A LATE BRONZE AGE CANAANITE MERCHANT’S HOARD OF GOLD ARTIFACTS AND HEMATITE WEIGHTS FROM THE YAVNEH-YAM ANCHORAGE, ISRAEL

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ABSTRACT

An underwater survey at the ancient anchorage of Yavneh-Yam, located on the southern Mediterranean coast of Israel, has revealed remnants of a sunken cargo dated to the Late Bronze Age. The cargo includes a small collection of objects composed of whole and broken-down gold jewelry and scrap, in addition to a collection of small stone weights suggesting that it was the stock-in-trade of a Canaanite merchant that plied the eastern Mediterranean waters. The gold and the weights appear to represent means of payment that were commonly known and in use throughout the Bronze and Iron Ages in the southern Levant.

INTRODUCTION

The Mediterranean coast of Israel has few natural shelters and is often exposed to storms. Wind powered watercraft losing control during storms tended to drift to the lee shore, were grounded and then wrecked by the shore breakers. Some ships were wrecked while sailing along the open coast away from a shelter; others were wrecked while sheltering in natural anchorages, such as Yavneh-Yam (Figures 1A, 1B). Light objects and wooden hull-parts subsequently drifted ashore and vanished from the wreck site. Heavier objects, such as those made of metal or stone, released during the wreckage, were buried in the shifting sand at the wreck site and were protected by it until discovery.1 In recent decades, human intervention in the coastal environment, mainly sand quarrying and the construction of harbors, resulted in a reduction of sand quantities and consequently, coastal erosion. Thus, numerous shipwreck sites have been exposed, destroyed or their remains further dispersed. Underwater rescue surveys have facilitated the discovery, documentation and exploration of surviving remains.

The present article discusses a group of gold artifacts and hematite weights originating from a defined shipwreck assemblage recovered in the Yavneh-Yam anchorage. A comprehensive study of the full assemblage is currently under preparation.2

Figure 1A: Location map - the eastern Mediterranean
THE YAVNEH-YAM ANCHORAGE SITE

The Yavneh-Yam anchorage (Figure 1B) was intensively surveyed by underwater archaeologists between 1983-1995 and the abundant finds found throughout the anchorage demonstrate that it sheltered ships from the Late Bronze Age to the Middle Ages. In antiquity, except for a small and poorly protected anchorage at Tel Rido located to the south, this anchorage was the only shelter for ships sailing along the coast of southern Israel and northern Sinai (Figure 1A). Underwater finds in the anchorage included several defined shipwreck assemblages as well as hundreds of isolated artifacts, including stone and metal anchors, remnants of ships and their cargoes. Among the stone anchors are 32 one-holed weight anchors, weighing 40-150 kg, and several composite stone anchors with two or three holes. Most were made of local limestone or kurkar yet one was made of non-local granite, suggesting connections with the Egyptian or north Sinai coasts. Heavy weight anchors (weighing more than 50 kg) with one hole and an oval or round top are typical of the Middle and Late Bronze Ages, yet finds from Kiton suggest that the use of three-holed anchors began during the Late Bronze Age. However, no clear association of the scores of stone anchors recovered from the anchorage with the discussed assemblage can currently be made.

THE YAVNEH-YAM LATE BRONZE AGE SHIPWRECK CARGO

A large assemblage of items, all dated to the Late Bronze Age, was recovered from the south-eastern section of the anchorage (Figure 1B). The anchorage is located within an elongated shallow (2-6 m deep) trough positioned between the coastline and the lee side of a submerged kurkar (sandstone) ridge several hundred meters west of the coast. At the bottom of the anchorage is a packed and marly paleosol often covered by shifting sands that move during storms randomly exposing areas of the paleosol upon which are found heavy archaeological remains such as stone and metal items that have not been swept away or deteriorated. These are periodically hand collected and documented by underwater surveys carried out immediately after storms, while finds not threatened with destruction or looting are documented and left in place.

The assemblage discussed here was all retrieved from one locale on the paleosol of the sea floor, within an area of 20 x 10 m at a water depth of 2.3 m. No remains of a ship’s hull were recovered, yet it is assumed that as they were all found in one locale, these objects originated from the cargo of one ship that sheltered in this anchorage, had drifted ashore and was subsequently wrecked in the shallow area of the anchorage during a violent storm.

