



www.maajournal.com

Mediterranean Archaeology and Archaeometry
Vol. 21, No 1, (2021), pp. 281-290
Open Access. Online & Print.



DOI: 10.5281/zenodo.4575728

TEAPOT OR MILKPOT? ABOUT THE CONTENT OF A SMALL, SPOUTED JAR FROM EB IV (2300-2000 B.C.E.) TELL ES-SULTAN, ANCIENT JERICHO

Lorenzo Nigro^{*1}, Elisabetta Gallo¹, Francesco Mura² and Teresa Rinaldi³

¹*Sapienza University of Rome, Dept. of Oriental Studies, Rome, Italy*

²*Sapienza University of Rome, CNIS Laboratory, Rome, Italy*

³*Sapienza University of Rome, Dept. of Biology and Biotechnology, Rome, Italy*

Received: 07/12/2020

Accepted: 15/03/2021

**Corresponding author: Lorenzo Nigro (lorenzo.nigro@uniroma1.it)*

ABSTRACT

During the 15th season of excavations and restorations (2019) at Tell es-Sultan, ancient Jericho, in Palestine, a spouted vase was found in a section, laying on the floor of a room in a very clear stratigraphic location. The vessel belongs to a renowned pottery type of the Early Bronze Age IV/Intermediate Bronze Age (2300-2000 B.C.E.), named “teapot” in the archaeological literature. Due to its state of preservation (the room had been burnt and the vase was still complete and with its inner content preserved), the Jericho “teapot” was analyzed in the CNIS Laboratory of Sapienza University of Rome in order to identify its content. XRF, SEM and ¹⁴C have been performed to clarify the nature of remains inside the vase, as well as a thorough typological study for comparisons from other archaeological contexts bearing relevant information.

The results of these exams have shown that the vase was not to be used on a fireplace, rather to serve as ewer. Remains of the content show a variable use of the vase and point to sweet beverages, olive oil and salt as its last contents.

KEYWORDS: Jericho, Early Bronze Age IV/Intermediate Bronze Age, pottery, “teapot”, ewer, beverage

1. INTRODUCTION

Tell es-Sultan/ancient Jericho is a key-site for the study of the Early Bronze Age IV/Intermediate Bronze Age in Southern Levant, both from the perspective of settlement organization and material culture development (Nigro 2003; 2020, 194-196; Montanari 2019). Sixteen seasons of excavations and restorations carried on by Sapienza University of Rome and the Palestinian MOTA-DACH, have provided further data on EB IV occupation on the tell with several contexts in firm stratigraphic sequence (Nigro *et al.*, 2019, 25). The major contribution of the Joint Italian-Palestinian Expedition to the study of the EB IV at Jericho has been the re-appraisal of the early occupation of the tell, which led to a subdivision of the period into two stages. During the EB IVA (Sultan IIIId1), a small village, with sparse dwellings and tents, arose on the summit of the Spring Hill, in Area G (Nigro, 2003, 130-131, fig. 13); during the succeeding EB IVB (Sultan IIIId2), the village extended over the flanks of the tell, as suggested by the remains of EB IVB houses uncovered in the northern *plateau* in Area F, on the Spring Hill in Area G, and on the southern flank of the tell in Areas B and E (Marchetti and Nigro, 2000, 123; Nigro, 2003, 129, fig. 15; Nigro *et al.*, 2011, 584;

Montanari, 2019, 138-141, fig. 3). A new piece of evidence was the retrieval of a complete pottery vessel found during the 15th season of excavations and restorations, in March 2019. The vase was retrieved during sampling from stratigraphic sections, an activity carried out to improve the collection of petrographic, botanical and chronological data, in light of a multi-disciplinary and analytical study of archaeological finds through chemical-physical analysis (Liritzis *et al.*, 2020). Stratigraphic sampling activity usually focused on the sections of the three main trenches on the western (Trench I), northern (Trench II), and southern (Trench III) flanks of the tell, excavated by K.M. Kenyon in order to produce a comprehensive evaluation of the site's stratigraphic sequence (Kenyon, 1981, 6-219). The project reveals new evidence for the Bronze Age Levant and contributes to at-risk cultural heritage and dating at the wider Aegean (Sideris *et al.*, 2017; Liritzis 2010). The vessel, a "teapot" according to a common definition in EB IV archaeological literature, was found embedded in the East Section of Kenyon's Trench III at elevation 11.2, length 17 (Kenyon, 1981, pl. 274a). The pot has been carefully extracted from the section (Fig. 1), and the surrounding material was sampled. The present paper reports some detailed analytical and typological analyses about this find.



