

TRENDS OF INNOVATION IN THE LEVANTINE STORAGE JARS AND PITHOI (13TH-11TH CENTURIES BC)

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This paper offers a brief discussion of the main trends of innovation in the typology and function of storage jars (amphorae) and pithoi, during the Late Bronze II-Iron I transition (13th-11th centuries BC), providing further insight into trade networks, cultural exchange, food storage strategies, and lastly into how Levantine societies responded to the crisis of the Late Bronze Age.

Keywords: trade networks; crisis years; amphorae; pithoi; storage jars

1. INTRODUCTION¹

1.1. *Debating the Crisis Years*

Over the last decades, the crisis of Late Bronze age societies has come under debate. Reactions to the crisis have been discussed, as well as the ways in which the crisis was overcome.² In this debate, a key role has been played by cultural contacts and exchanges: that is encounters, cultural mixtures, migration of human groups, exchanges of goods, people, knowledge, and skills. To explain the cultural change, several new key-concepts have been introduced by scholars, such as entanglement, hybridity/hybridization, creolization. The use (and the abuse) of these terms and, in the end, the tendency to abandon them, have also been questioned. Recently, it has been suggested that the use of these terms «acted, to a degree, as a deterrent to simplistic reconstructions of past contacts».³ So, at least from a minimalist point of view, we need to deal with these concepts to describe and interpret the questions posed by archaeological research in the eastern Mediterranean.

Moreover, new approaches to the study of cultural contacts and exchanges have been proposed; starting from an analysis of the whole chain of exchange, with its key elements (producer, transmitter, recipient), a new view of cultural exchanges has been introduced; the idea of a *reified* view of culture has come under discussion.⁴ At the same time, over the last few decades we have tried to use some key concepts and analytical tools borrowed from the social sciences, such as network analysis. The definition of a network as a system of nodes (or vertices) with connecting links (or edges) enables us to identify various types of networks:

¹ This study has been carried out thanks to the funding of Prin 2017 “Peoples of the Middle Sea” under the coordination of L. Nigro (Sapienza University), within the CNR Research Unit led by I. Oggiano; the study took its starting point from a reworking of the typology I published years ago (Pedrazzi 2007); part of the results presented here have been discussed at the workshop organized by T. Bürge and P. Fischer at the Göteborg University in January 2020; and a few results presented here arise from the study conducted with R. Jung and H. Mommsen on the Levantine SJ from Cyprus: Jung - Mommsen - Pedrazzi 2023. I am grateful to all the colleagues mentioned above for the valuable opportunities they have given me.

² Bachhuber - Roberts 2009; Knapp - Manning 2016. On the mobility in the Mediterranean because of the crisis: Jung 2018. On the “sea peoples” and the transformations in the 13th-11th centuries BC, see Fischer - Bürge eds. 2017. For the “ceramic innovations” in the Eastern Mediterranean at the end of the 2nd millennium BC, see Jung 2012, 104-120.

³ Yasur-Landau 2017, 143.

⁴ Ulf 2009, 507. See also Pedrazzi 2021, 17-19.

from spatial ones (for example, transport and road networks) to those of a social type. Borrowing some concepts from network analysis, we try to interpret the circulation of Levantine transport and storage vessels in the 13th-11th centuries BC.

1.2. *The repertoire of storage/transport vessels*

Some innovations are introduced in the repertoire of storage and transport vessels, namely the storage jars (SJ) and the *pithoi*, in the so-called crisis years, i.e. during the transition between the Late Bronze and the Iron Age.⁵ A few preliminary questions are helpful in framing the analysis. Firstly, which kind of morphological and functional features are typical of storage and transport vessels? Do these characters change over time? And do they have any specific significance from an economic or social point of view, or on the cognitive level? Secondly, looking at the provenance studies of storage/transport containers, can we describe a transformation/change in trade networks? Lastly, which kind of contribution (if any) could SJ and *pithoi* offer to our global understanding of the nature of the crisis and of the different responses to it given by Levantine societies?

Thus, starting from the first question, we will provide here an overall picture of the ways in which storage jars and *pithoi* changed during the periods before and after the collapse of Late Bronze II societies. The focus on storage jars and *pithoi*, considered together, is based on functional and morphological considerations: the huge *pithoi*, mainly used for storage, were also transported by ships; moreover, the shape of some Iron I *pithoi* derived directly from Canaanite Storage Jars,⁶ as in the case of the collared-rim *pithoi* of the Southern Levant.⁷ A joint analysis of both big storage containers and medium-size transport jars, will provide us with a clearer definition of local, regional and interregional strategies for food storage and for the circulation of commodities.⁸

2. STORAGE JARS (LATE BRONZE II-IRON I)

In the Late Bronze II, many diverse types of SJ (or transport amphorae) were produced and used along the Levantine coast. During the Late Bronze IIB (13th century BC), we can distinguish at least three categories, based on the profile of the shoulder: (1) the angular-shouldered SJs; (2) rounded-shouldered SJs (without any carination); (3) slightly carinated SJs.⁹ On the other hand, a few *hybrid* shapes derived from contamination between the Canaanite jar and models coming from outside. Morphological classes should not be based solely on rim shapes, given that similar types of rims are used for different jars.

⁵ For the sake of convenience, we adopt here a simple and unified chronological scheme: Late Bronze II, subdivided into Late Bronze IIA (14th century BC) and Late Bronze IIB (13th century BC); Iron I, subdivided into Iron IA (first three quarters of the 12th century BC) and Iron IB (late 12th to 11th/first decades of 10th centuries BC). Note, however, that the period corresponding to the first three quarters of the 12th century (1200-1130 BC) can also be labelled Late Bronze III. For the Late Bronze chronology see Sherratt 2014, 499, tab. 33:1; for the Iron Age chronology, see Nigro 2014, 263, tab. 1.

