the important issue of terminology should be briefly discussed.

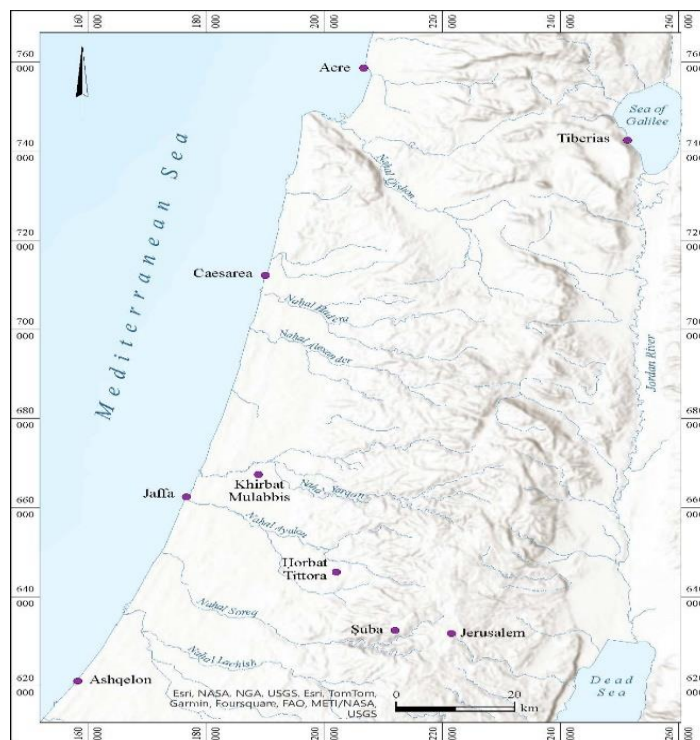


Figure 1. Location map.

¹ Refers here primarily to the area of historical Palestine/modern-day Israel.



Figure 2. Jerusalem, Terra Santa compound: pithos A in situ (courtesy IAA and Zubair 'Adawi; photography: Shai Halevi [IAA]).

Although this study deals with a time-period when Arabic was the *lingua franca* among most of the country's population (including the non-Muslims), we prefer to consistently use the Greek term pithos/pithoi for two main reasons. First, it seems that the term pithos, and/or versions of pithos, continued to be in use by the local Aramaic/Hebrew-speaking Jewish population and perhaps also by local Greek- or Syriac-speaking Christians during at least part of the Early Islamic period. The term *pyts/pytws* (פיתוס/פיתס) was used by the Jews of Palestine in Roman and Byzantine times (Taxel, 2018: 17, n. 3, 59, with references) and even by the Jews of Iraq in the 'Abbasid period (Rice, 1958: 26, n. 4). Second, we do not know for sure what the equivalent local Arabic term (or terms) in the Early Islamic and Crusader periods was, although there is great plausibility that one of the most common terms was *zīr* (زير; pl. *azyār*). The latter is known not only from ethnographic studies of 19th- and 20th-century Palestine and Egypt (e.g., Dalman, 1935: 251; Henein, 1997: 114, 157, 159; Vorderstrasse, 2015: 209), but also from Fatimid- (or earlier?) to Mamluk-period sources which relate to Egypt and North Africa (Milwright, 1999: 509; Shaddoud, 2016: 212; Vorderstrasse, 2015: 220). The term *zīr* most probably has antecedent late antique versions in Hebrew/Aramaic (*zyr/זיר*; Taxel, 2018: 17, n. 3) and probably also in Coptic (ⲥⲓⲣ; Vorderstrasse,

2015: 220), which suggest that the Arabic word developed not long after the Muslim conquest in Palestine and elsewhere. Yet, other Arabic terms might also have been used in early and later medieval Islamic Palestine and the Levant to define specific categories of pithos-type jars, among them *dinn/dann* (دِن; pl. *dinān*), which was probably designated to hold wine (Rice, 1958; Shaddoud, 2016: 210-211) and *ḥubb* (حُب; pl. *ḥubban*), which was probably more multifunctional in terms of its potential contents, similar to the *zīr* (Shaddoud, 2016: 211). It can also be assumed that in certain places or time-periods some terms were used interchangeably for the same jar types (cf. Lancaster and Lancaster, 2010: 220, who noted that in a certain location in contemporaneous Oman two different terms – *khars* and *ḥabiya* – were apparently used for the same kind of local pithos-type jar).

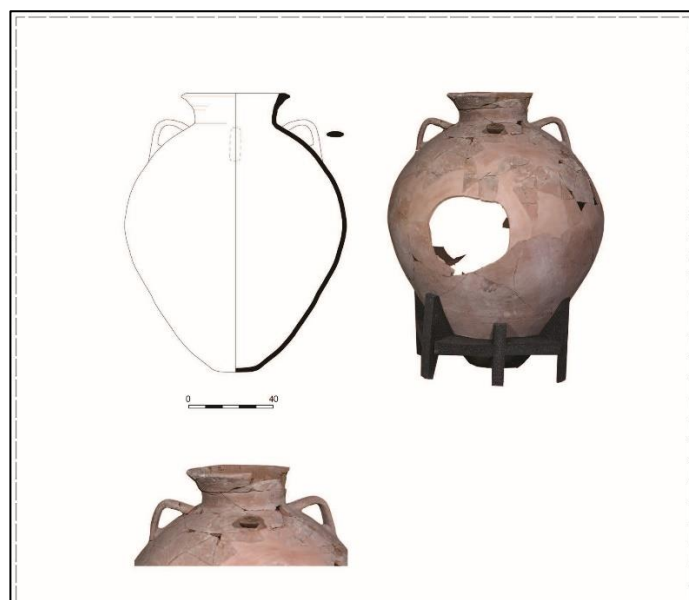


Figure 3. Jerusalem, Terra Santa compound: pithos A (courtesy IAA and Zubair 'Adawi; 3D scanning: Avshalom Karasik and Argita Gyermen-Levanon [IAA]; photography: Dafna Gazit [IAA]).

1.2. The Case Study Pithoi

The pithoi discussed in this study were retrieved from excavations conducted by the Israel Antiquities Authority (IAA) at five inland and coastal sites: Jerusalem, Khirbat Mulabbis, Ḥorbat Tittora, Ashqelon (two excavations) and Caesarea (Fig. 1).

Jerusalem

Excavations carried out in 2018-2020 at the Terra Santa compound within the Old City's Christian Quarter revealed architectural remains dated from the Early Roman to the Ottoman periods.² The main and better-preserved architectural phase represented the Mamluk period, though the large number of Early Islamic—mainly 'Abbasid- and Fatimid-period—finds at the site indicated rather intensive contemporaneous activity during this phase as well. One of the associated remains was a beaten earth floor found under the foundation level of two Mamluk walls that formed a corner. A large pithos had been partially sunken into the floor, with its upper half protruding from the floor (hereafter pithos A; Fig. 2); actually, this part of the vessel was probably intentionally

² The excavations (permit Nos. A-8381, A-8483, A-8657) were directed by Zubair 'Adawi and the pottery was studied by Itamar Taxel.

broken at some later stage and most of the fragments were found tossed inside the remaining lower half. Interestingly, together with the fragments of the *in situ* pithos, a few sherds were found (including the neck and rim) belonging to another pithos of a different type (hereafter pithos B). The earth accumulation that sealed the sunken pithos and its surroundings contained pottery sherds dated to as late as the 11th century, while the pottery found in a testing trench dug through the earth floor seems to date not later than the 10th century. It is unknown whether pithos A, upon being sunken into a floor, fulfilled its primary use as a storage container for water or foodstuff or some reuse practice (see further below).