Figure 1. Excavation and sampling of 'Teapot' TS.19.TrIII.2000/1 in the East Section of Kenyon's Trench III at Tell es-Sultan/Jericho.

2. CONTEXT AND STRATIGRAPHY

Pot TS.19.TrIII.2000/1 was found lying on a floor of beaten clayish marl, embedded into a collapse

layer, under a broken jar, cut through to the south by the stones of the Middle Bronze II rampart (Fig. 2)¹. On the northern side, a burnt basket was laying over

¹ In the published drawing of the East Section of Kenyon's Trench III this area is missing. It is at elevation 11 m a.s.l., where is written "denudation".

the vessel (Fig. 3), suggesting that the cut of Trench III intercepted a domestic unit of the Sultan IIIId2 village (Kenyon's Trench III, Stage XX, phases lxxviii-lxxx), which can be dated at c. 2200-2150 B.C.E. (Nigro, 2003, 129; Montanari, 2019, 139, fig. 3). The basket and the

jar protected the vase from being smashed on the floor at the time of the destruction of the room. The vessel was taken complete from the section and subjected to analyses.

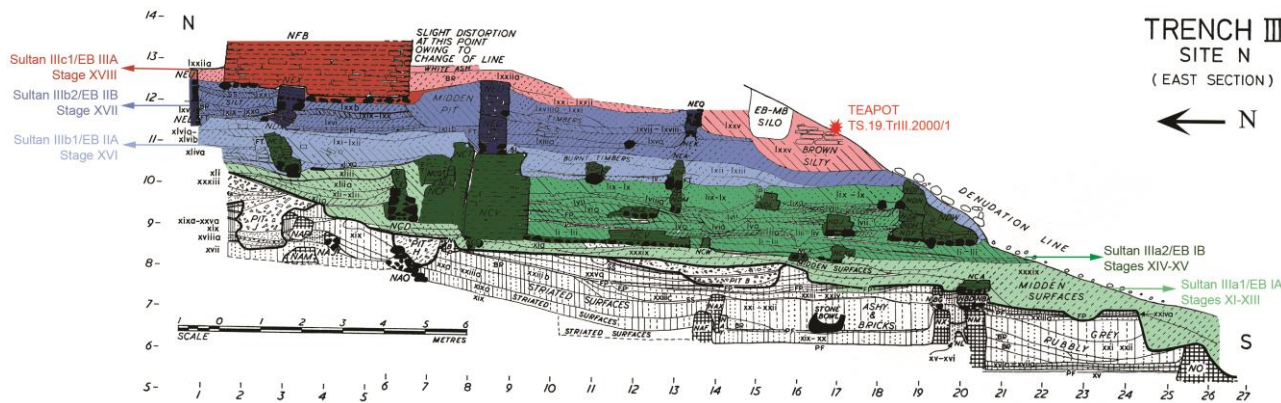


Figure 2. East Section of Kenyon's Trench III with the stratigraphic position of 'Teapot' TS.19.TrIII.2000/1.

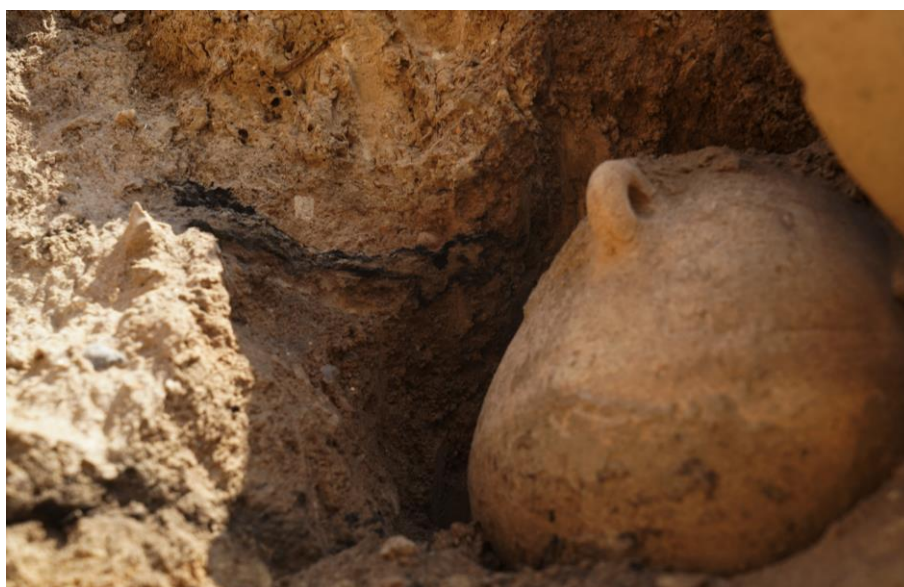


Figure 3. Detail of 'Teapot' TS.19.TrIII.2000/1 and the burnt basket laying over the vessel.