⁶ The definition of “Canaanite jar” was first coined by scholars in the mid-20th century: Grace 1956. This label has been questioned as partly misleading, but it is still being used: Pedrazzi 2016, 58. See also Killebrew 2007.

⁷ Wengrow 1996, 307; Killebrew 2001, 391.

⁸ Recent publications on maritime transport containers include Demesticha - Knapp eds. 2016, with many contributions; Knapp - Demesticha 2017.

⁹ See Pedrazzi 2016; 2022.

2.1. *Angular-shouldered SJ*

During the Late Bronze II, the maximum diameter and the balance point are situated in the upper part of the vessel, facilitating handling and pivoting. The angular-shouldered SJ (Type 5-4; fig. 1)¹⁰ is the commercial jar *par excellence*, used in sea-trade and transport, spread all around the Levantine coast and produced in many regions along the coast. Documented through hundreds of complete vessels, including the SJs found in Syria at Minet el-Beida (Ugarit), this type reached the Mycenaean world and Egypt. In Cyprus this jar is attested in limited quantities, if compared to its spread elsewhere and to the significant numbers found in shipwrecks (such as the Kaš-Uluburun wreck).¹¹ As for the Mycenaean world, a recent study of Canaanite jars from Tyrins confirmed the origin from several centres in the Levant.¹² When we refer to the 13th century Canaanite jars, we are referring to this specific type.

In the first stages of the Iron Age, after the destruction of many Levantine sites, certain types of SJ continue to be produced, even if with a few morphological changes, while other types completely disappeared, being replaced by new shapes. The transformation is very gradual, with a clear morpho-functional continuity, in contrast to what will happen in Iron II (at the end of the 10th/beginning of the 9th century BC). In the Iron I, the quite sudden disappearance of the angular-shouldered SJ (Type 5-4) is noteworthy; from then on, i.e. in the Iron age, the angular-shouldered jars has a different body profile, with a very flat shoulder and a shorter neck, as for Type 5-2, spread along the central and southern Levantine coast, at Dor¹³ and Tel Qasile,¹⁴ and even in Cyprus at Palaepahos *Skales*.¹⁵ An example like these vessels, coming from Amarna, differs from our Iron I samples in the shape of the rim and bottom.¹⁶

2.2. *Rounded-shouldered SJ*

As for the second category, i.e. the SJ with rounded shoulder, we can mention the presence of ovoid jars in the Late Bronze I-II (Type 1-1),¹⁷ which derives from the Middle Bronze Age (MBA) models; ovoid jars are typical of the Late Bronze I; we also recall the small globular types, Type 12-1 of the Late Bronze II, the distribution of which is significant: about 18% from Syria (and in particular from Tell Kazel); approximately 59% from Galilee (especially from Hazor), and a few from the Beqaa Valley.¹⁸ In Cyprus, this type has been found at Pyla *Kokkinokremos*:¹⁹ the NAA did not allow a definite attribution to an existing class,²⁰ even if the fabric is very similar to that of jars from Tell Kazel (Syria). Morpho-

¹⁰ Pedrazzi 2007, 75-77.

¹¹ Pyla *Kokkinokremos*: Georgiou 2014, pl. XI:138 (complete vessel). Enkomi: Jung - Mommsen - Pedrazzi 2023, 175-176, fig. 24:1, 6 (bases). Kaš-Uluburun: Bass 1986; Pulak 1988.

¹² Day *et al.* 2020.

¹³ Raban 2000, fig. 9.24:7, 18, 19.

¹⁴ Mazar 1985, fig. 47:11.

¹⁵ Karageorghis 1983, figs. CXIV:2, CLXVI:40, CLIV:46; and for the Type see Pedrazzi 2007, 72-73.

¹⁶ Peet - Woolley 1923, pl. XLIII:105.

¹⁷ Pedrazzi 2007, 50-51.

¹⁸ Pedrazzi 2007, 113-115.

¹⁹ Karageorghis - Demas 1984, pl. 38:109.

²⁰ Jung - Mommsen - Pedrazzi 2023.

functional features suggest that this type was intended for household purpose, therefore, if provenance from Syria were confirmed, it would be safe to assume that these “domestic” jars travelled by sea.

The SJs without carination on the shoulder, in the Iron I and II, have an ovoid and elongated body. Well known examples come from Galilee and the Jezreel Valley (Types 9-1 and 9-2), probably locally produced, in sites such as Tel Keisan, Megiddo, Beth Shean; these jars derive from the tradition of the ovoid Canaanite Jar of the Middle and Late Bronze ages, a type not specialized in maritime transport, but mainly used for storage purposes and for a locally based circulation of goods.

2.3. *Slightly-carinated SJ*

As for the type with a slight carination on shoulder, and a “bellied” profile (Type 4-2),²¹ it seems typical of the Northern Levant. Tell Kazel (Syria) provided a significant number of vessels pertaining to this form (fig. 2).²² The type is widespread between coastal Syria and Cyprus, where many examples from Maa *Palaeokastro*, Pyla *Kokkinokremos* and Kition are relevant to this shape.²³ In central and southern Levant this SJ is not very common: only a few examples have been identified, such as a complete vessel in a Late Bronze II context at Hazor in Galilee.²⁴

The slightly carinated and bellied jars continued to be produced and used, with minor changes in shape, as we see in Type 4-1, that is - e.g. at Tell Kazel - the evolution of previous Type 4-2.²⁵ The shoulder, in the Iron I, became more convex and rounded, even if the slight carination was preserved, as an important morpho-functional feature, as well as the knobbed or bulbous bases. In the meantime, during the Iron I, another type with a slightly carinated shoulder spread, Type 5-5, with a cylindrical body and a bulbous base: it is very common in Galilee, at Tell Keisan²⁶ and in coastal Palestine at Tell Qasile,²⁷ and it is also documented in Phoenicia (Tyre and Sarepta), and in Cyprus (Enkomi, Pyla *Kokkinokremos*, Palaepaphos *Eliomila*, Hala Sultan Tekké).²⁸ This type features a not very standardized internal volume, with a capacity ranging from 14 to 22 liters.