The near-complete pithos A (Fig. 3) is ca. 1.3 m height and 1 m maximal diameter. It is made of a coarse but high-temperature fired reddish-brown fabric that contains many tiny to large white, reddish-brown and black inclusions and negatives of organic tempers. The vessel's body was handmade, apparently using the coil technique with the neck produced separately on a wheel. The attachment of the neck to the body is clearly discernable on the interior, where the potter made no special effort to smooth the join (as opposed to the same area on the vessel's exterior). The pithos has an oval body with 2 cm-thick walls, a flattened base (ca. 0.18 m in diameter) and a tall, wide neck with an outfolded, flattened triangular-sectioned rim (ca. 0.4 m inner diameter). The pithos originally had four large handles (ca. 0.3 m length, 10 cm width) with an oval cross-section and slightly ridged surface set on the shoulder; two handles were fully preserved; the third handle's lower part is broken; and the fourth handle is missing. Crude hand-made smoothing marks (including fingerprints) are seen on the inner surface of the vessel's walls and on the lower part of the interior (but not on the bottom); there are numerous small cavities, likely wear resulted from contact with some substance. The inner surface of the jar's base and the wall slightly above the base have a dark gray color, perhaps due to the absorption of the jar's contents into the clay. The jar's maximal estimated volume (up to the rim level) – based on its 3D scanning – is 598.7 liters, although in reality it was probably filled up to its neck base level at most.³

Pithos B (Fig. 4) is made of a coarse but high-temperature fired orange-brown fabric that was fired to yellowish-brown and contains many tiny to large white inclusions. Its illustrated preserved fragment belongs to a short, vertical neck with a thickened, square-sectioned rim (ca. 0.2 m inner diameter); hence, it can be assumed that its size was about half that of pithos A. As we shall see, this assumption is reinforced by the near-complete pithos from Ḥorbat Tittora, which belongs to the same type as the Jerusalem pithos B.



Figure 4. Jerusalem, Terra Santa compound: pithos B (courtesy IAA and Zubair 'Adawi; photography: Itamar Taxel).

Khirbat Mulabbis

Khirbat Mulabbis is a multi-period site situated at the southeastern fringes of the Sharon (central coast) plain, nowadays on the outskirts of the city of Petaḥ Tiqwa. Excavations carried out at the site in 2006-2007 revealed remains dated to Byzantine until the Ottoman period, with the most extensive ones dated to the Crusader period (12th and 13th centuries) and associated with a historically-documented Frankish settlement (for a preliminary report, see Haddad, 2015).⁴ The Crusader-period stratum included a beaten earth floor into which two halves of a pithos had been embedded upright (ca. 0.5 m apart), with the jar's upper half placed upside down (Fig. 5). When unearthed *in situ*, it was noticed that the pithos parts were covered from the interior with a layer of soot. The earth walls of the pit into which the lower pithos half was sunk was also blackened from soot. After the pithos parts were removed, washed and restored (Fig. 6), it was found that the pithos' lower half bore a thin layer of whitish mortar/plaster on the base and on the wall up to a height of about 0.3 m above the base with occasional mortar/plaster patches on upper parts of the wall as well. In addition, it was found that the pithos' lower half was covered with soot not only from the interior but also throughout the exterior, a detail which must have some link to the blackened pit that held the pithos. As to the pithos' upper half, it lacked any mortar or plaster and its external sooting was confined to a narrow strip along its breakage line; namely, when embedded upside down in the earth floor, the external soot lined its upper fringes.



Figure 5. Khirbat Mulabbis: the pithos halves in situ (courtesy IAA and Ellie Haddad; photography: Tsila Sagiv [IAA]).

The fabric, production technology, dimensions (ca. 1.36 m high, 0.95 m maximal diameter, 0.4 m inner rim diameter) and morphology of the Khirbat Mulabbis pithos are virtually identical to those of the Jerusalem pithos A (the pithos' rim is partially broken; hence its originally triangular section was not preserved). The 3D digital scanning of the pithos showed that its body was somewhat deformed; namely, it had a somewhat oval rather than round

³ The 3D scanning of the pithos was performed by Avshalom Karasik and Argita Gyermen-Levanon (IAA), and its volume's calculation was made by the Computational Archaeology Laboratory at the Hebrew University of Jerusalem.

⁴ The excavations (permit Nos. A-4935/2006, A- 5131/2007) were directed by Elie Haddad; the pottery was studied by Smadar Gabrieli and the discussed pithos was studied by Itamar Taxel.

perimeter.⁵

The context of the pithos halves and the soot marks they bear suggest that they were reused as ovens or hearths, a practice documented archaeologically in Byzantine and Early Islamic Palestine (where regular storage jars were also used for this purpose; Taxel, 2018: 92) and during ethnographic studies in Greece (Vroom, 2003: 284), Cyprus (London, 2020: 50, fig. 6.5) and Oman (Lancaster and Lancaster, 2010: 218, fig. 23). The mortar/plaster traces on the pithos' lower part suggest that it had once been embedded in a built floor or installation, perhaps while fulfilling its prime use designation as a storage container (for an ethnographic parallel from Oman, see Lancaster and Lancaster, 2010: 217, figs. 19-21). However, at a certain stage and for a reason unknown, the pithos was broken into two parts; its neck and handles were partially removed (or accidentally broken) and the two halves were converted into sunken ovens or installations associated with fire (cf. Lancaster and Lancaster, 2010: 218, figs. 23-25).

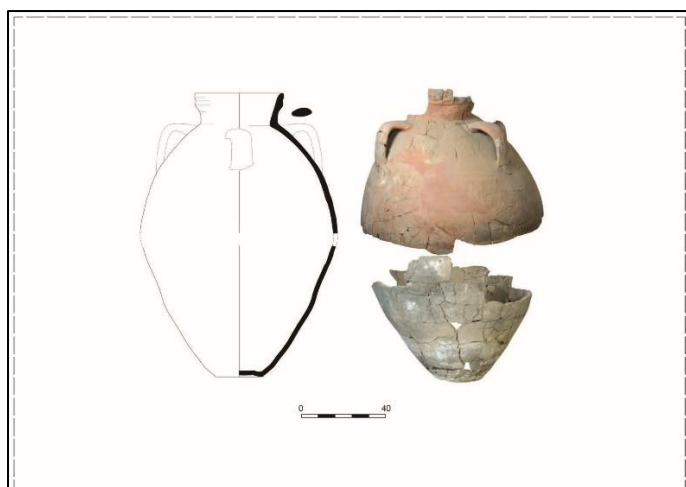


Figure 6. Khirbat Mulabbis: the pithos (courtesy IAA and Ellie Haddad; 3D scanning: Avshalom Karasik and Argita Gyermen-Levanon [IAA]; photography: Clara Amit [IAA]).