3. TYPOLOGICAL STUDY

This pouring vessel was anachronistically named "teapot"² (Figs 4-5), due to its distinguished shape, well known in the ceramic production of the Early Bronze Age IV/Intermediate Bronze Age in Syria-Palestine (Richard, 1980, 17-18; D'Andrea, 2014, Vol. II, 233-245, pls. LX-LXVIII). It is made of a reddish-

brown buff fabric³, with very small sandy inclusions, typical of the Sultan IIIId2/EB IVB ceramic production (Nigro, 2003, fig. 20:6). The shape is slightly biconical, with flat base (diam. 8 cm), hole-mouth (diam. 7 cm), and a vertical lug-handle opposite of the oblique spout (D'Andrea, 2014, Vol. II, 235, pls. X:3, LX:7 [Type T1.1B]).

² This nomenclature is a relic of the pioneering work of W.F. Albright at Tell Beit Mirsim, where the archaeologist first recognized the Early Bronze Age IV/Intermediate Bronze Age horizon and theorized the use of the word "teapot" in connection with the

"caliciform culture" of Northern Syria (Albright, 1932, 7-8; Wright, 1971, 290; Dever, 1973, 47-48).

³ Munsell Soils Color Chart: 7.5YR7/6 (reddish brown).



Figure 4. 'Teapot' TS.19.TrIII.2000/1.

The horizontal band between the handle and the spout is decorated by a thin wavy combed motive (Fig. 6). The upper part of the vessel shows very clear signs of refining on a slow potter's wheel (Fig. 7): the reintroduction of the use of the slow wheel is another characteristic element of the second later phase of the EB IV occupation at Tell es-Sultan/Jericho (D'Andrea, 2014, Vol. I, 126).

The type is well known in the mature inventory of the EB IV, quite common both in domestic and funerary contexts (Bunimovitz and Greenberg, 2004, 27): it finds comparisons, for example, in the Jericho necropolis (Kenyon's Type F: Kenyon 1965, figs. 65:1 [Tomb O1], 80:5 [Tomb M14]), at Tell el-Husn/Beth Shean (Oren, 1973, figs 18:12 [Tomb 89], 19:16 [Tomb 74], 23:10 [Tomb 262], 24:9 [Tomb 108]), and at Bab edh-Dhra' (Schaub, 1973: fig. 8:23 [Tomb A54]).

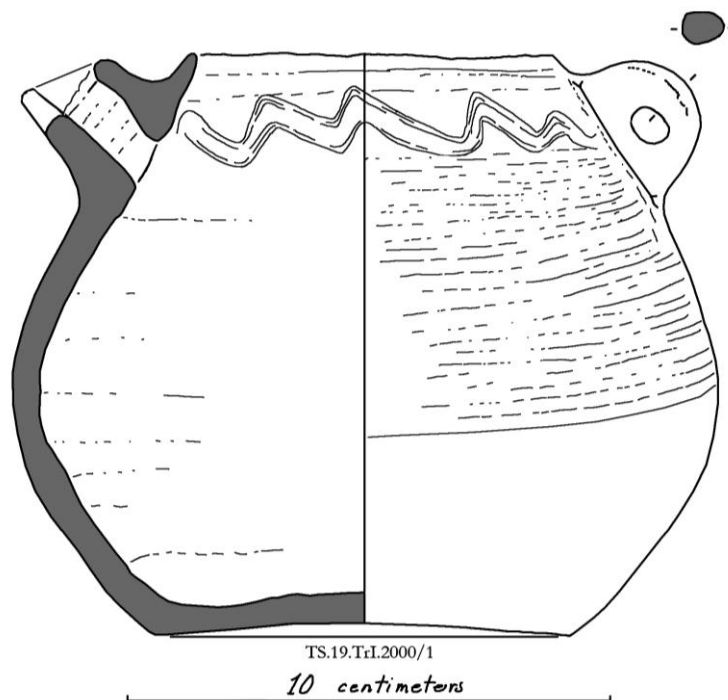


Figure 5. Drawing of 'Teapot' TS.19.TrIII.2000/1.



Figure 6. Detail of the wavy combed decoration under the rim of the vessel.



Figure 7. The outer surface of the 'teapot' showing signs of slow potter's wheel finishing.