Among the finds of the assemblage were 46 small and minute gold objects and a collection of seventeen small stone balance weights which are the focus of this article. The gold items include several whole jewelry objects and numerous gold jewelry scraps with a total weight of 8.27 g (Figure 2). The small stone weights include 16 grain- or spondondoid hematite weights and a pendant stone weight, with a total weight of 239.77 g (Figure 3). In addition to these collections, several other small finds, including a hematite cylinder seal of Syrian origin as well as bronze spearheads, arrowheads, axes and bronze figurine of a smiting deity, probably representing the Canaanite god Baal, were recovered from the same locale. In addition, a neck fragment of a Canaanite amphora dated to the Late Bronze Age was also recovered. This type of jar was produced in Canaan and was widely used in maritime transport along the Syro-Canaanese coast and beyond, where it is found as far as Egypt, Cyprus, southern Anatolia and Mycenaean Greece (Figure 4).10

THE GOLD OBJECTS

The gold objects within the assemblage (Figure 2) consist of two pendants (Figures 5-6), a ring (Figure 7) and a collection of various types of beads along with gold jewelry scrap including raw material for the production of jewelry and broken jewelry items (Figures 8-10).

A gold leaf pendant weighing 0.58 g (Figure 5) was recovered, made of a length of gold wire, hammered out into an elongated flat oval leaf or petal at both ends. The leaves are decorated with a lightly chased line running parallel to their edges while a small rounded protrusion is executed in repoussé in the center of each leaf. The wire, representing the stems of both leaves, was then folded 180 degrees and twisted around to form a suspension loop at one end. This form of pendant belongs to broad and varied group of Late Bronze Age floral pendants.11 Examples are known from Lachish, found when soil from the Late Bronze Age Fosse Temple was sifted.12 Several more examples derive from Tell el-

Figure 1B: Location map - the Yavneh-Yam anchorage,
Figure 2: The gold objects

Figure 3: A selection of hematite weights
Ajlun; two examples were found in Hoard 277, buried in a room associated to Town II and probably dating to a late phase of the LB IA period, and another from Hoard 1312 which overlay a wall of Town II, also probably dated to the LB IA period.

A complete ‘crescent’ or ‘horns’ pendant weighing 0.56 g (Figure 6) was also recovered, composed of an open gold ring, the terminals nearly touching, to which is attached a broad suspension loop so that the terminals of the ring shank are at bottom when the pendant is hung. The shank is made of undecorated square-section wire. The suspension hoop was made of sheet gold with repoussé ribbed decoration, folded into tubular shape and then attached onto the ring shank.

Such objects appear to have been worn as cultic pendants as is depicted on a painted stone female figurine from Sileh, dated to the Late Bronze to early Iron Age I period or on the chest of a male priest presiding over a ceremonial basin, as found on a basalt statue from Hazor, also dated to the Late Bronze Age. The form belongs to an extremely popular group termed ‘Crescent or Horns’ pendants commonly found throughout Canaan primarily during the LB I-II periods. They are usually made in gold, silver and electrum, less often in copper alloy. With its small size, undecorated shank and broad suspension hoop, the present example is very typical of this form.

The assemblage also included a simple gold ring (Figure 7) weighing 0.77 g, of rounded section wire with tapering ends. One of the ends appears to have been broken or cut off. The small diameter of this ring (1.5 cm) deems its use as a finger-ring unlikely though it may certainly have been used as an earring or nose-ring.

Such rings are commonly found in gold, silver or copper alloy already during the Early Bronze Age.

Several types of small gold beads were also recovered (Figure 8). These include wound wire bead made by tightly winding wire around a biconical shape (Figure 8A) or cylindrical form (Figure 8B), sheet metal beads made of hammered sheet gold bent into a tube and then creased in parallel lines to imitate a wire-made bead (Figure 8C), beads or small rings made by winding a wire around a thicker wire or pin, the ends then meeting (Figure 9). Such beads are all very common and are found as early as the first Dynasty in Egypt and the Royal tombs at Ur in Mesopotamia. In addition, beads made of several granules were recovered (Figures 8E, 10E: H). These were produced by soldering together a ring made of minute gold granules, then joining together two such rings, one stacked atop the other. The granulation technique first appears in Mesopotamia where granule beads were discovered in the Royal Cemetery of Ur dating to the middle of the third millennium BCE, while locally, it was introduced nearing the end of the Middle Bronze Age, as in examples from the gold hoards at Tell el-Ajjul. Granulation became especially common during the Late Bronze and Iron Ages in the southern Levant. A single elongated bead with four perforations, produced by soldering together four small wire beads side by side was also found (Figure 8F). Such beads with multiple perforations are commonly called spacer beads and were used in the construction of multi-stranded necklaces or collars.