Ḥorbat Tittora

Ḥorbat Tittora is a large, multi-period site located on the western fringes of the transition area between the Judea and Samaria Hills. Excavations carried out here in 2017 and 2023 around a Crusader-period Frankish fortified tower revealed remains dated from the Roman to British Mandate periods.⁶ Outside the tower, part of a medieval building which included a small, plastered room was unearthed. The room contained at least one, near-complete pithos (and presumably fragments of additional pithoi). The room was adjacent to a plaster floor where Mamluk-period pottery was found above and below, though the building had at least one earlier phase as indicated by a cistern that had been sealed by the Mamluk stratum and contained Ayyubid-period pottery. The near-complete pithos was made of a coarse though high-temperature fired grayish-brown fabric that was fired to yellowish containing many tiny to large white and reddish-brown

inclusions. It is uncertain whether this pithos was wheel-made or handmade, though the former possibility cannot not be ruled out due to the vessel's relatively modest dimensions (below); at any rate, its neck and rim were fashioned on a wheel.

The pithos (Fig. 7) has an oval body (ca. 0.75 m height and 0.52 m maximal diameter) with 1.5 cm-thick walls, a flattened base (ca. 0.17 m in diameter) and a short, vertical neck with a thickened, square-sectioned rim (ca. 0.2 m inner diameter). Originally it had four oval-sectioned handles (only two were preserved) with deep thumb impressions at their bases. Hand-smoothing marks are seen on the exterior wall, mainly the upper part, in addition to a shallow, vertical wavy incision on the shoulder – perhaps reflecting a spontaneous desire of the potter to decorate this otherwise plain vessel. The jar's maximal estimated volume (up to the rim level) – based on its 3D scanning – was 78.8 liters, although in reality it was probably filled up to its neck base level at most.⁷ The jar's exterior, from rim to base (including the handles), bears remains of a thin layer of whitish, fine plaster; numerous pottery grits (2-5 mm large) had been embedded into at least some of the plaster. It is unknown whether this plaster layer was related to the plaster floor into which the pithos was sunk or represents a coating of the jar, perhaps in order to prevent evaporation or leaking of its (liquid) contents.

The Ḥorbat Tittora pithos is related, in terms of neck-rim profile, rim diameter and fabric, to the Jerusalem pithos B. Therefore, regarding the assumed 11th, or at the latest, early 12th-century date of the Jerusalem pithos B, the Ḥorbat Tittora pithos may be of a similar date or slightly later dated, but probably not from the Mamluk period. If the architectural context of this pithos is indeed of a Mamluk-period date, it is possible that the pithos was an older vessel in secondary use.

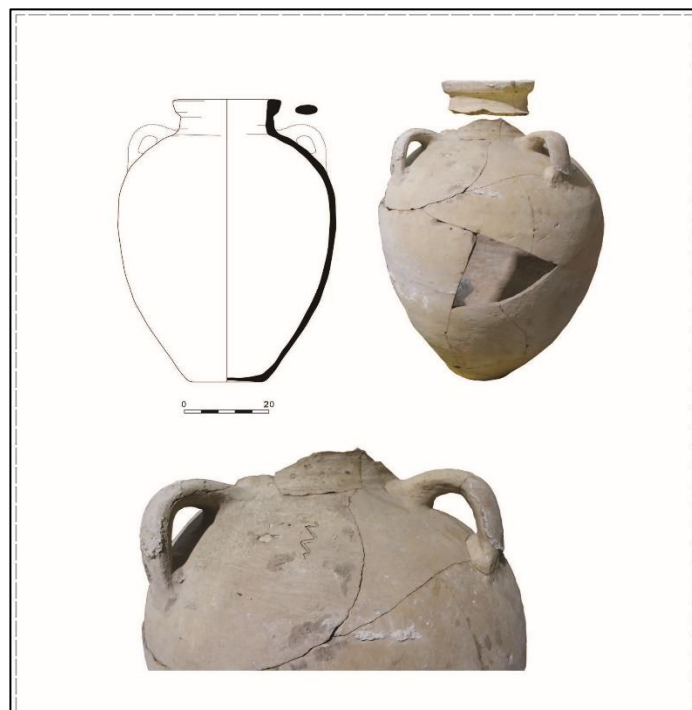


Figure 7. Ḥorbat Tittora: pithos (courtesy IAA and Avraham Tendler; 3D scanning: Argita Gyermen-Levanon [IAA]; photography: Itamar Taxel).

⁵ Although the two pithos parts shown in Fig. 6 appear as if they do not join, in reality there is no gap between them. The gap reflects the inability of the 3D digital scanning to document the lower 5 cm or so of the jar's upper section due to technical problems. However, the overall height of the jar was reconstructed based on manual measurements and photographs.

⁶ The excavations (permit Nos. A-7949/2017, Z-55/2023) were directed by Avraham S. Tendler and the pottery was studied by Itamar Taxel. For a preliminary report on the 2017 excavation, see Tendler, 2021.

⁷ See above, n. 3.

Ashqelon (Greek: Ascalon/Arabic: 'Asqālan) was one of the major harbor cities on the southern Mediterranean coast of historical Palestine. The site of the ancient city (Tel Ashqelon) and its vicinity have been extensively excavated since the early 20th century. In at least two of these excavations fragments of pithoi dated to the Fatimid and/or Crusader period were found. The first excavation, carried out within the Barzilay Hospital (in the modern city of Ashqelon), ca. 0.5 km east of Tel Ashqelon, revealed the remains of a circular, plastered built pit, perhaps a silo. The pit contained pottery sherds dated primarily to the 11th and 12th centuries, as well as a coin of the Persian ruler Nur al-Din Muhammad (1164-1174 CE) (Kogan-Zehavi, 2007). Among the ceramics were neck-rim and handle fragments of a pithos (ibid.: fig. 8: 9, 10) whose morphology and fabric are identical to those of the Jerusalem pithos A and Khirbat Mulabbis pithos (Fig. 8: 1, 2).

In the second excavation project, conducted in 2016, 2018 and 2021 at the Roman basilica in Tel Ashqelon,⁸ fragments of two pithoi were found in a refuse deposit dated to the 11th-12th centuries. The pithoi, both presumably handmade with the rim/neck fashioned on a wheel, are made of a coarse though high-temperature fired orange-brown fabric that contains tiny to large white, reddish-brown (basalt?), gray (shell?) and sparkling (mica?) inclusions. The first pithos has a very short, vertical neck with an everted, triangular rim (ca. 0.3 m inner diameter) decorated with very shallow wavy combing on its external upper surface (Fig. 8: 3). The second pithos is neckless, with a very thick, externally ridged rim (ca. 0.32 m inner diameter) that has a shallow groove on its upper surface (Fig. 8: 4). Both jars are covered from the exterior and on the inner side of the neck/rim with a lightly burnished reddish-brown slip.