'Teapots' are usually linked to northern influxes connected with ceremonial drinking (Fig. 8) as a major feature of the late Early Bronze Age IV/Intermediate Bronze Age society (Bunimovitz and Greenberg, 2004; Joffe 2018, 46, fn. 9; D'Andrea and Vacca, 2019), even though its simple utilitarian shape is suitable for pouring different liquids and makes it an ordinary vessel. In addition, one should note that in the same

contexts from where 'teapots' come, drinking shapes such as cups, beakers, goblets or chalices usually lack (Bunimovitz and Greenberg, 2004, 25). Thus, it seems difficult to univocally connect 'teapots' to drinking, unless one does not invoke an *argumentum e silentio* surmising that such drinking shapes were all made of wood or other perishable materials (leather, wood, etc.).



Figure 8. Examples of 'teapots' from Early Bronze Age IV/IBA tombs in Palestine (c. 2300 B.C.E.).

Nevertheless, a similar shape is known from some highly meaningful contexts both in Egypt and Mesopotamia, which indicate that such kind of ewers had ceremonial and symbolic functions for a long time

among the élites of the Near East and Egypt. The copper ewer found in the tomb of Khasekhemwy in the Umm el-Qaab necropolis at Abydos (Tomb V: Petrie, 1901, 12-13, 27, pl. IX:13; Schorsch, 1992, 145-146;

Dreyer *et al.*, 1998, 164-167; 2000, 122-128), and the calcite one found in the tomb of Queen Puabi at Ur (PG/800: Woolley 1934, pl. 178, U.10502) may be considered among such proto-types of the popular ceramic vessels (Fig. 9).



Figure 9a-b. Copper ewer from Tomb V at Umm el-Qaab, Abydos (Khasekhemwy Tomb, c. 2700 B.C.E.; Penn Museum No. E9595); calcite ewer from Tomb PG/800 at Ur (Queen Puabi Tomb, c. 2600 B.C.E.).

A further observation is suggested by the lug-handle, that is uncomfortable to be held and it is clearly intended to allow the suspension of the vessel by a string (Fig. 10). This points to the function of the vessel as dipper, for tapping a liquid from a big jar or a pithos (with a mouth larger than 15 cm, i.e. the maximum diameter of our vessel).



Figure 10. Detail of the lug-handle of the 'teapot', possibly used to suspend the vase by a string.

In Early Bronze II-III Syria-Palestine this shape is quite common – and its diffusion from the North to the South is witnessed by some renowned specimens from Megiddo.

4. RESULTS

Typological and technological features of the vessel point to an attribution to the initial stage of the EB IVB, around 2300 B.C.E. (Richard, 2003, 294; Palumbo, 2008, 227); nonetheless, the retrieval of one burnt seed of *Lens culinaris* (TS.19.TrIII.PR.4) inside it made it possible a radiocarbon determination.

4.1. Dating

The seed was sampled within the pot to be dated by the radiocarbon method at the Centre for Dating and Diagnostics (CEDAD) of the Salento University in Lecce, Italy. After a preliminary chemical protocol adopted at the CEDAD chemical laboratories to clean the sample of any possible contaminant (D'Elia *et al.*, 2004), sample TS.19.TrIII.PR.4 (Lab Code LTL19569A) was measured by Accelerator Mass Spectrometry (AMS) and dated to 3937±40 B.P. (conventional radiocarbon age); the calibrated date (related to the 2σ 95.4% probability level) is 2497-2298 B.C.E. (84.7%) (Fig. 11).