Another fragment of a bead was a shallow cap made of sheet gold with a wire ring collar around its perforation (Figure 10E: F).
This object is polished on the outside only and may have been fitted on the end of a bead or pendant. Use of such capped beads is locally known already during the Middle Bronze Age II (19th-18th centuries BCE) and continues in use to at least the end of the Iron Age II (7th century BCE).26

In addition to the gold jewelry described above, several small gold rings (Figure 9), gold wire fragments (Figure 10A), whole and flattened gold granules (Figure 10B) and small gold snippets and shavings (Figure 10D) and spills (Figure 10C) were also recovered. Many of these exhibit chisel cut marks, evidence that they were once a part of larger creations that had been deliberately cut, broken or shaven down. Some of the wire fragments (Figure 10A) exhibit a faint elongated crease along their axis, indicating that they may have been made by the strip drawing method. This method was practiced in Egypt from at least the third millennium BCE,27 whereby long and thin strips were twisted and then rolled between two flat surfaces or possibly pulled through a small perforation, such as a stone bead, causing the strips to tighten up into a solid circular section.28 Several other jewelry fragments were also recovered, among them a decorated pin head (Figure 10E: A).

**The Hematite Weight Assemblage**

Seventeen hematite stone weights were discovered (Table 1) weighing 239.79 g altogether.29 Among these were 14 weights in the form of a sphenoideal wheat grain (nos. 1-13), eleven having a flat base and two (nos. 11, 10) lacking a defined base. In addition, a weight in a form of a cylinder (no. 21), a plane-convex weight (no. 20) and a weight in the form of a pendant (no.22). The total

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*Figure 5: A gold-leaf pendant*
mass of each weight was measured by a calibrated balance accurate to +/- 1 mg and was rounded to the nearest one hundredth of a gram (see Table 1).³⁰

CULTURAL AND CHRONOLOGICAL ASSOCIATION OF THE GOLD FINDS

Though most of the objects of the gold assemblage are not chronologically instructive, the assemblage as a whole may be specifically dated only by the two pendants which are associated to the LB I-II period (15th-14th centuries BCE). All of these items are products typical of Canaanese goldwork. Further substantiation of the chronological and cultural association of the assemblage is provided by the cylinder seal, the transport amphora and the bronze figurine, all typical Canaanese products of the Late Bronze Age. The association of this collection to the local Late Bronze Age settlement at Yavneh-Yam is further substantiated by 27 tombs of the Late Bronze Age that have been excavated to the north and south of the site.³⁵ Within the settlement, several structures associated to the Late Bronze Age are also known.³⁶

THE SIGNIFICANCE OF THE YAVNEH-YAM GOLD ASSEMBLAGE

The present collection of gold objects is made up of whole gold jewelry in addition to broken down jewelry, parts for jewelry in the making and gold jewelry scraps. The very small size of the collection, with a total weight of only 8.27 g, suggests that it was probably once much larger and more varied than what is presently available for study. In this light, we could conceivably see this assemblage as a utilitarian founders' hoard,³⁷ possibly representing a goldsmith's stock-in-trade that may have been left over by-products of a production process that would include raw materials, complete objects and partial objects or objects-in-the-making that could have also functioned as 'spare parts' within a fabrication process. Additional gold artifacts belonging to this hoard may have been scattered on the sea bottom and covered with sand or may have been salvaged in antiquity or plundered by modern treasure hunters. However, what is missing from this gold assemblage is the direct evidence of a jeweler or goldsmith themselves which must include gold working tools, such as small hammers, punches, chisels, dies and tweezers.

The lack of direct evidence for a goldsmith allows consideration of other options. Other objects found in apparent association to the gold items such as the small sphendonoid or grain-shaped stones, may be interpreted as small weights that could have been used to weigh out precious metal. The small hoard of gold items, in association to the weights, may thus be possibly seen as a portion of a Canaanite merchant's hoard that could have been used as a means of currency.