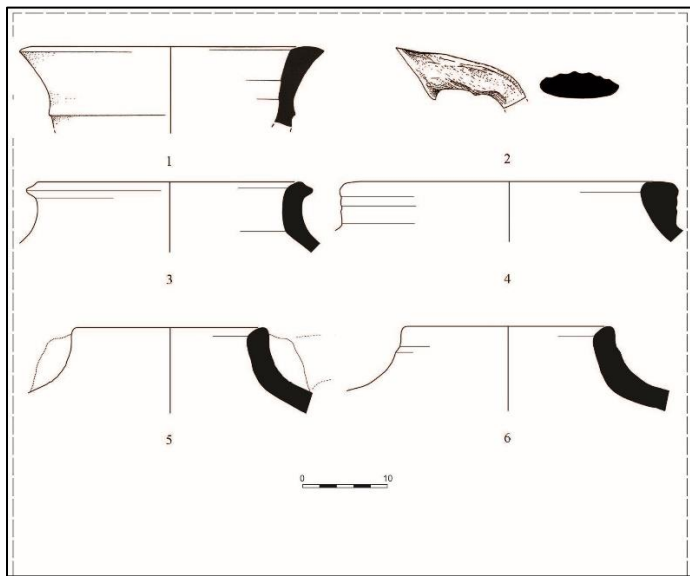


Figure 8. 1, 2) pithos fragments from Ashqelon Barzilay Hospital (courtesy IAA; drawing: Alina Pikovsky [IAA]); 3, 4) pithoi from Tel Ashqelon (courtesy IAA, Sa'ar Ganor and Rachel Bar-Nathan; 3D scanning: Avshalom Karasik and Argita Gyermen-Levanon [IAA]); 5, 6) pithoi from Caesarea (Itamar Taxel; 3D scanning: Avshalom Karasik and Argita Gyermen-Levanon [IAA]).

Caesarea Maritima (Arabic: Qaysāriyah), the Roman- and Byzantine-period provincial capital of historical Palestine and one of the country's major harbor cities, was still an important town in the Early Islamic and Crusader periods. Numerous excavations have been carried out in and around the city since the mid-20th century. In 2020-2022, excavations were conducted within an extensive Early Islamic-period agricultural system of sunken plots in the dunefield south of Caesarea as part of multidisciplinary research directed by one of the present authors (Itamar Taxel) and Joel Roskin. The plots and the berms which delimit them were stabilized and fertilized by a huge amount of domestic refuse transported from the town of Caesarea. The preserved components of this refuse were dominated by pottery sherds, the latest of which are dated to the 11th to early 12th century. One of the excavation areas yielded two pithos fragments (for a preliminary publication, see Taxel and Roskin, 2023: 725, fig. 5: 13, 14); both are made of a coarse reddish-brown fabric that contains many tiny to large white and reddish-brown inclusions and fine mica and are unevenly covered from the exterior with cream-colored wash. The jars have a very short, in-turned neck with a plain rim (ca. 0.2-0.23 m inner diameter) and thick handles attached to the neck (Fig. 8: 5, 6).

1.3. Petrographic Analysis

Samples taken from the nine discussed pithoi were cut to standard (30 µm) thin sections and petrographically analyzed under a polarized light microscope.⁹ This led to a classification of the samples into four petrographic groups (A-D) according to the characteristics of their raw materials.

Group A

Three pithoi belong to this group (Jerusalem pithos A, Khirbat Mulabbis and Ashqelon Barzilay Hospital). These pithoi are characterized by a ferruginous, argillaceous, optically active matrix. The paste contains numerous opaque, ferruginous and/or optically active, argillaceous shale fragments, ranging from 0.5 to 0.8 mm in size. The sand-sized non-plastic components comprise 20% of the paste and contain abundant discrete early-Eocene to early Oligocene foraminifera (*Acarinina* spp. and *Subbotina* spp. foraminifera are identified).¹⁰ Serpentine fragments, altered to a dark reddish-brown during firing, are accompanied by clinopyroxene, mica, and less commonly, chert, radiolarian chert, chalk siltstone, fine igneous rock (possibly dolerite), calcite fragments and feldspar grains (Fig. 9). Elongated voids, likely left by decomposed straw, are prominent in the Jerusalem pithos A sample. The composition of these pithoi suggests that the raw material originated from a geological setting distinct from the studied sites and from Israel as a whole. The composition indicates that the material was likely sourced from an area adjacent to both ophiolite units and sedimentary basins. Ophiolites, representing oceanic crust thrust onto continental crust, often include a thin upper layer of oceanic sediment (such as oceanic clay and radiolarian chert) overlying pillow lava, which is itself overlaid on a sheeted dolerite complex. Ophiolite units are found in several Mediterranean regions, including northwestern Syria, Türkiye, Cyprus and Greece in the eastern Mediterranean, and Albania, Italy, Corsica and Spain

⁸ The excavations (permit Nos. A-7684, A-8349, A-9110) were directed by Sa'ar Ganor and Rachel Bar-Nathan, and the pottery was studied by Itamar Taxel.

⁹ For more details on the method of petrographic sampling, see, e.g., Whitbread, 1995; Vaughan,

1999; Quinn, 2022.

¹⁰ The foraminifera were identified by Lidia Grossowicz and Irit Gefen (Geological Survey of Israel).

in the central and western Mediterranean. The combination of Paleogene calcareous and ophiolite derived rocks typically indicates areas where sedimentary rocks are exposed alongside ophiolites. These sedimentary sequences usually overlie the ophiolites and are consequently found in close proximity to them. Examples include regions such as Ras al-Basit in Syria and the circum-Troodos or Kyrenia ranges in Cyprus, where the Paleogene Lefkara Formation, known for its marl suitable for ceramic production, is exposed. These are just a few examples among other possible cases (Constantinou, 1995; Gass et al., 1994: Map Sheet 2; Kahler, 1994; Pantazis, 1978: Map).

Group B

Three pithoi belong to this group (one of the Ashqelon basilica pithoi [above, Fig. 8: 3] and the two Caesarea pithoi). These pithoi are characterized by ferruginous matrix rich in fine calcareous fragments. The sand-sized non-plastic components comprise 20% of the paste and contain shale fragments, poorly preserved early-Eocene to early-Oligocene foraminifera such as *Acarinina* spp., coarse rounded chalk fragments and coarse quartz grains of up to 1.5 mm. Less common are basalt fragments, radiolarian chert and serpentine (Fig. 10). The composition indicates that, similar to Group A, the material for Group B was sourced from an area near both ophiolite units and sedimentary basins. Though the pithoi of Group B exhibit slight compositional differences from Group A, including the addition of quartz grains, they too were likely imported from a distant source.

Group C

This group is represented by the other pithos from the Ashqelon basilica (above, Fig. 8: 4). This pithos is characterized by ferruginous, micaceous matrix (Fig. 11). The sand-sized non-plastic components comprise ~10% of the paste and include coarse (≤ 2 mm) decomposed calcareous rocks and siltstone fragments. Mica laths are common in igneous and metamorphic rocks and are occasionally found as small flakes in sedimentary rocks. The potential origins of vessels with a micaceous matrix are varied, and in the absence of additional evidence, it is not possible to pinpoint a specific source. Nonetheless, it can be affirmed that the pithos was not locally produced in Israel.

