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A TYPOLOGICAL-MORPHOLOGICAL SPATIAL ANALYSIS OF POLYCANDLEON GLASS LIGHTING GOBLETS FROM THE ROMAN PERIOD IN ISRAEL: SPATIAL DISTRIBUTION AND CHRONOLOGICAL MOVEMENT AROUND THE MEDITERRANEAN BASIN

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Abstract: The arrival of the glass vessels dating to the Roman period from Israel and other areas around the Mediterranean basin indicate a slow process of acceptance of the vessels made of a different material – which was not widely used in everyday life. It turns out that in Israel, as well as in other regions, the main use of the light cups made from glass dated to the roman period was used mostly in grave complexes. In a gradual manner, the use also expanded to other levels of life, which is expressed in the diverse presence of the tools in various building complexes. Since the Roman period, two main types of goblets are known: suspended and placed, with the more common being the suspended lighting goblets. It is evident that the main center of distribution of glass vessels in general and of glass goblets of light in particular is from Israel and alongside the distribution of these the process was accompanied by a conceptual distribution of the modes of use as accepted in the original distribution area. The research method that will be used in this framework is the method called: "Regional behavioral Tipo-morphology" – that makes use of the tools that were discovered on site and examines them in a comparative manner against circles of use within the site, in the vicinity of the site and through spatial examination circles that are growing in size.

Keywords: *Ancient glass, Lighting goblets, Plycandalon, Roman Period, Regional Behavioral Tipo-Morphology*.

INTRODUCTION

Glass lamps from the Roman period, as well as those discovered in later periods – Byzantine and Early Islamic, are divided into two types of goblets: polycandela goblets and lamp goblets. Glass lighting vessels are categorized into four main typological groups representing different types of polycandela goblets and three types of lamp goblets – hanging lamp goblets, placed lamp goblets, and perforated lamp goblets. Polycandela goblets were produced as

bowls with a stem base, and as such, the vessel cannot stand on its own. Therefore, it is a vessel designed for hanging. Polycandela goblets were hung in two ways. In one method, the polycandela goblet was placed in a "polycandela holder" made of a flat metal ring with round openings (the number and size of openings vary), the stem base was inserted through the round opening, and the goblet walls "sit" on the metal surface of the polycandela ring. The second hanging method is by using a hook polycandelon with three chains, each ending with a hook, which were installed in loops attached to the polycandela ring, or the polycandela holder is made of metal wires wrapped around each other to form a single holder.

From the Roman period in Israel, we know of two typological groups: the polycandela goblet and the hanging lamp goblet. From the polycandela goblets of this period, we know of six types that differ from each other based on the morphological characteristics of the stem bases identified with this object: polycandela goblet with a bead base (solid or hollow), polycandela goblet characterized by an edge bead base, polycandela goblet with an elongated and hollow base, polycandela goblet with a conical and hollow base profile, and polycandela goblet with its base. Until now, research on ancient glass in Israel has focused on establishing a typological-descriptive foundation based on ancient glass findings discovered in archaeological excavations conducted in Israel. Within some of these descriptive reports, a foundation is presented noting the morphological parallels of various types from Israel and around the world. This research is a pioneering study presenting a first synthesis focusing on a specific type of vessels – those intended for lighting, in a defined period, and examining their usage patterns in the researched regional focus. Additionally, this research presents a procedural picture of the functional development in lighting vessels alongside the typological changes representing it (these are numerous due to the very elastic characteristics of the material – glass). Furthermore, this work presents an in-depth comparison between lighting vessels in Israel during the same period to lighting vessels in Mediterranean countries discovered during the same period and expands the discussion to the Byzantine period.

REGIONAL BACKGROUND – CHRONOLOGICAL

Most of the glass finds so far known from the region of Israel, dating to the Roman period are known from tomb complexes[1]. Few objects are known from this period from building complexes that represent the diversity of life as residences, public and service buildings, and industrial and agricultural facilities[2]. Another aspect that explains the process of the technological development of these tools as well as their slow entry into widespread use in different walks of life deals with two aspects: one, concerns the fact that this relatively new technology was made alongside a long-standing ceramic industry with its glorious technological traditions, which made it difficult for the tools to be adopted on by possible "customers" of the period alongside the change of household utensils and the habits known to them – long years[3]. The second aspect concerns the high technological complexity required to produce the tools, until the tool is finished. This process, which is accompanied by high-temperature fire energy that prevents the glass maker from touching the vessel except after it has been disconnected from the blowing tube and cooled, explains the small number of glass makers' houses in the Roman period, which represents the transition to a wider use of these vessels. From this the assumption is that initially the use of these tools involved high costs in relation to and was reserved for those who could purchase them[4].