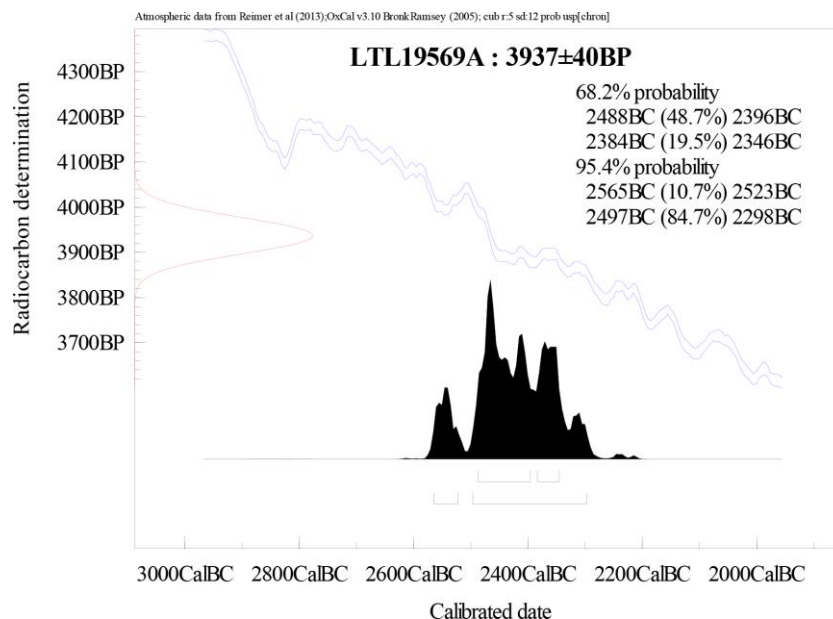


Figure 11. Conventional radiocarbon age (3937 ± 40 B.P.) of sample TS.19.TrIII.PR.4 (CEDAD Lab Code LTL19569A), calibrated using the IntCal 13 calibration curve and OxCal v. 3.10 software (Reimer et al., 2013), and the related calibrated time ranges corresponding to 1σ 68.2% probability and 2σ 95.4% probability levels.

This date and ceramic association may support the general raising of Early Bronze Age chronology in Southern Levant (Regev et al., 2012, 559-561; Höflmayer, 2014; Falconer and Fall, 2016, 16-23; D'Andrea, 2019, 62-63; Fall et al., 2020, 28). However, the proposal chronological revision seems quite complicated at Tell es-Sultan (Nigro et al., 2019, 25-26, tab.8). Moreover, a closer analysis to the teapot's finding spot may indicate that the pot was originally laying on the bottom of an EB IV silos (visible in Kenyon's Trench III East Section at elevation 11.2, length 16, Fig. 2), the walls of which collapsed letting earlier material to fill up the vase.

4.2. XRF and SEM analyses

Before emptying it, the vase was passed through an XRF scanning. Soil inside the pot, including ashes and charcoals, was sieved and carefully excavated. Materials from the inner surfaces were sampled in different spots (bottom, sides, under and inside the spout), and examined at a SEM by T. Rinaldi and F. Mura in the CNIS Laboratory of Sapienza University.

The analysis of samples from the inner walls of the vase revealed the presence of phytoliths (SiO_2) and salt (NaCl) in proximity of the spout (Figs. 12-13), without any other significant result about the content.

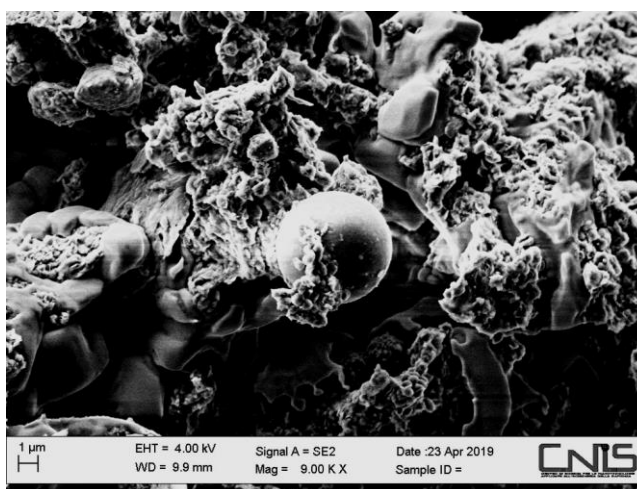


Figure 12. Phytoliths (SiO_2) identified near the mouth and the spout of the 'teapot'.

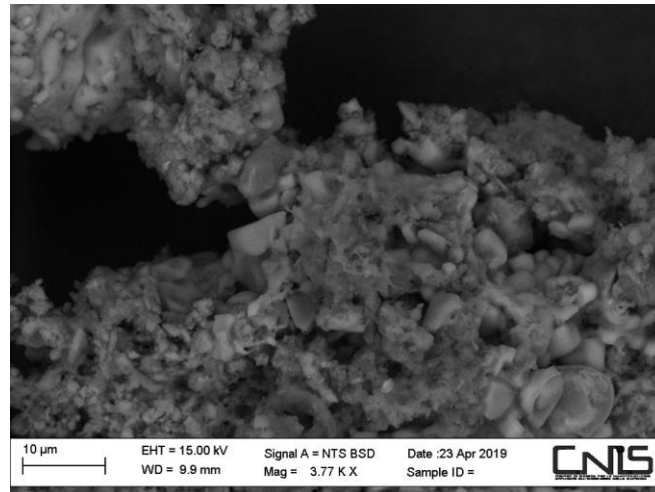


Figure 8. Salt (NaCl) identified near the mouth and the spout of the 'teapot'.