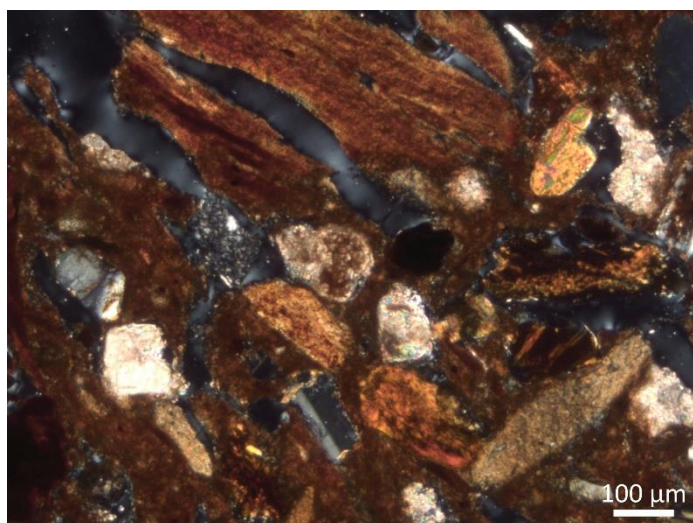


Figure 9. Photomicrograph of the Jerusalem pithos A (Group A): argillaceous shales, serpentinized rock fragments, foraminifer and chert (?) embedded in ferruginous matrix. xpl.

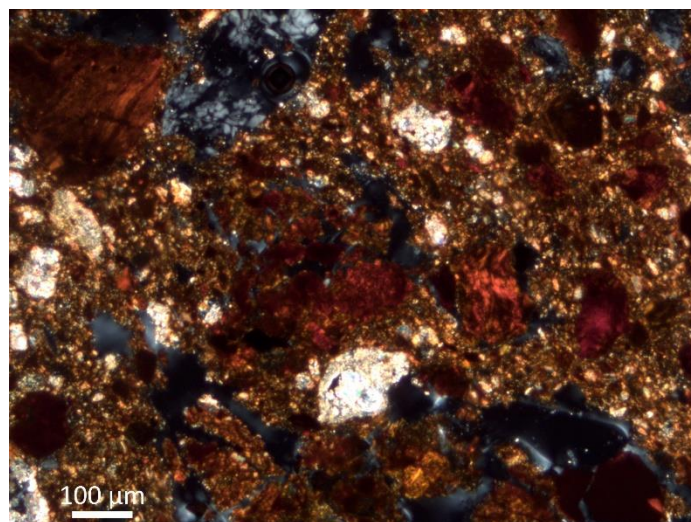


Figure 10. Photomicrograph of one of the Caesarea pithoi (Fig. 8: 6; Group B): serpentinized rock fragments embedded in matrix. xpl.

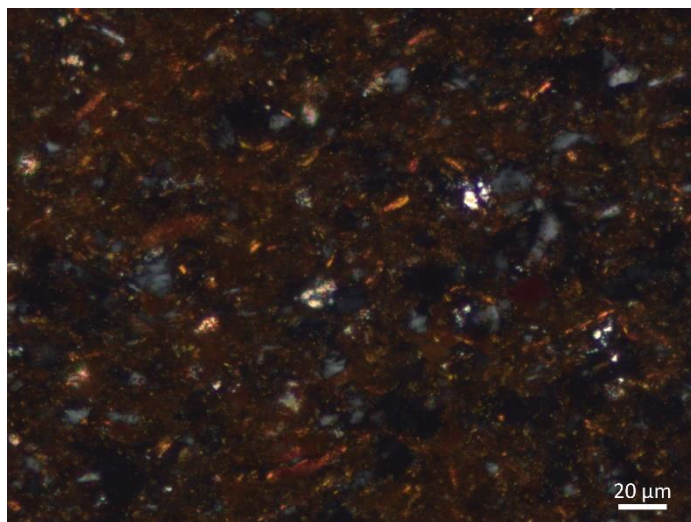


Figure 11. Photomicrograph of one of the Ashqelon basilica pithoi (Fig. 8: 4; Group C): micaceous matrix. xpl.

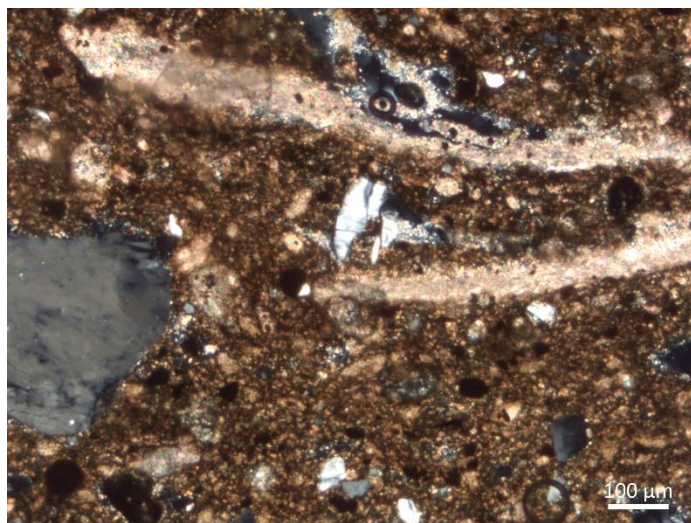


Figure 12. Photomicrograph of the Jerusalem pithos B (Group D): mollusk shell fragments and quartz grains embedded in matrix. xpl.

Group D

Two pithoi belong to this group (the Jerusalem pithos B and the pithos from Ḥorbat Tittora). This group is characterized by ferruginous matrix rich in fine silt-sized calcareous components. The sand-sized non-plastic components comprise 15% of the paste and contain abundant mollusk shell fragments with some ferruginous infilling. Rounded coarse ($\leq 600\mu\text{m}$) quartz grains and dolostone appear in fewer numbers and, on occasion, feldspar or heavy minerals (Fig. 12). This group is possibly derived from the Moza Formation. The Moza Formation is widely exposed across the Judea and Samaria Hill country (Sneh et al., 1998; Sneh and Avni, 2011) and was used extensively in antiquity for pottery production (e.g., Goren, Finkelstein and Na'aman, 2004). The abundant mollusk fragments presumably originated from the Moza Formation or the overlying fossiliferous Aminadav Formation (Arkin, Braun and Starinsky, 1965; Sass and Oppenheim, 1965; Scarpa, 1990; Braun and Hirsch, 1994). The quartz grains may have derived from the coastal dunes and were intentionally mixed within the clay. These two pithoi were possibly produced at a site within the Judea or Samaria Hills or in their immediate vicinity.

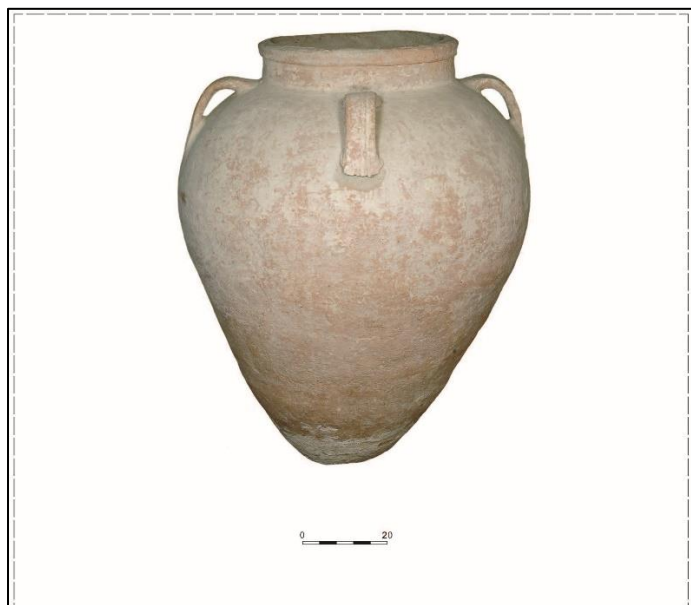


Figure 13. Tiberias: one of the Fatimid metal hoard pithoi (courtesy IAA and Oren Gutfeld [Hebrew University of Jerusalem]).