2.4. *Innovation and continuity in SJ*

Between the Late Bronze II and the Iron I, certain shapes of SJ were still being produced and used, in a more restricted area, the northern Levantine coast, Cyprus and the Cilicia coast. In fact, Type 4-1 is the evolution into Iron I of the previous Type 4-2. At the same time, the type with carinated shoulder (Type 5-4), used in Late Bronze II, was no longer being

²¹ Pedrazzi 2007, 68, fig. 3:17.

²² Badre - Capet - Vitale 2018, pl. 27.

²³ Karageorghis - Demas 1984, pl. 37:111 (Pyla K.); 1988, pls. 211:441, 236:340 (Maa P.); Jung - Mommsen - Pedrazzi 2023, 163, fig. 18 (Maaj 9, Maaj 33).

²⁴ Jar n. D4393, Loc. 9017: Yadin *et al.* 1958, pl. CIX:1.

²⁵ Pedrazzi 2007, 66-69.

²⁶ Briend - Humbert 1980, pls. 59:4-6, 60:2, 67:4.

²⁷ Mazar 1985, figs. 48:2, 4, 6-8, 12, 15; 43:19, 21.

²⁸ Dikaios 1969, pl. 120:12 (Enkomi); Bikai 1978, pls. 26:17, 35:13 (Tyre); Anderson 1988, pl. 31:7 (Sarepta); Karageorghis 1990, pl. LXXXVI:1 (Palaepaphos *Eliomila*); Bürge - Fischer 2018, 225, fig. 3:16 (Hala Sultan Tekké); Jung - Mommsen - Pedrazzi 2023, 176, figs. 25:1 (Enkomi), 32:2 (Pyla K.).

produced (fig. 3). This SJ also had a somehow standardized capacity, with two main size groups: one with a capacity of 10 to 14 liters, and the other ranging from 18 to 22 liters, and with a smaller variant (approximately 7 liters) attested in the Kaš-Uluburun shipwreck. The angular-shaped jars were replaced by the ones with a slightly carinated shoulder (Type 5-5 of Iron I). A sharply angular shoulder would only come back into use later, in the Iron II and in the Persian period. Clearly, this morpho-functional feature was adopted when maritime trade was particularly advanced.

3. LARGE STORAGE CONTAINERS (LATE BRONZE II-IRON I)

As for the large storage containers, a transformation in the repertoire occurred between Late Bronze II and Iron I periods. Innovation and continuity in the repertoire are clearly interwoven.

3.1. *Late Bronze II pithoi*

The *pithoi* produced along the Levantine coast in Late Bronze II have not well-standardized shapes. One notable exception is represented by the imported Cypriot *pithoi*, carried by ships, as attested by the Kaš-Uluburun and the Cape Iria shipwrecks; these Cypriot *pithoi* (Type 20-2)²⁹ have recurring key features in the morphology, such as the high and large cylindrical neck, or, in many cases, a wavy line decoration on the shoulder (fig. 4, left). In Galilee, the typical pithos of Hazor (Type 20-1)³⁰ has a regular shape, with an everted neck, rounded shoulder and narrow flat base, and without handles (fig. 4, right): it is a clearly local pithos, not circulating by sea or land, and it seems well known especially during Late Bronze I-II, mainly at Hazor (working as a regional center); then, this container is basically used to store regional products. The morphological standardization of conservation vessels suggests a more centralized management of agropastoral resources in the Galilean area, at least around Hazor.

3.2. *Iron I pithoi*

At the beginning of the Iron Age, the picture gradually and slightly changes. The first notably development is the appearance of the so-called “Tyrian” or “Phoenician” pithos (Type 21-1),³¹ borrowed from the Late Bronze II Cypriot tradition. Its spread is basically limited to the region of Tyre and to the Northern Galilee. This type, significantly, was produced only during the 12th and 11th centuries BC. The disputed issue is whether the artisans who produced it were coming from Cyprus, and whether the model was reworked locally because of the on-site activity of these Cypriot artisans. The development in the region around Tyre of a container with morphological features issued from Cypriot vases, is probably a sign of persistence in the 12th-11th centuries of elements of Western origin, at a time when direct contacts are decreasing; moreover, the Cypriot model, rather than developing locally in the same areas where it was imported during the 13th century, namely

²⁹ Pedrazzi 2007, 148-152, Type 20-2.

³⁰ Pedrazzi 2007, 146-148, Type 20-1.

³¹ Gilboa 2001; Pedrazzi 2007, 156-157, Type 21-1.

the Syrian coast, appears in the henceforth “Phoenician” region, bearing evidence of the continuity of Mediterranean connections in this area.³²

In the same period, at least two other local models began to spread into Galilee and Palestine (fig. 5): the broader and more elongated so-called Galilean Pithos (Type 22-1 and Type 22-2)³³ and the collared-rim pithos in the Palestinian highlands (Type 24-1).³⁴ If the use of the Galilean pithos partly overlaps that of the Tyrian Pithos,³⁵ the collared-rim pithos is quite a different story: it is a sort of “very large Canaanite Jar”,³⁶ with an ovoid shape, rounded shoulder and rounded base, short neck with a distinctive ridge at the base of the neck, and folded rim (with many variants). This vessel seems to have developed through an increase in size of the ovoid jars of the previous period, and we should note that the ovoid shape is particularly appreciated in the Palestinian region, more than in Northern Levant. The collared-rim pithos is an example of a multi-functional vessel, used for transport as well as for storage, with multiple functions: water supply in small villages, or conservation of horticultural product, or even shipping of valuable products such as resins.³⁷

Therefore, we note that the Iron I production of big storage containers (and probably of the contents) was less centralized. While the “Hazor type” of Late Bronze II was typical of a single site, the Canaanite town of Hazor, conversely the “Galilean” pithoi of Iron I were widespread in every small village of the Galilean highs.