5. CONCLUSIONS

After this study, the spouted vase found in Trench III at Tell es-Sultan, ancient Jericho, resulted to belong to a popular kind of ewer used to pour liquids, possibly beverages, during the third millennium B.C.E. The identification of the beverages dispensed with this vase remains, however, an open question. In this case, when the vessel was found complete and *in situ*, analyses and study helped in identifying its content. The capacity of the vessels is about 800 ml. Various possibilities have been suggested after the analyses carried out on the small, spouted jar in Sapienza CNIS Laboratory, drawing the following conclusions as regards its content.

1. Water: the vase and its spout are too small for being considered a water jug for drinking; however, the vase might be used to pour water for washing hands (and this is suggested by the comparison with the most ancient prototypes of copper, such as those found in the tomb of Khasekemwy at Abydos associated with a copper lustral basin [see above]).
2. Beer: the shape of the vessel, and especially its relatively large mouth, are not comfortable for beer, as well as the spout, with a diameter of less than 1 cm, which results too narrow for this drink.
3. Wine: the dimensions of the spout are suitable for wine, as well as the shape of the vessel, as

it allows to add spices to the beverage. What seems not fitting this interpretation is the capacity of the 'teapot': too small for such a drink. This, however, can depend on the dimension of the mouth of the jar where the 'teapot' was immersed, if it was employed as dipper.

4. Olive oil: in this case the spout diameter is possibly too large, while the wide vessel's mouth is uncomfortable for olive oil (nonetheless the identified phytoliths may be considered traces of olive oil, as the two endocarps found burnt into the vase).
5. Milk: the vessel dimensions are suitable for carrying milk, especially for serving it. The relatively large mouth, moreover, allowed the addition of honey or spices.

Comparisons and relatively wide diffusion through space and time during the third millennium B.C.E. seem to indicate that the small, spouted jar called "teapot" in the archaeological literature in English of pre-Classical Levant was connected to some liquid stuff of relatively common use or consumption. Being beer, milk or spiced wine or some other fermented fruit juice, this ewer was deemed essential in the funerary set of high rank personages. It may be also employed for lustral acts (washing hands) in association with a basin.

ACKNOWLEDGEMENTS

Work at Tell es-Sultan is carried on since 1997 in fruitful cooperation with the Ministry of Tourism and Antiquities of the State of Palestine, Dept. of Archaeology and Cultural Heritage. Our deepest thank is addressed to H.E. the Minister Dr Rula Ma'ya; the Director General Dr Saleh Tawafsha; Dr Jehad Yasin; Dr Yiad Hamdan; Mr Mohammed Mansour. A special thank is also addressed to the Italian Ministry of Foreign Affairs, the DGSP - Ufficio VI Settore Archeologia - and the Italian Consulate in Jerusalem, which strongly support our scientific endeavour at Tell es-Sultan. The academic authorities of Sapienza University of Rome, the Rector Magnifica, Prof. Antonella Polimeni, the Dean of the Faculty of Letters, Prof. Stefano Asperti, the Pro-Rector for Scientific

Research, Prof. Maria Sabrina Sarto, for the always generous funding of the Jericho Project. We also thank the Research Centre for Nanotechnologies Applied to Engineering of Sapienza University - CNIS - for the analyses which made possible this study.