The material most commonly used as a standard of value (currency), and from which coins were made in a much later period is metal, primarily gold, silver and copper, occasionally iron. Several Late Bronze Age shipwrecks containing copper, tin and lead were recovered off the Israeli coast, testifying to a wide spread metal trade along the Levantine coast. In one of the cargoes, a
Figure 8: Several types of gold beads: A) wound wire bead made by winding wire around a biconical form; B) wound wire bead made by winding wire around a cylindrical form; C) hammered sheet bent into a tube and creased; D) bead made from slightly flattened wire wound around a thin wire with the ends meeting; E) bead made of several granules; F) spacer bead; G) gold bead; H) small gold ring or bead.

Figure 9: Small gold rings or beads.
Figure 10A: Gold scrap - wires

Figure 10B: Gold scrap - granules
bronzesickle sword of possible Egyptian origin was recovered. As to the intrinsic value of the material, precious metal by weight, especially silver and gold, was used in the ancient Near East as early as the 3rd millennium BCE as a means of establishing a standard for assessing the worth of material objects to facilitate barter exchange. Precious metal thus served as a means of payment, security for the purchase of property and goods, and for settling debts and taxes. Currency (such as metal bullion) used according to specific weight standards is generally understood to be money.

As a commodity of value, precious metal as well as broken down jewelry made of precious metal, was used in commerce for various transactions, its worth as bullion being determined by the weight of the material against a set standard. Many of the gold items (see esp. Figure 10C: D) appear to have been purposefully cut while others (Figure 10C: C) were spills. The small size of the objects would have been used in order to incrementally reach a set weight to determine the value of the metal mass. The weighing was probably carried out on a pair of small scales suspended from a balance beam. Such an apparatus was first introduced into Egypt during the 18th Dynasty and was in common use throughout the New Kingdom (and see Figure 4). Metal and bone scale pans, usually about eight cm in diameter and with at least three stringing holes around their circumference, are locally found throughout the Bronze and Iron Ages as well as in neighboring lands; the earliest dated example of such scales is known from the Early Bronze Age at Tel Fadou-Kfarabida in Lebanon. Use of gold and silver that was purposefully cut into smaller pieces for use as payment in this fashion is known in the southern Levant already during the Middle Bronze Age (16th cent. BCE), such as in a hoard of broken down silver jewelry and cut silver pieces found at Shiloh while at Troy, long and thin gold bars marked with precut incisions in order to facilitate their cutting into smaller and regular pieces (Geldbarren) are known even earlier, during the EB III period (ca. 24-22 cent. BCE). Finally, use of a scale weight system on Canaanite merchant vessels plying the eastern Mediterranean waters during the Late Bronze Age has conclusively been shown.
Figure 10E: Gold scrap - snippets

Figure 10E: Gold scrap – sections of gold jewelry pieces
to have existed on the Uluburun shipwreck, off the southern Anatolian coast\textsuperscript{6} and is eminently clear in Egyptian depictions from the New Kingdom (Figure 4).

While the workmanship of the gold jewelry appears to be Canaanese, the source of the gold itself was most probably Egyptian. During the Late Bronze Age, the Egyptian New Kingdom's political and military hegemony over the Levant is well-known and Egyptian gold was eagerly sought in neighboring regions as well. Silver and predominantly gold, appearing in the form of ingots and cut pieces and scrap for weighing, was also used as a form of currency in New Kingdom Egypt, as is apparent in a gold hoard from Tell el-Amarna.\textsuperscript{9} A passage from the Amarna letters from the time of Amenophis III, relates the disappointment of the Babylonian king upon receipt of a gold shipment of low quality from Egypt,\textsuperscript{9} so that gold from Egypt was apparently used in trade and diplomatic gift exchange throughout the Ancient Near East during the Late Bronze Age.\textsuperscript{9} With the expansion of the Neo-Assyrian empire, silver became the generally accepted means of currency by the 7th century.\textsuperscript{20} However, gold was also in use in a similar manner during the Bronze and into the Iron Age I period when it was gradually replaced by silver.\textsuperscript{31}

**CONCLUSIONS**

The small assemblage of gold, along with the collection of weights, is possibly to be seen as evidence of a Canaanite merchant on board the shipwreck found in the Yavneh-Yam anchorage. The Late Bronze Age is well known for the intensity of trade throughout the eastern Mediterranean, with merchant ships that plied the coastal waters from Egypt to Lebanon and further north as well. The Yavneh-Yam anchorage would have been a convenient stop along this route to engage in trade or to find shelter. The gold items could have been used for purchase or income from sale of goods and services. The Canaanite merchant could have stopped at numerous ports and anchorages (cabotage) along the eastern Mediterranean coast, while at each of these the merchant may have had to use the weight value system in that region. The range of weights found in the present assemblage would thus be useful in accommodating the needs of the merchant at his changing ports of call.