4. TRANSFORMATION OF MORPHO-FUNCTIONAL FEATURES

Then, the repertoire changed during and after the so-called crisis years; we can explain that considering the specific significance of the morpho-functional elements of each vessel type. The functional attributes of vases are economically relevant and are also cognitively meaningful. The morpho-functional characters considered here are: (1) *portability* (or transportability), depending on the presence, size, and position of handles, but also on the total weight, base shape and rim shape (e.g. the *portability index* of a hole-mouth vessel should be lower); (2) *stability*, related to a flat base and to the displacement of the centre of gravity (towards the centre of the vessel or not); (3) *accessibility of contents*, depending on mouth width, neck shape, total size, handles, etc.; and, finally, (4) the *capacity* (or internal volume) of vessels, that may suggest higher or lower standardization.

³² Gilboa 2001; Pedrazzi 2007, 353.

³³ Pedrazzi 2007, 158-161 (Types 22-1 and 22-2); cfr. Briand - Humbert 1980, pl. 57:1, 2 (Tell Keisan); Finkelstein 1988, fig. 32 (Tel Harashim); Biran 1989 (Tel Dan).

³⁴ Pedrazzi 2007, 163-168 (Type 24-1). For the collared-rim pithoi: Biran 1989; Esse 1992; Wengrow 1996; Killebrew 2001.

³⁵ Petrographic studies have shown, for the Upper Galilee, a basically local production of different pithoi in the EIA, though in distinct areas. For pithoi from Har Adir, for example, recent studies demonstrate that «although both were produced at a location near Har Adir, the “wavy-band” pithoi are made of a fabric characteristic of the central and western upper Galilee while the Galilean pithoi originated in its eastern hills»; and, as for Tel Dan, «the “wavy-band” type was identified as originating at the northern coast of Canaan and the Galilean type was locally produced»: Pagelson - Katz - Goren 2022, 9; cfr. Waiman-Barak - Gilboa 2019.

³⁶ The increased size of the collared-rim jar (i.e. pithos), compared to the ovoid jars of the Late Bronze I-II from which their shape derive, could be motivated by a quantitative increase in perishable products traded: Wengrow 1996; Pedrazzi 2007, 351. These pithoi «came about as an indirect result of the need to transport bulky, liquid or breakable goods, in the same ways as other ceramic containers»: Artzy 1994, 139.

³⁷ Wengrow 1996; Killebrew 2001.

Less attention has been paid to the cognitive aspects, but it might be useful to evaluate the familiarity of a certain type of container within a context, be it social, territorial, or political. In the Late Bronze II, a wavy line on the shoulder of pithoi makes these huge vessels familiar and easily identifiable as Cypriot. The Iron I the “Tyrian” (or “wavy band”) pithoi could be identified and recognized in a comparable way. Also, the shape of the containers could make them recognizable as being used (or usable) for certain specific contents. Late Bronze II storage jars with angular shoulders, for example, were recognizable all over the Eastern Mediterranean in the 13th century BC, while, on the other hand, the standardization and recognizability of the Iron I vessels tend to decline. This could eventually suggest that identification of the specific products had become less important, or that their circulation was more restricted.

5. DISTRIBUTION PATTERNS AND NETWORKS

In the perspective of a study of trade networks based on the distribution patterns of storage and transport containers, a preliminary identification of the origin of vessels is needed; and such origin can be suggested by an analysis that combines the study of morphological types (based on whole profile of vessels) with petrographic and chemical analyses, also based (if possible) on fragments from complete (or at least partially restorable) vessels.

5.1. *Redistribution points and connecting links*

As a network is a system of nodes (or redistribution points) with connecting links, then we must identify nodes and links existing before and after the 12th century in the Eastern Mediterranean trade network. Comparing nodes and links before and after the crisis years, we can suggest change in trade networks, transformations in connectivity, and continuity or innovation patterns.

Thus, we can identify trade networks in the Eastern Mediterranean, with their specific nodes and links, for two main periods: end of the 13th - beginning of the 12th century BC, on the one hand, and the period immediately after the collapse (second part of the 12th to 11th century BC), on the other hand. The principal (re)-distribution areas are: (A) Northern Levant, with (A1) sites along the coastal region, and (A2) the internal region and the ‘Amuq; (B) coastal Cilicia; (C) coastal sites in Cyprus; (D) sites along the central Levantine coast (in modern Lebanon); (E) the northern part of Southern Levantine coast, with (E1) sites located between the Carmel ridge and Dor, and (E2) the internal areas of the Galilean ridges and the Jezreel valley; (F) the southern part of Southern Levant, with (F1) the southern coast, (F2) the central highlands of Palestine, and (F3) the southern internal region, with part of the Negev area; and a few “external” nodes such as (G) the Aegean, with (G1) Greece and (G2) Crete; (H) Egypt; and (I) the Transjordanian plateau. The main active “links” considered here are: (I) trade/movements of goods; (II) movements/displacement of peoples or human groups; (III) transfer of ideas, skills, models. The kind of links considered here, referred to the circulation of storage and transport vessels, correspond to three different kinds of “routes” through which specific storage/transport vessels can move and circulate: I) by the vessel and its contents being transported; II) by groups of people arriving and starting to produce a new type in another place; III) by ideas or mental models circulating.