2. Discussion

Equivalents and Chronology

As can be seen, the discussed pithoi belong to four or five morphologically discerned types (the Ashqelon basilica pithoi may represent variants of the same type) and divide into four petrographic groups which fit the typological seriation. The Jerusalem A, Khirbat Mulabbis and Ashqelon Barzilay Hospital pithoi, which represent the seemingly largest pithos type, have several published and unpublished parallels (all are represented by

rim-neck fragments) from excavated sites in Israel. A pithos found at Şuba (in the Judean Hills), the site of the crusader castle of Belmont, is described as made of pink fabric with reddish-yellow surfaces, a gray core and inclusions of sand, grog and black grits. It was found in a British Mandate-period context located within the Crusader fortress (Grey, 2000: 90, fig. 6.2: 44) and is most probably of a Crusader-period date given the site's history; a pithos found in a Crusader-period context at the harbor town of Acre/'Akko is made of a yellowish-brown fabric with gray core, much sand, some limestone inclusions, some voids and mica (Stern, 2012: 48-49, fig. 4.25: 4, Type VL.PL.2). According to Stern (2012: 49), a molasses jar from Acre whose fabric is similar to that of the discussed pithos was petrographically examined and found to have originated in northern Israel, though the origin of the pithos itself remains unknown, albeit still considered to be local. A pithos found in a Crusader-period context at the harbor town of Jaffa is made of a coarse reddish-brown fabric that contains numerous tiny to medium-sized white inclusions, some mica and numerous tiny to large voids. Some of the latter are narrow and elongated, like regular chopped straw voids, but most of the voids are rounded, as if they had originally contained grain fragments.¹¹

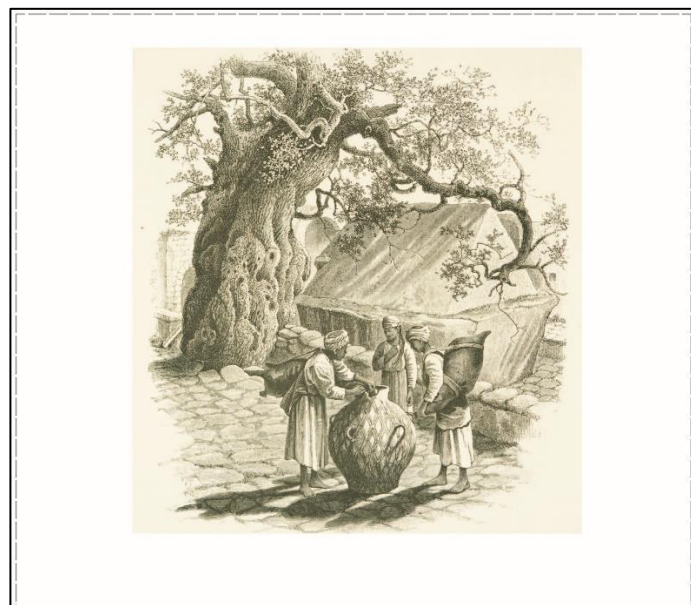


Figure 14. A 19th-century local handmade geometrically painted pithos at Nabi 'Uzeir/Tomb of Eleazar in the village of 'Awarta, Samaria Hills (after Wilson, 1884: image on p. 4).

Interestingly, although the petrographic analysis indicates that these pithoi (petrographic Group A) originated from a distant ophiolite environment source, no secure parallels to similar pithoi have been identified by us in publications of Early Islamic and medieval pottery from northwestern Syria, Türkiye, Cyprus or Greece, which seem to be better candidates as the pithoi source regions than western Mediterranean regions given the characteristics of the country's economic contacts in Fatimid and Crusader times (see below). A pithos with a somewhat reminiscent rim-neck profile was published from a 13th-14th-century context at Marqab, slightly east of the Syrian coast (Shaddoud, 2014: 42-43, pl. 14: 1). It is made of a fine and hard brick-red fabric with black core

¹¹ The Jaffa pithos was found in excavations directed by Alexander Fantalkin on behalf of Tel Aviv University in 2000 and 2001 and the Roman to Islamic pottery was studied by Itamar Taxel.

and white and black inclusions, and according to Shaddoud it was probably produced in Massyaf, ca. 37 km inland east of Marqab. Yet, the rim of this pithos has no broad external fold as in the pithoi found in Israel, but a deep groove that divides the rim and the neck.

Given these data, it seems that the discussed pithos type was common mainly in the 12th and perhaps 13th century, though the complete, in situ example from Jerusalem suggests that it had appeared already in the 11th century. As to the volume of the Jerusalem A pithos (and apparently also that of Khirbat Mulabbis pithos, given its virtually identical dimensions) – nearly 0.6 m³, it is similar to that of a more or less contemporaneous pithos unearthed in Athens (ca. 0.64 m³; Vroom and Boswinkel, 2016: 105, 107, Table 3).

The Ashqelon Basilica and Caesarea pithoi (ascribed to petrographic Groups B and C) are dated to the 11th to early/mid-12th century, but they have no clear parallels among materials published from local sites as well as from their associated regions of origin (from a distant ophiolite environment source).¹²

The Jerusalem B and Ḥorbat Tittora pithoi, which may represent local production from the Moza Formation (petrographic Group D), have a possible parallel – in the form of a rim-neck fragment – from an Ayyubid- and Mamluk-period (late 12th to early 16th-century) context at Šuba, which is made of a white fabric with buff surfaces (Grey, 2000: 90, fig. 6.2: 43). If this jar indeed belongs to the same type as the Jerusalem B and Ḥorbat Tittora pithoi, it may be not later than the 12th century. It perhaps constitutes a residual in the context in which it was found. At any rate, the near-complete example from Ḥorbat Tittora indicates that this was a relatively small-sized pithos with a volume of less than 0.08 m³, which although being considerably taller than that of the average contemporaneous regular (portable) storage jar, is still much lower than that of the Jerusalem A, Khirbat Mulabbis and other associated pithoi.



Figure 15 Palestinian peasant women making handmade zīr-type jars, ca. 1920-1933 (photo from the Matson Collection, Library of Congress, Prints & Photographs Division, LC-DIG-matpc-15632).