This cultural picture that reflects a slow developmental process of adopting the use of a new material and technology emerges in a similar way from the analysis of the glass goblets from the Roman period. The decisive main part of these objects: the lighting glass goblets: hanging goblets (Polycandelon) and resting candle goblets and those that can be hung were discovered in burial complexes (the main find), as waste from a workshop and mikvah (Religious purification pool)[5].

This fact receives an interesting reference with the help of two data: the first, which contradicts the image of the find that reflects low usage volumes of glass vessels at the sites of the Roman period in the Land of Israel; This is compared to the results of a chemical examination of many glass vessels discovered in the assemblages of shipwrecks discovered along ancient trade routes from the Roman period in the Mediterranean basin, and at many sites throughout Europe, which indicate that the origin of many of the glass vessels is from Israel. The second, showing the discovery of a large-scale workshop, the first of its kind to be discovered on the northern slopes of the Carmel Mountains, where several large glass furnaces were discovered, dating from the Roman period, indicating that it was a world production center for glass vessels. In addition to these, a Roman document associated with the Roman emperor Diocletian who operated in the fourth century AD lists the rates of two types of glassware: one, Judean glass – from Israel and the other, Alexandrian glass – from Egypt. The Judean glass, which varies according to the certificate – is greenish and compared to the Alexandrian glass – which is more expensive[6]. The location of the great maker's house was chosen based on two main considerations: the origin of the raw material to produce the glass and the source of the combustion materials required to create the energy required to produce the tools.

These data raise an important question that relates to the gap between the presence of a global production center for glassware, and the presence of a huge amount of glassware throughout Europe that originates from this manufacturer, and the use of glassware in low volumes as shown by the excavations of sites in Israel dating to the Roman period. It is possible that this figure is related to the routing of the maker's product to European countries and not distributing it in the Israeli space, or that this figure is related to the definition of glass as a vessel that receives impurity in the

[1] GAT 2013; GORIN-ROZEN 2022.
[2] GORIN-ROZEN 2006; GORIN-ROZEN 2007; JACKSON-TAL 2016; JACKSON-TAL 2018; JACKSON-TAL/GORIN-ROZEN 2018.
[3] GAT 2013.
[4] LUCKNER 1994.
[5] GAT 2013.
[6] GORIN-ROZEN 2016.

context of the Jewish population. This spatial image is well reflected in the image of the findings of glass vessels from the Roman period and their exposure in burial complexes associated with the laws of impurity.

This picture, which represents a few finds of glass cups from the Roman period, characterizes the area of the Mediterranean basin and is not unique to the Israeli area only. It is evident that beyond the growing distribution of glass vessels, the adoption of glass vessels as replacements or additions to the pottery candles was slow[7]. The novelty of this essay is that it constitutes a primary case of creating a concentrated typological image of glass vessels with a clear functional definition – vessels intended for lighting, dividing them into types, describing their characteristics and placing them within the assemblages in which they were discovered. So far, no such connection has been presented in relation to findings from archaeological excavations from Israel.

METHOD

The reconstruction of the behavioral model that emerges from the analysis of the glass light goblets is done by the model called – regional behavioral typo-morphology[8]. This model looks comparatively at expanding spatial circles. At the base of this model is the understanding that the cognition of our predecessors was not different but located at an earlier technological stage. This point of view makes it possible to anchor ancient phenomena in human perspectives in the present and formulate a discussion about them that considers the limitations of the missing data (the voice of those people). This behavioral reconstruction model refers to both a mobile material finds, and a stationary material find and seeks to examine it in relation to the general picture of the place and space. The observation process is accompanied by the creation of category isolation and their definition. With the definition of the categories, it is possible to go to the site of contemporary knowledge infrastructures that discuss similar phenomena and thus propose a new cognitive behavioral model.

TYPOLOGICAL-MORPHOLOGICAL DISCUSSION

The glass lighting goblets cups dating to the Roman period from Israel, as well as the polycandalon glass lighting candles that were discovered in the later periods – Byzantine and early Muslim, are divided into two types of polycandalon glass goblets: standing and hanging lamp goblets. There for, the glass lighting goblets are divided into four main typological groups that represent its types and three types of lamp goblet – a hanging lamp goblet, a resting lamp goblet and a hollow lamp goblet.