5.2. Distribution patterns of SJ and trade networks in the Late Bronze II

Provenance analysis has shown that, before the collapse, the angular shouldered SJ (Type 5-4) were produced in many centres of the Levantine coast, and they spread into Mycenaean Greece, Southern Crete, Egypt, and (to a lesser degree) in Cyprus (fig. 6). One of the main nodes (or redistribution centres) of this 13th century network is Ugarit, with its region, on the Syrian coast (area A1); another distribution area (D) is the Lebanese coast, with the main centres of Tyre and Sidon; an important distribution zone of Type 5-4 is located on the southern coast (E1 and F1), but also in the Jezreel Valley (E2), with a few Canaanite administrative centres. In these areas, the SJ are produced and used. Other distribution areas correspond to the regions to which the vessels were shipped, such as Cyprus, Greece, Crete, and Egypt. The samples used for petrographic and chemical analyses are quite easily recognisable as belonging to Type 5-4 (rims and bases in this type are quite unequivocally identifiable). The petrographic analysis led by Goren on the jars from the Kaš-Uluburun wreck suggested that 80% come from the Carmel coast (E1), 14% from the Tyre-Sidon area (D); and others from Ugarit (A1); the SJ from Vivara in the Bay of Naples seems to come from Northern Syria. Also, in the study published by Day and others of the 32 SJs from the LM IIIA-III B building at Kommos (Crete), petrographic and NAA analyses suggested different origins: Northern Syrian coast (4 samples); the Akkar plain (11-12 samples); the coast between Sidon and Akko (3 samples), the Jezreel valley (12 samples) and the Carmel-Sharon coast (5 samples). Recently Gilboa, Barak and Jones provided a petrographic analysis of SJ from Phoenician levels at Kommos and confronted their Groups with Day's groups, finding a correspondence and thus confirming the overall picture.³⁸

This 13th century network, based on the study of Type 5-4, vanished after the LBA collapse. A clear economic change is revealed by the disappearance of this network. This "Late Bronze II angular-shouldered amphora network", anyway, partially overlapped with other contemporary, but smaller, ones: i.e. the slightly carinated jar circulation network (4-2). The nodes in this case are three: (A1) coastal Syria, with major centres in the 13th century located at Ugarit and Tell Kazel; (B) Cilicia, with Tarsus examples;³⁹ (C) Cyprus.

Whiles there is no trace of this Late Bronze II "angular-shouldered amphora network" (Type 5-4) after the collapse and during the Iron I, the "northern amphora network" (slightly carinated and bellied SJ type) encompasses the crisis years and continues even during the first stages of the Early Iron Age, as shown by the distribution of Type 4-1, well documented in Syria at Tell Kazel, in the Cypriot centres of Maa *Palaeokastro*, Enkomi and Kition (fig. 7).⁴⁰ At Hala Sultan Tekké, the type is present in Obrink level 2, datable in Levantine terms between the Late Bronze II and the Iron I.⁴¹ Some scholars have suggested a local production of some "Canaanite jars", for example at Maa: do these jars belong to this bellied type? In Hans Mommsen's NAA analysis, in the project headed by Reinhard Jung, using samples from complete vessels from Maa, we did not find any match with Cypriot chemical groups.⁴²

³⁸ Day *et al.* 2011; Gilboa - Barak - Jones 2015.

³⁹ Goldman 1956, figs. 387:1215 (Type 4-2), and 36:1216 (Type 4-1): both from Late Bronze II contexts.

⁴⁰ Type 4-1 at Cyprus: Maa *P.*, Karageorghis - Demas 1988, nn. 656, 319 (Fl. II), 251 (Fl. I), with brown or reddish-brown ware; Kition, Karageorghis - Demas 1985, nn. 4637, 839; Hala Sultan Tekké (lev. 2), Obrink 1979, figs. 196, 198; Enkomi, Dikaios 1969, n. 3484/3, pl. 120:11 (lev IIIA destruction).

⁴¹ Obrink 1979.

⁴² See the results in Jung - Mommsen - Pedrazzi 2023.

Moreover, we must consider the scarce availability of chemical and petrographic data for the Syrian area. This suggests greater caution before confirming the Cypriot production of certain specimens.⁴³

5.3. *Distribution patterns from circulation of peoples and skills, and trade networks in the Late Bronze II*

It is worth to mention the networks in which links may not be represented exclusively by the shipment of goods, but also by the circulation of peoples and skills (or ideas and models, such as morphologies and manufacturing techniques): for example, a comparison between the “wavy line pithos network” in Late Bronze II and in the Iron I, between the 13th and 12th centuries BC. Type 20-2 (in particular, sub-types 20-2-2 and 20-2-4 with wavy-line decoration) clearly represents a Cypriot pithos (known in many sites in Cyprus). This type is well-known also along the Syrian coast in the Late Bronze II (especially in its final phase). Here, the links of the connection are both (I) the transfer of vessels, (II) the movement of artisans, and (III) the sharing of ideas and skills. Local production, following the arrival of groups of people or at least models, is suggested both for morphological reasons (i.e. the observation of a sort of contamination of the Cypriot features with a local shape, for example at Ugarit), and visual (macroscopic) fabric analysis. The “nodes” of this network are (C) Cyprus, as a place of origin, and (A1) the Syrian coast as the area where vessels, artisans and morphological models arrived.

After the Late Bronze II collapse, the Cypriot pithos is no longer attested, and certain key-sites disappear, as Ugarit, but a new local production of a wavy-line pithos (Cyprus-inspired) emerges, maybe following the arrival of Cypriot artisans in a limited geographical area, between Tyre (with its rural hinterland, as the site of Jemjim now confirm)⁴⁴ and the Northern Galilee. The manufacture of this “Tyrian” or “wavy-band pithos” is local. It is connected to the exploitation of the agricultural resources of this specific region of the Levant at the very beginning of the Iron age. The main points (or nodes) in the distribution network are Tyre (node D), the Galilee (node E2), and, also, Cyprus (node C), as the homeland of artisans that gave rise to this Levantine production or, at least, as the origin of the models that inspired this form.