¹² Noteworthy regarding the period and region under discussion are two yet unpublished identical pithoi (one complete and one fragmentary) that were found in the 11th-century Serçe Limani shipwreck off the southern Turkish coast. Based on information and line drawing of the complete pithos kindly provided by Paul Reynolds (University of Barcelona), who is studying the pottery from the wreck, the pithoi are ca. 0.74 m high and 0.57 m in diameter and have a flattened base, an oval body with two handles, a slightly in-turned neck and a square-sectioned rim (ca. 0.27 m inner diameter) with pie-crust

The Broader Cultural Context

As noted in the introduction to this study, the discussed Fatimid- and Crusader-period pithoi constitute yet another stage in millennia-old Levantine tradition of using pithos-type jars. In the centuries which preceded the time-period under discussion, namely from the time of the Muslim conquest until about the late ‘Abbasid or early Fatimid period (i.e., from the 630s to the 10th century), a few locally produced, region-specific pithos types were in use, which sometimes reflect earlier, Byzantine-period ceramic traditions. These included the largest variant of the Jerusalem-region bag-shaped, double-handled and comb-decorated jar (ca. 0.6-0.7 m height, 0.5-0.6 m in diameter; Magness, 1993: 227-230, Form 6), whose distribution was mostly confined to the central hill country, the northern Negev and parts of the coastal region (e.g., Arnon, 2008: 39, 161-165, Type 921; Gadot and Taxel, 2016: 54, fig. 5.13: 2), and neckless, four-handled handmade jars (ca. 0.5-0.9 m height, 0.4-0.7 m in diameter) with combed, impressed and/or plastic decoration which were produced in northern Palestine and/or Transjordan and appear almost exclusively in the country’s northern regions (e.g., Loffreda, 2008: 145; Stacey, 2004: 127, 129, fig. 5.36). Apparently, almost no imported pithoi are known from this time-period. The only possible exceptions are the latest specimens of a north Syrian and/or Cypriot handmade pithos type with a globular, neckless body (ca. 0.7-1 m height and diameter) and two handles, which was common mainly during the Byzantine period and perhaps continued until the late 7th or early 8th century (Reynolds, 2003: 544). However, it is unknown whether such pithoi which have been found in contexts dated to the beginning of the Early Islamic period represent contemporaneous imports or older, continuously used or reused vessels (for the potentially prolonged use-life of pithoi in the Mediterranean region and the Middle East in Roman and early modern times, see, e.g., François, 2016; Lancaster and Lancaster, 2010: 217-218; London, 2020: 48-49, 90, 177; Peña, 2007: 210-226).

In the 11th century, alongside the latest variants of local pithoi such as those that originated in the Jerusalem area and the country’s northern regions, a few imported pithos types appeared, some continuing in use into the 12th (and perhaps 13th) century; namely, they bridged the political transition from Fatimid to Crusader/Frankish rule in the Levant. The case study pithoi that constitute the focus of this study and their close equivalents, which were described in detail above, are among the representative of this group. Other published contemporaneous pithoi from the region are rather scarce. The most prominent examples are three pithoi excavated in Tiberias (on the western shore of the Sea of Galilee) in a Fatimid-period dwelling where they were reused as containers for hoarding valuable bronze objects and coins (Hirschfeld and Gutfeld, 2008).

All three Tiberias pithoi are described as being made of a pale brown fabric with white and black inclusions and light yellowish-brown surfaces, though they differ in morphology. The first pithos has a flattened base, an oval body (ca. 1.08 m height, 0.88 m in diameter), four handles and a short, vertical neck with a thickened, outfolded rim (ca. 38 cm inner diameter) (Fig. 13). The second pithos has a pointed base, an oval body (ca. 0.8 m in diameter) decorated with incised zigzag incisions on the shoulder and two

decoration on its lower face. The pithoi are made of a dense and granular black fabric, probably quartz-rich with a few gray (fossil shell?) inclusions. According to Reynolds, these fabric characteristics may indicate that the pithoi originated in northern Lebanon, perhaps in Tripoli. Unfortunately, none of the pithoi discussed in this study has a rim-neck profile similar to that of the Serçe Limani pithoi, though the rim diameter of the latter is between the rim diameter of the Caesarea and Ashqelon basilica pithoi, which suggests that these vessels were more or less of the same size as the Serçe Limani examples.

double-strand handles. Its neck/rim was purposely detached in order to enlarge its opening; hence, its preserved height is ca. 1.06 m.¹³ The third pithos is much smaller than the first two; it has a flattened base, an oval body (ca. 0.55 m height, 0.48 m in diameter) decorated on its middle part with wavy incisions, two handles and a very short neck with a thickened rim (ca. 0.15 m inner diameter) (Vincenz, 2008: 160, 163, pl. 4.40). The morphology of the first pithos is generally reminiscent of the Jerusalem A and Khirbat Mulabbis pithoi (and their fragmentary counterparts, such as the Ashqelon Barzilai Hospital pithos), although the Tiberias pithos is more than 0.2 m shorter and has a different rim-neck profile. The third (smallest) Tiberias pithos can be generally paralleled to the Ḥorbat Tittora pithos (and its fragmentary, Jerusalem B equivalent), though here too the Tiberias vessel is smaller and has a different neck. The second Tiberias pithos is the most exceptional compared to the pithoi discussed here and seems to be rather endemic to northern Palestine and central and northern Transjordan. At any rate, the Tiberias pithoi were not petrographically analyzed; hence, their provenance, especially that of the first and third jars – whether local/regional or foreign – cannot be determined.

As noted above, pithos-type storage jars continued to be used in Palestine throughout medieval and post-medieval times in certain locations until the late 20th century. Regarding the latest documented locally produced examples from the 19th and 20th centuries, these pithoi were either handmade or wheel-made, handled or handleless and unglazed. They were used to hold water for drinking and other daily needs at indoor and outdoor contexts (Hirschfeld, 1995: 141-142; Figs. 14, 15), olive oil (Dalman, 1935: 251; al-Hroub 2015: 83, fig. 125) and likely other foodstuffs (such as pickled olives, dried fruits, etc.) at indoor, mainly domestic contexts (cf. the multifunctional use of equivalent *khars*-type jars in contemporaneous Oman; Lancaster and Lancaster, 2010).¹⁴ These containers were supplemented by imported, internally-glazed, handleless jars which were produced at the village of Biot in southern France and shipped from Marseilles (François, 2013: 281-282, fig. 3: 3). In local contexts they were probably used primarily for olive oil storage, but on a rather low scale and mainly in urban settings, monasteries and a few villages (see Avitsur, 1994: 131, fig. 131, who noted that these jars were nicknamed in Arabic *ḥabiya fransawi* or *ḥabiya franji*, meaning “French barrel/jar”).

Functional and Economic Aspects

The exact primary function of the Fatimid- and Crusader-period pithoi discussed in this study is unknown, including in the case of the two *in situ* examples of Jerusalem A and Ḥorbat Tittora. It can, however, be assumed, based on studies on earlier contemporaneous and later pithoi in the Mediterranean region and the Middle East, that the original designation of these pithoi was to hold water and other liquid and solid/dry foodstuffs. The thick-walled, stationary pithoi, which were often sunk into floors or embedded into walls with plaster – practices that can also be identified regarding some of the above-discussed pithoi – provided a dry, cool and protected environment for their contents (see Lancaster and Lancaster, 2010; London, 2020; Shaddoud, 2016; Vroom, 2020: 287-289; Vroom and Boswinkel, 2016: 107-108). Nevertheless, it is uncertain whether wine was also regularly stored in pithoi in Fatimid- and Crusader-period Palestine, as was contemporaneously common, for instance, in (predominantly Christian) Byzantium and Cyprus. Still, the pithoi

found in presumably Crusader-period Frankish contexts, such as those from Khirbat Mulabbis and Ḥorbat Tittora, may have contained wine at a certain stage of their usage. Nevertheless, it should be remembered that wooden barrels, introduced to the Levant and the Eastern Mediterranean by the Crusaders, probably gradually replaced pithoi as the most common type of large, stationary or semi-stationary wine storage container, at least in contexts associated with the Frankish population (Bronstein, Yehuda and Stern, 2020: 69-70).