The glass lighting goblets were made as a bowl with an elongated leg-like base, and as such, the vessel cannot stand on its own. Therefore, it is a tool that is intended for hanging. The lighting goblets were hung in two ways. According to one method – the hanging lighting goblets was placed inside a "polycandalon glass lighting holder" made of a flat metal hoop with round openings (the number of openings and their size varies), the base of the leg was threaded into the round opening and the sides of the cup "sit" on top of the metal surface of the polycandalon holder. The second method of hanging is done by "hooks holder" with three chains; At the end of each of them set a hook, which were installed in loops connected to the glass lighting holder, or, the hooks holder is made of metal wires wrapped around each other, into one holder.

The four typological groups, which characterize the lighting goblets glass candles, are further subdivided according to the different types comprising them. The typological division that characterizes the glass goblets with an elongated leg-like base is based on their formal characteristics and the properties of the various bases, which are divided into sixteen different types of bases which will be described below. The candle goblets of their three types are represented by twenty-one types, characterized mainly by the types of hanging handles that characterize the glass lighting glass goblet, as well as by the outline of the goblet's body and functional additions such as an ax rim which was installed in the middle of the goblet's body for hanging it, or the wick grip pipe which was installed at the top of the bowl base in its inner part. which was installed in the base of the bowl in the inner part of the goblet.

From the Roman period in Israel, are known two of the broad typological groups that were described in the previous section – the resting lamp goblet and the hanging glass goblet. Of the hanging glass goblet. from this period, six types are known that differ from each other according to the formal characteristics of the leg-like base identified with this object: A hanging glass goblets with a beaded base (sealed or hollow), an glass goblets characterized by an end bead base, hanging glass goblet with an elongated and hollow base, hanging glass goblet which describes its conical and hollow base and a cup as a whole whose base is a hollow or sealed droplet.

Hanging glass goblet with a beaded base

This type is divided into two subtypes: lighting goblets glass with solid bead base and lighting goblets glass characterized by a hollow bead base. This base (either solid or hollow), during its production is pinched and pressed in several places – according to the number of beads requested (the number of beads varies). This group is divided throughout the periods into four subgroups according to the nature of the bases and the beads that make them up: one, lighting goblets glass with a hollow bead base, which is created by compressing air through the blow pip to the base mass and pulling the hot and viscous glass. With the creation of the hollow base, it is pinched as mentioned, in several points according to the number of beads desired. The other, and lighting goblets glass with a solid beaded base: it was created by pulling the hot glass, while rotating it into an elongated base, and pinching the base at several points and processing the beads into the desired shape according to the perception of the volume of the glass. The further division is based on the typological characteristics of the bases: a base with shallow beads, and a base with prominent and emphasized beads. From the Roman period, are known lighting goblets glass with only prominent – emphasized beaded bases.

[7] GAT 2013.
[8] GAT 2013; GAT 2019.

Hanging Lighting goblets glass with solid beads base

Three lighting goblets glass with solid bead base were discovered in the tomb systems – the catacombs, which were uncovered in Beit Sha'arim. One goblet was discovered in system number 14[9], and two more goblets were discovered in system number 20[10]. Additional lighting goblets glass with solid bead was discovered in a niches tomb – inside Hall A which has seven niches that was uncovered in Gilboa[11].

The three discussed goblets are characterized by very similar typological features. All three have a solid base with three emphasis and prominent beads. In all three goblets, the lower part of the bead located at the end, is straight because of the tool being bent from the blow pip. The cup bowl of the goblet from Gilboa did not survive. The two Beit She'arim goblets have an ax lip in the center of the goblet bowl – surrounding its outline. This is intended for the installation of a hanging hoop which is caught under the opposite rim; Three chains or hanging wires were attached to the hoop which allowed the goblet to be hung. These four goblets dating from the Roman period were discovered in systems of niches tombs – either as a magnificent and large tomb system like the catacombs in Beit Sha'arim, or in a family niches tomb that was discovered in Gilboa.

Beit Shearim – Kat. 20	Gilboa	Beit Shearim Kat. 14
 3.	 2.	 1.
bluish green[12]	yellowish green[13]	bluish green[14]

Fig. 1. Lighting glass goblets glass with solid beads base.

Hanging Glass lighting goblets with a hollow beaded base

Lighting goblets with a hollow beaded base were discovered in the glass workshop uncovered in Jalame[15]. As mentioned, the base created by pulling material together with the cup bowl, by compressing air through the blow pip, while rotating the tool, and pulling the material into an elongated tube. With the creation of the elongated and hollow base, it is pinched at several points on the axis of its length, according to the number of beads requested. The glass light goblets with the hollow beads base from the workshop in Jalame were made of glass with a greenish-bluish tint and a greenish tint. This difference may indicate two processes: one is corrosion and oxidation of the glass which is bluish greenish in color; The second option, changing the shade of the glass in the melting furnace by adding glass fragments collected for reburning (recycling).