6. CONCLUDING REMARKS

To conclude this brief overview of distribution patterns of storage/transport vessels and trade networks, we come back to the discussion of the nature of the “crisis”. Both continuity and change (or innovation) in the repertoire of SJ and pithoi, and in their networks of circulation, can be documented.

In response to the issues we have posed at the beginning, the examination of different types of SJ and pithoi has demonstrated that the most significant morpho-functional characters of vessels (related to the possibility of easily moving the containers, loading them onto ships, sealing them) evolve over time, in a gradual but substantial way, highlighting transformations in the food storage and long-distance transport. As discussed before, the

⁴³ Gilboa - Barak - Jones 2015, note 27: «Some complete jars at Maa Floor II (not sampled) must also be Syrian». Indeed, looking to the shape, we can ascribe them to Types 4-2 and 4-1.

⁴⁴ Oggiano - Khalil 2020, 347-348.

demise of the standardized SJ Type 5-4 is clearly linked to the end of the centralized Late Bronze II trade. On the other hand, the survival between Late Bronze II and Iron I of a less specialized and “less maritime” shape (Type 4-2 and Type 4-1), used for both domestic storage and transportation, shows that narrower trade circuits (e.g. a North Levantine network) remain alive, even after the crisis.

Discussing the provenance analyses of Canaanite jars, some scholars argued that in the 12th century, «the Southern Levant seems to be dominant, and Syria, for the time being, is not represented».⁴⁵ We can rather suggest, here, that only a morpho-functional study of complete SJs, combined with chemical (NAA) and petrographic analyses, can provide reliable answers to the issue of the role played by the Syrian coast in the 12th century in the maritime (and inland) trade. According to the distribution and circulation of storage and transport vessels, we can suggest that the Northern Levantine trade network was still alive between the 13th and the 12th centuries, and the Syrian coast were involved with sites playing a primary role, such as Tell Kazel.

As for the pithoi, the analysis of the Southern Levant between the Late Bronze II and Iron I is particularly relevant in suggesting some conclusions about the reactions of Levantine societies to the crisis. Once again, the innovations are under the sign of continuity. The typical storage vessel of the Palestinian highlands during the Iron I, that is the collared-rim pithos (Type 24-1), is inspired by the shape of the former ovoid Canaanite jars, adding the “innovation” of a marked increase in size. Thus, it is not a question of introducing a new and innovating form, but of adapting earlier forms to renewed needs, related to the growing quantity of commodities to be moved and stored. The “wavy band” or “Tyrian” pithos (Type 21-1), on the other hand, represents a revision in the 12th century of the Late Bronze II Cypriot pithoi that were also imported to the Levantine coast during the 13th century. In this case, this vessel can be considered a sort of “innovation” (though in the sign of continuity) dated to the Iron I, i.e. after the crisis, motivated by the displacement of Cypriot artisans (fig. 8); the area of distribution of this form corresponds to the agricultural hinterland of Tyre, including the Upper Galilee. The presence of the wavy band decoration also turns into a key factor in the identification of some specific containers; therefore, aspects related to perception, i.e. cognitive aspects, should also be considered. In fact, in the same contexts, some of the pithoi in use are visibly related to a Cypriot tradition, even if they are morphologically different from the Late Bronze II pithoi (in the Iron age, the base, for example, is protruding rather than flat); apparently, such “wavy band pithoi” were supposed to be immediately recognizable and *perceived* as related to the Cypriot world.

The issues discussed here, drawn from the study of storage and transport vessels, reveal that it is important to highlight transformations and innovations in the ceramic repertoire by focusing on the threefold dimension of the producer, the transmitter, and the recipient: ceramic traditions and typological transformations in fact respond to the needs of the potter who produces the vessels, the merchant who transports the goods, and the user and receiver of the commodities themselves.

⁴⁵ Gilboa - Barak - Jones 2015, 92.

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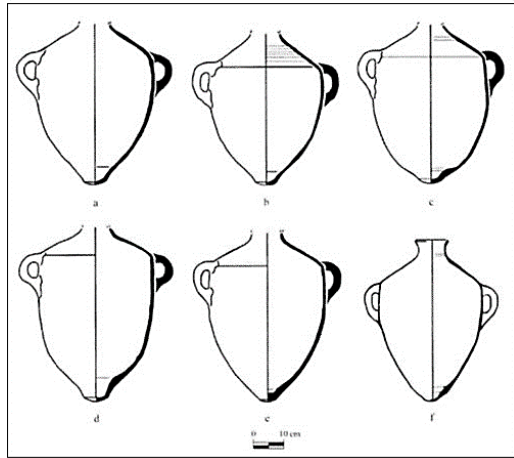
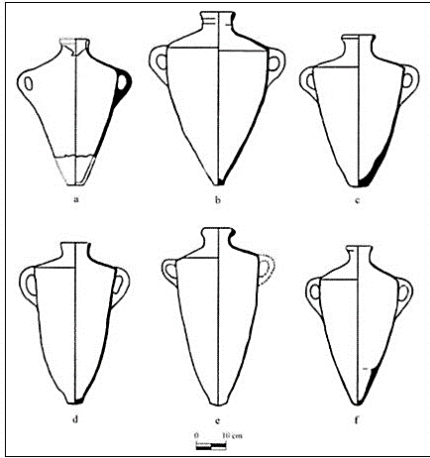


Fig. 1 - Type 5-4 (Pedrazzi 2007, fig. 3.24).