REFERENCES

- Albright, W.F. (1932) *The Excavations at Tell Beit Mirsim I: Pottery of the First Three Campaigns* (The Annual of the American Schools of Oriental Research 12). New Haven, American Schools of Oriental Research.
- Bunimovitz, S. and Greenberg, R. (2004) Revealed in Their Cups: Syrian Drinking Customs in Intermediate Bronze Age Canaan. *Bulletin of the American Schools of Oriental Research*, No. 334, pp. 19-31.
- D'Andrea, M. (2014) *The Southern Levant in Early Bronze IV. Issues and Perspectives in the Pottery Evidence* (Contributi e Materiali di Archeologia Orientale XVII, Volume 1: Text, Volume 2: Appendices and Plates). Roma, "Sapienza" Università di Roma - Dipartimento di Archeologia.
- D'Andrea, M. (2019) The Periodization of Early Bronze IV in the Southern Levant: Bridging the Gap between Stratigraphy and Absolute Chronology. In *Conceptualizing Urban Experiences: Tell es-Sultan and Tall al-Hammām Early Bronze cities across the Jordan. Proceedings of a workshop held in Palermo, G. Whitaker Foundation, Villa Malfitano, June 19th, 2017* (Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan, 13), E. Gallo (ed.), Rome, Rome «La Sapienza» Expedition to Palestine & Jordan, pp. 61-78.
- D'Andrea, M. and Vacca, A. (2019) Alike but different. Drinking vessels in the Eastern Mediterranean around 2500-2000 BC. In *Between Syria and the Highlands. Studies in honor of Giorgio Buccellati & Marylin-Kelly Buccellati* (Studies on the Ancient Near East and the Mediterranean 3), S. Valentini and G. Guarducci (eds.), Rome, Arbor Sapientiae, pp. 122-138.
- D'Elia, M.L., Calcagnile, L., Quarta, G., Sanapo, C., Laudisa, M., Toma, U. and Rizzo, A. (2004) Sample preparation and blank values at the AMS Radiocarbon Facility of the University of Lecce. *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*, No. 223-224 (special issue), pp. 278-283.
- Dever, W.G. (1973) The EB IV-MB I Horizon in Transjordan and Southern Palestine. *Bulletin of the American Schools of Oriental Research*, No. 210, pp. 37-63.
- Dreyer, G., Hartung, U., Hikade, T., Köhler, E.C., Mutter, V. and Pumpenmeier, F. (1998) Umm el-Qaab. Nachuntersuchungen im frühzeitlichen Königsfriedhof, 9/10. Vorbericht. *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo*, No. 54, pp. 77-167.
- Dreyer, G., von Driesch, A., Engel, E.-M., Hartmann, R., Hartung, U., Hikade, T., Müller, V. and Petres, J. (2000) Umm el-Qaab. Nachuntersuchungen im frühzeitlichen Königsfriedhof, 11/12. Vorbericht. *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo*, No. 56, pp. 43-129.
- Falconer, S.E. and Fall, P.L. (2016) A Radiocarbon Sequence from Tell Abu en-Ni'aj, Jordan and its Implications for Early Bronze IV Chronology in the Southern Levant. *Radiocarbon*, No. 58.3, pp. 615-647.
- Fall, P.L., Falconer, S.E. and Höflmayer, F. (2020) New Bayesian Radiocarbon Models and Ceramic Chronologies for Early Bronze IV Tell Abu en-Ni'aj and Middle bronze Age Tell el-Hayyat, Jordan. *Radiocarbon*, No. 63.1, pp. 1-36.
- Höflmayer, F. (2014) Dating Catastrophes and Collapses in the Ancient Near East: The End of the First Urbanization in the Southern Levant and the 4.2 ka BP Event. In *Overcoming Catastrophes. Essays on Disastrous Agents Characterization and Resilience Strategies in Pre-Classical Southern Levant* (Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan 11), L. Nigro (ed.), Rome, Rome «La Sapienza» Expedition to Palestine & Jordan, pp. 117-140.
- Joffe, A. (2018) Notes on Early Bronze Age Commensality. In *Tell it in Gath. Studies in the History and Archaeology of Israel Essays in Honor of Aren M. Maeir on the Occasion of his Sixtieth Birthday* (Ägypten und Altes Testament, Band 90), I. Shai, J.R. Chadwick, L. Hitchcock, A. Dagan, C. McKinny and J. Uziel (eds.), Münster, Zaphon, pp. 41-70.
- Kenyon, K.M. (1965) *Excavations at Jericho. Volume Two. The Tombs excavated in 1955-1958*. London, The British School of Archaeology in Jerusalem.
- Kenyon, K.M. (1981) *Excavations at Jericho. Volume Three. The Architecture and Stratigraphy of the Tell*. London, The British School of Archaeology in Jerusalem.
- Liritzis., I (2010) Strofilas (Andros Island, Greece): New evidence of Cycladic Final Neolithic dated by novel luminescence and Obsidian Hydration methods. *Journal of Archaeological Science* No. 37, pp. 1367-1377.