Most of the case study pithoi discussed above – seven out of nine (Jerusalem A, Khirbat Mulabbis, Ashqelon Barzilai Hospital, Tel Ashqelon and Caesarea) – are of foreign origin, most likely from the northeastern Mediterranean, with the remaining two (Jerusalem B and Ḥorbat Tittora) being probably of local (Judean hill country?) production. Although this ratio should be treated with caution, as no comprehensive typological and petrographic study of Fatimid- and Crusader-period pithoi across the country has been made, the relative quantity and diversity of imported pithoi is rather telling. Namely, the requirement of local urban and rural populations for pithoi of various dimensions was fulfilled not only by the products of Palestinian (or Transjordanian) potters, but also – and perhaps even mainly – by (higher quality?) pithoi which were produced in regions further afield in the northeastern Mediterranean.

The imported pithoi were most probably transported to Palestine by sea, apparently as new vessels designated for sale in (harbor town?) markets or as special orders made by individuals or institutions.¹⁵ Although the petrographic analysis of the pithoi included in this study was unable to pinpoint the regions of manufacture of the imported pithoi, the findings point to potential origins in Greece, Türkiye, Cyprus or northwestern Syria (regions further to the west seem less plausible). Additionally, the apparent lack of published parallels for similar pithoi from these regions makes it difficult to place them within a more specific geographic context. Historical testimonies and archaeological finds indicate that the Fatimids maintained constant commercial contacts – notably during the 11th century – not only with Muslim-ruled territories in the Levant and North Africa but also with the Byzantine mainland and islands and with Italy (see Wickham, 2023; Vroom, 2022). Of course, following the establishment of the Crusader states of the Levant from ca. 1100 CE onwards the entire northeastern Mediterranean came under Christian control, which resulted in the intensification of (mainly maritime) trade throughout the region (Stern, 2012: 139-159; Wickham, 2023). Consequently, the imported pithoi under discussion could equally have arrived – both in Fatimid and Crusader times – from regions ruled either by Muslims or Christians.

It should however be emphasized that the overall number of archaeologically documented pithoi in Fatimid- and Crusader-period Palestine is rather modest, with usually no more than two or three specimens retrieved in a given excavation of contemporaneous context and more often with no representation of such vessels at all. Following Athanasios Vionis' (2012: 204) discussion on pithoi in the Middle and Late Byzantine Cyclades, the local relative scarcity of pithoi has two main explanations. The first is the potentially high production (and transportation) cost of these containers, which made them – specifically the largest and/or imported ones – affordable to a relatively limited number of relatively well-to-do households or individuals (cf. Sanders, 2016:

¹³ It is possible that this pithos was neckless, with a broad, flattened rim.

¹⁴ In the Ottoman period, at least in the 18th-century Red Sea region, pithoi were also used as merchandise containers on merchant ships (see Raban, 1972-1975a; Sharma, 2003: 44-45, figs. 5-8)

¹⁵ It therefore seems less likely that these pithoi arrived in Palestine as used vessels, e.g. as water containers on ships, also because both Byzantine (or otherwise Western) and Muslim ships of the discussed time-period used amphorae, skins and barrels for their onboard water supply (Pryor, 1988: 81-83).

10-11, 16, table 1, for the example of medieval to early modern Greece). The second explanation for the rarity of pithoi relates to the very justification of the use of such large containers, since many, if not most households were characterized by a direct and seasonal consumption of foodstuffs and the quantities of their surplus agricultural products did not require pithos-sized storage containers. Thus, the requirements of most rural and urban households, in Greece and the Levant alike, regarding foodstuff storage could be fulfilled by regular-sized storage jars and various types of built or rock-cut storage installations.

The fate of pithoi after the termination of their primary use, which could have lasted for many years if not decades or more, depended on the context in which they were placed, on the needs of the people who used the pithoi, and on the history of their associated place of use. Namely, it seems that pithoi which were sunk into floors were rarely, if at all, removed after they ceased to function and were left in place even after the structure to which they belonged had been abandoned (see Vionis, 2012: 203; Vroom, 2020: 290-291; Vroom and Boswinkel, 2016). However, if a building was still active, such sunken pithoi could be reused for hoarding valuables or as (provisional?) refuse receptacles. On the other hand, freestanding pithoi could be removed to another place, be it a refuse dump or a new activity area, and be reused in a more or less complete state – sometimes after repairing or strengthening – or after being broken or detached, e.g. in order to be reused as ovens/hearths, vessel stands, etc.

3. Conclusion

This study focuses on a class of ceramic vessels – pithoi – that has thus far been little studied regarding the Islamic- and medieval-period southern Levant. Nine complete and fragmentary pithoi from Fatimid- and Crusader-period contexts in five excavated coastal and inland sites in Israel were examined, including by petrographic analysis. The results show that most of these pithoi, represented by three or four types, were imported from locations elsewhere in the northeastern Mediterranean, while another pithos type is probably of local production. These pithoi, notably the imported ones, seemingly have few to no published equivalents, including in their potential regions of origin. The chronology of these vessels indicates that at least two of the types (the one represented by the Jerusalem A, Khirbat Mulabbis and Ashqelon Barzilai Hospital pithoi, and the one represented by the Jerusalem B and Ḥorbat Tittora pithoi) apparently appeared in the 11th century and continued into the 12th or 13th century, namely in local chronological terms they bridge the (late?) Fatimid and Crusader periods. In other words, these specific pithos types demonstrate the continuity of economic systems of production, and in the case of the first type also of international trade, regardless of geopolitical regime changes in Palestine and other regions (cf. Jacoby, 2007: 169, 190). The discussed pithoi functioned in domestic contexts for the sake of foodstuff storage, and were sometimes reused for other purposes following their retirement from prime use. It is our hope that this study will assist scholars working in the Levant and other Mediterranean regions to identify and date similar, and different, Islamic- and medieval-period pithoi, and that it will contribute to a better comprehension of pithoi with respect to the material culture, daily life and economic structures of contemporaneous Mediterranean and Near Eastern societies.

Résumé - Pithoi de période fatimide et croisée en Palestine : Nouveau Aperçu sur leur typo-chronologie, production, techniques et provenance :

Cet article examine les grands récipients de stockage en céramique connus sous le nom de pithoi, utilisés aux périodes islamique et médiévale au Levant Sud. Il se concentre sur les pithoi provenant de cinq sites de fouilles datés de la période fatimide et du début période croisée (XIe-XIIe siècles). La recherche analyse les aspects morphologiques, technologiques et contextuels caractéristiques de ces navires, évalue leurs origines par analyse pétrographique et discute de leur typologie, pratiques d'utilisation et de réutilisation d'un point de vue économique.

Mots-clés: *périodes fatimide et croisée, Palestine, pithoi, typo-chronologie, techniques de production, pétrographique analyse, provenance, fonction.*

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