Fig. 2 - Type 4-2 (Pedrazzi 2007, fig. 3.17:a-f).

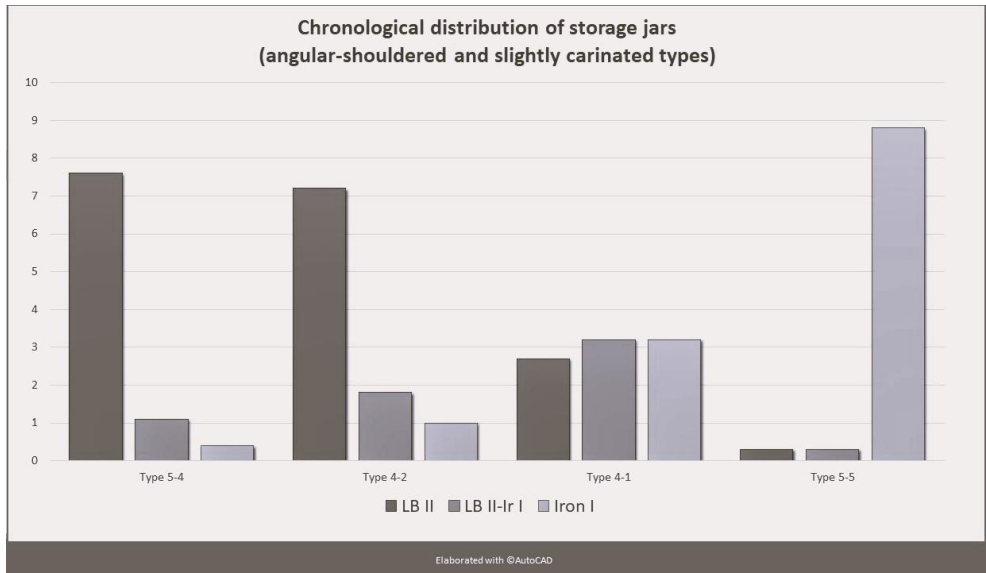


Fig. 3 - Chronological distribution of Storage Jars (Late Bronze II-Iron I).

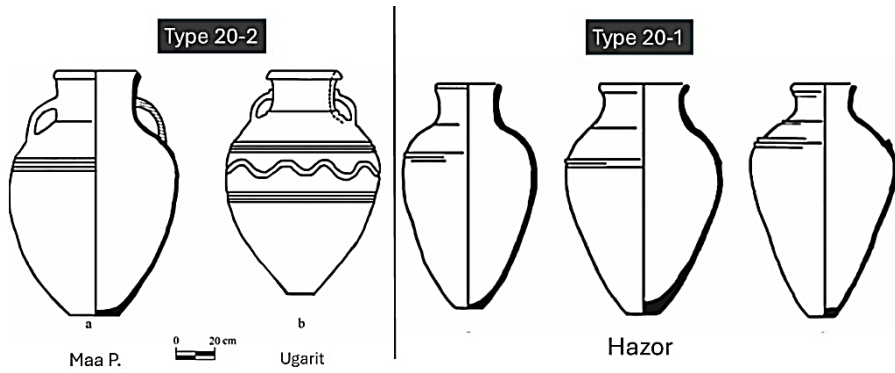


Fig. 4 - Late Bronze II Pithoi, Type 20-2 (Cypriot) and Type 20-1 (Pedrazzi 2007, fig. 3.100 and 3.94).

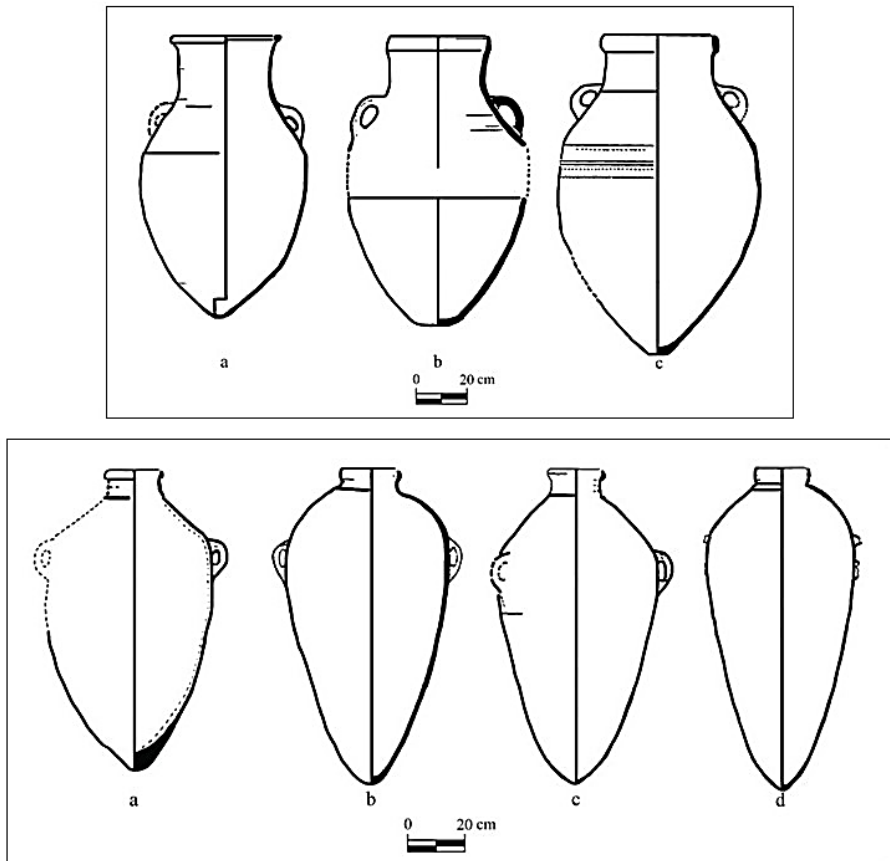


Fig. 5 - Iron I Pithoi, Type 22-1 (Galilean) and Type 24-1 (collared-rim).