- Liritzis, I., Laskaris, N., Vafiadou, A., Karapanagiotis, I., Volonakis, P., Papageorgopoulou, C. and Bratitsi, M. (2020) Archaeometry: an overview. *Scientific Culture*, Vol. 6, No. 1, pp. 49-98.
- Marchetti, N. and Nigro, L. (2000) *Excavations at Jericho, 1998. Preliminary Report on the Second Season of Excavations and Surveys at Tell es-Sultan, Palestine* (Quaderni di Gerico, 2). Rome, SK7.
- Montanari, D. (2019) Tell es-Sultan/ ancient Jerico in the Early Bronze Age IV: a summary. In *Conceptualizing Urban Experiences: Tell es-Sultan and Tall al-Hammām Early Bronze cities across the Jordan. Proceedings of a workshop held in Palermo, G. Whitaker Foundation, Villa Malfitano, June 19th, 2017* (Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan, 13), E. Gallo (ed.), Rome, Rome «La Sapienza» Expedition to Palestine & Jordan, pp. 135-154.
- Nigro, L. (2003) Tell es-Sultan in the Early Bronze Age IV (2300-2000 BC). Settlement vs Necropolis - A Stratigraphic Periodization. *Contributi e Materiali di Archeologia Orientale*, Vol. IX, pp. 121-158.
- Nigro, L. (2020) The Italian-Palestinian Expedition to Tell es-Sultan, Ancient Jericho (1997–2015): Archaeology and Valorisation of Material and Immaterial Heritage. In *Digging Up Jericho. Past, present and future*, R.T. Sparks, B. Finlayson, B. Wagemakers and J.M. Briffa (eds.), Oxford, Archaeopress, pp. 175-214.
- Nigro, L., Calcagnile, L., Yasin, J., Gallo, E. and Quarta, G. (2019) Jericho and the Chronology of Palestine in the Early Bronze Age: A Radiometric Re-Assessment. *Radiocarbon*, No. 61.1, pp. 211-241.
- Nigro, L., Sala, M., Taha, H. and Yassine, J. (2011) The Early Bronze Age palace and fortifications at Tell es-Sultan/Jericho. The 6th - 7th seasons (2010-2011) by Rome “La Sapienza” University and the Palestinian MOTADACH. *Scienze dell’ Antichità*, No. 17, pp. 571-597.
- Oren, E.D. (1973) *The Northern Cemetery of Beth Shan*. Leiden, E.J. Brill.
- Palumbo, G. (2008) The Early Bronze IV. In *Jordan: An Archaeological Reader*, R.B. Adams (ed.), London, Equinox Publishing, pp. 227-262.
- Petrie, W.M.F. (1901) *The Royal Tombs of Earliest Dynasties. Part II*. London, The Egypt Exploration Fund.
- Regev, J., De Miroshedji, P., Greenberg, R., Braun, E., Greenhut, Z. and Boaretto, E. (2012) Chronology of the Early Bronze Age in the Southern Levant: New Analysis for a High Chronology. *Radiocarbon*, No. 54.3-4, pp. 525-566.
- Reimer, P.J., Bard, E., Bayliss, A., Beck, J.W., Blackwell, P.G., Bronk Ramsey, C., Buck, C.E., Cheng, H., Edwards, R.L., Friedrich, M., Grootes, P.M., Guilderson, T.P., Haflidson, H., Haidas, I., Hatté, C., Heaton, T.J., Hoffmann, D.L., Hogg, A.G., Hughen, K.A., Kaiser, K.F., Kromer, B., Manning, S.W., Niu, M., Reimer, R.W., Richards, D.A., Scott, E.M., Southon, J.R., Staff, R.A., Turney, C.S.M. and van der Plicht, J. (2013) IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. *Radiocarbon*, No. 55.4, pp. 1869-1887.
- Richard, S. (1980) Toward a Consensus of Opinion on the End of the Early Bronze Age in Palestine-Transjordan. *Bulletin of the American Schools of Oriental Research*, No. 237, pp. 5-34.
- Richard, S. (2003) The Early Bronze Age in the Southern Levant. In *Near Eastern Archaeology. A Reader*, S. Richard (ed.), Winona Lake, Eisenbrauns, pp. 286-302.
- Schaub, R.T. (1973) An Early Bronze Age IV Tomb from Bâb edh-Dhrâ’. *Bulletin of the American Schools of Oriental Research*, No. 210, pp. 2-19.
- Schorsch, D. (1992) Copper Ewers of Early Dynastic and Old Kingdom Egypt – An Investigation of the Art of Smithing in Antiquity. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo*, No. 48, pp. 145-159, pls. 31-36.
- Sideris, A., Liritzis, I., Liss, B., Howland, M.D., and Levy, T.E. (2017) At-risk cultural heritage: new excavations and finds from the Mycenaean site of Kastrouli, Phokis, Greece. *Mediterranean Archaeology and Archaeometry*, Vol. 17, No 1, pp. 271-285
- Woolley, C.L. (1934) *Ur Excavations. Volume II. The Royal Cemetery: A Report on the Predynastic and Sargonic Graves Excavated between 1926 and 1931* (Publications of the Joint Expedition of the British Museum and of the Museum of the University of Pennsylvania to Mesopotamia). London and New York, The Trustees of the two Museums.
- Wright, G.E. (1971) The Archaeology of Palestine from the Neolithic through the Middle Bronze Age. *Journal of the American Oriental Society*, Vol. 91, No. 2, pp. 276-293.