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NOTES


4. See Galili Forthcoming.

5. See Galili Forthcoming. In addition, a pair of stone anchors bearing Egyptian engravings was recovered off Megadim, on the northern Carmel coast (see Ehud Galili and Kurt Raveh, "Stone Anchors with Carvings from the Sea off Megadim, Israel," *Sefunim* VII (1988): 41-47). Another pair of one holed stone anchors bearing engravings of Egyptian hieroglyphs was recovered two km north of Atlit (see Robert R. Stieglitz, "Inscribed Egyptian Stone Anchors," *Sefunim* 4 (1972-1975): 42-43 (Hebrew)); see also Shelley Wachsmann, *Seagoing Ships and Seamenhip in the Bronze Age Levant* (College Station, Texas: Texas A & M University Press, 1997), 268, figs. 12.21, 12.22. These finds attest to at least two ships which were sailing between Egypt and the Canaanite coast and were grounded and wrecked on the northern Carmel coast.


7. The cylinder seal appears to be representative of a well-known class of seals (Syrian Group II, see Henri Frankfort, *Cylinder Seals: A Documentary Essay on the Art and Religion of the Ancient Near East* (London: Macmillan, 1939), 273; see also Gustavus A. Eisen, *Ancient Oriental Cylinder & Other Seals* (Chicago: Chicago University Press, 1940) generally dated to between 1700-1350 BCE, or possibly a local variant representative of the Syrian Group III, more narrowly dated to between 1350-1200 BCE (Frankfort 1939, 260). The dating of the other finds, such as the jewelry (see below), favors a chronological attribution to Syrian Group II (Galili forthcoming).


15. See Ora Negbi, *The Hoards of Goldwork from Tell e-Ajul* (Goteborg: Studies in Mediterranean Archaeology Vol. 25, 1970). While all gold examples of this pendant form appear to indicate a date in the early 15th century BCE, singular specimens may also occur in much later periods as well, such as a silver example from Tomb 16 at the Atlit necropolis, see Cedric N. John, *Excavations at Atlit* (1930-1): *The Southemese Cemetery*, Quarterly of the Department of Antiquities of Palestine 2 (1933): 41-104 (pl. 17: 40) that are dated to the Persian period (5th-4th centuries BCE) and was found along with a scarab, spiral rings and several stone heads. However this object, associated to a burial of the Persian period, could also have been an heirloom or a curio that was picked up from an earlier occupation. Such phenomena of valuable jewelry items being reused centuries after their original fabrication are not uncommon. See Amir Golani, *Jewelry from the Iron Age II Levant* (Orbis Bibliicus Orientalis SA Series 34, Fribourg: Vandenhoeck and Ruprecht, 2013), n. 8, pp. 12, 116.

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19 See Golani 2013, 129.
20 See Amnon Ben-Tor, "Two Burial Caves of the Proto-Urban Period at Azor," *Qedem* 1 (1975): 1-53, Figure 12, 10.
23 See Negbi, 1970.
25 See Golani 2013, 193.
26 See Golani 2013, 216, figure 35: 9-10.
29 The weights were numbered together with several metal weights which were recovered from the anchorage but are not associated with the discussed Bronze Age assemblage. Thus the numbers 13-17 (of the metal weights) are missing from the table.
30 The weights were weighed by electronic weight type *Meter Precisa 125A*. The assumed units were calculated when there was less than 5% matching error. Weight study after Raz Kletter, "The Answer of the Weight: Weighing and Weights in Ancient Israel," *Et Mol: Journal for the History of the Land of Israel and the People of Israel* 3 (2001): 155 (Hebrew). Kletter Raz, Galili Ehud and Sharvit Jacob 1999, A group of weights from Yavnah–Yam. Unpublished IAA draft report.
34 See Kletter et al., 1999.
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49 And see Marian Feldman, Diplomacy by Design: Luxury Arts and an ‘International Style’ in the Ancient Near East, 1400-1200 BCE (Chicago: Chicago University Press, 2006).
51 See Golani 2013, 50-53.