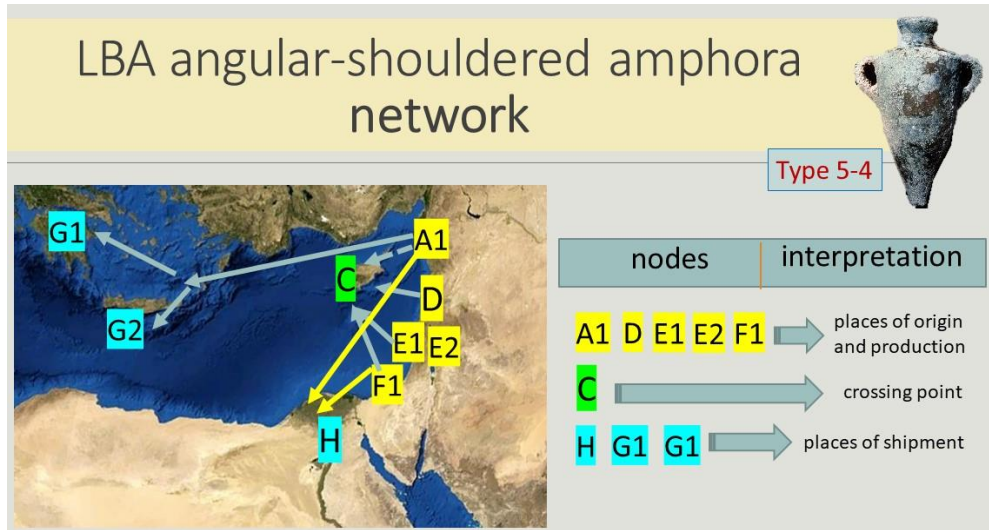


Fig. 6 - Distribution network of Late Bronze II Type 5-4.

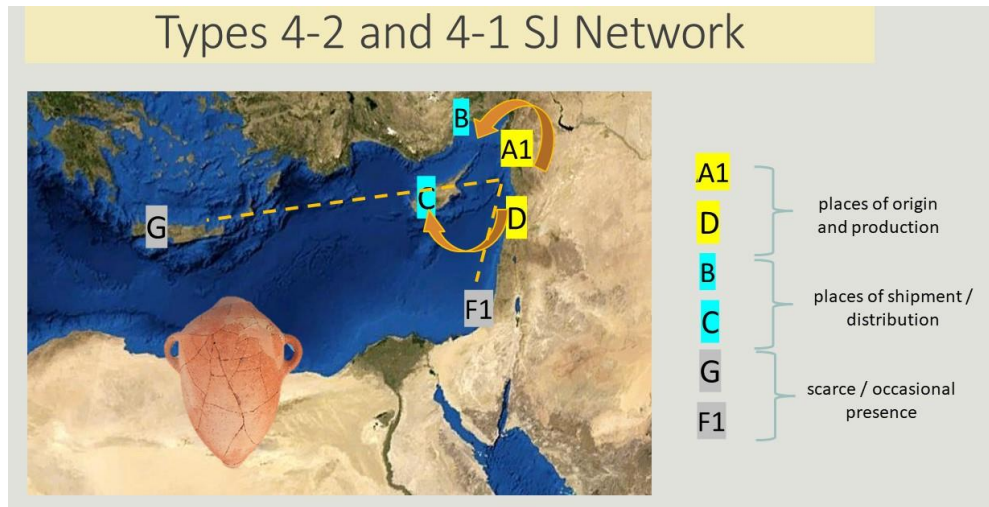


Fig. 7 - Distribution network of Late Bronze II-Iron I Types 4-2 and 4-1.

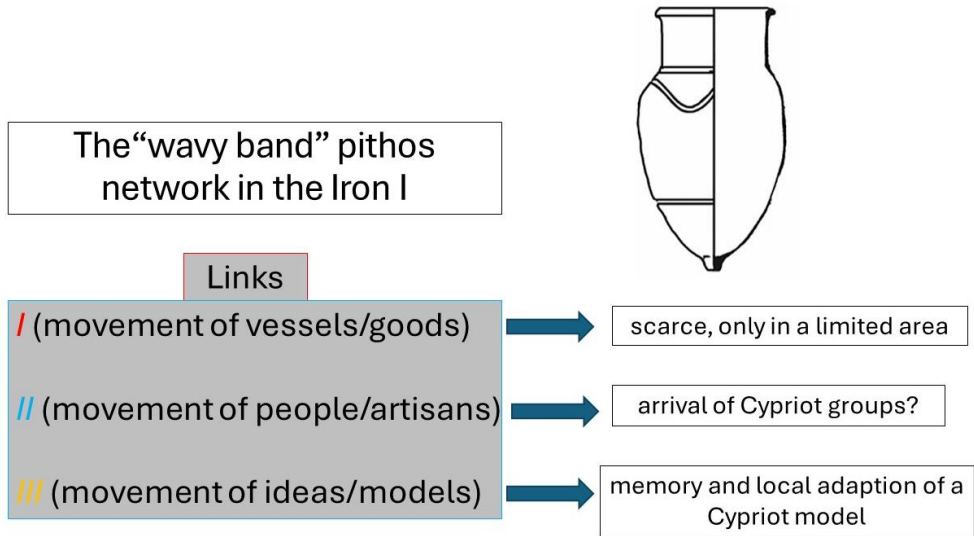


Fig. 8 - "Wavy band" pithos of the Iron I: links and network.