Jalame's glass workshop	
 1.	 2.
Greenish[16]	Greenish blue

Fig. 2. Glass lighting goblets with a hollow beaded base.

Hanging glass lighting goblets with a beaded edge base

This goblet is characterized by a base whose upper part, which originates from the bowl of the goblet bowl, is elongated, and its lower part, close to the edge of the base, is pinched and expanded into one or more beads. This type of glass goblet characterized by a base with two end beads, was discovered in the grave system – number 20 in Beit Shearim[17]. The two end beads are not uniform, and it is obvious that they were hardly worked. The upper part of the base is elongated, and its sides are wide and rounded. The base of the beads is solid and the shade of the glass from which it is made is a greenish bluish – a shade that characterizes most of the finds of setting goblets and hanging goblets that were discovered in the tomb systems at the Beit Shearim site.

Another goblet with a beaded edge base – which has a single bead at the edge of the base, was discovered at the site of Givat Yasaf – Tel A – Ras[18]. The candle was discovered in the complex of a building dating back to the early Muslim period. It must be assumed according to the opinion of the excavator that the origin of the vessel fragments is from the complex of graves dating to the Roman period that were discovered near the building. The base is sealed, its sides are straight and elongated. The edge of the base is pinched into a single bead with a ridge in the upper part as a product of processing and crafting the bead. The edge of the bead is straight as evidence of the candle being folded and disconnected from the blowing tube and its alignment on the work surface of the glass volume. The cup is made of glass which has a greenish bluish hue. From what has been said about the different types of inclusion cups with beaded bases, it appears that most of them were made of glass with a bluish-green hue, and it also appears that most of them were discovered in grave complexes.

Giva't Yasaf – Tel A-Ras	Beit Shearim
 1.	 2.
Greenish blue[19]	Greenish blue[20]

Fig. 3. Glass lighting goblets with a solid beaded edge base.

[9] AVIGAD 1955.
[10] AVIGAD 1976.
[11] GORIN-ROZEN 2000.
[12] AVIGAD 1976, 19, Fig. 43/97.
[13] GORIN-ROZEN 2000, 66, Fig. 8/66.
[14] AVIGAD 1976, 19, Fig. 43/96.
[15] DAVIDSON WEINBERG 1988.
[16] DAVIDSON WEINBERG 1988, 56, Fig. 3–7/33.
[17] AVIGAD 1976, 98.
[18] ROCHMAN-HALPERIN 1999; GORIN-ROZEN 1999, 138.
[19] GORIN-ROZEN 1999, 138, Fig. 1/138.
[20] AVIGAD 1967, 19, Fig. 43/97.

Hanging glass goblet with an elongated and hollow base

The base of this type is characterized by walls that are straight. Included in this typological group are also goblets which outline the sides of their base which is slightly rounded and widened. The bases of the elongated goblets appear throughout the periods in two typological ways – hollow and solid. The appearance of the goblets with the hollow base is earlier, and dated to the Roman period, in which goblets with only an elongated and hollow base were discovered. The type with the solid base is dated as later and originates from the Byzantine period onwards. Most goblets of this type were made of glass with a bluish-greenish and bluish tint. Two goblets were made of transparent glass.

So far, six lighting goblets with an elongated and hollow base are known, dating from the Roman period, which were discovered as part of a regular archaeological excavation. One goblet was discovered in a niches tomb in Hall A – with seven niches, in Gilboa[21]. As mentioned, the goblet was discovered together with a beaded base a goblet which was discussed earlier. The sides of the base are straight, and its base is truncated and flat as evidence of the disconnection of the goblet from the blowing tube and the alignment of its end on top of the work surface of the glassblower. The goblet is made of glass with a bluish tint. On the other hand, the beads base goblet which was discovered in the same assemblage is made of glass with a yellowish green hue. It is possible that the two goblets were made in different glass workshop, or they were made in the same workshop at different times, or perhaps in the same glass workshop where they were made, several furnaces operated, each of which produced vessels of a different shade.

Another goblet with an elongated and hollow base, was discovered in the complex of graves that was uncovered at the Beit She'arim site – in system number 20[22]. Only the edge of the base goblet survived. Its sides are straight, and its base is thickened and round. The goblet is made of glass which has a greenish bluish hue. The goblet was discovered along with other eight goblets. Six hanging goblets of different types, and two sited glass goblets which one of them was made with hanging handle. This goblet is the only of this type that was discovered in this burial complex. As mentioned, most of the goblets, which were discovered in system number 20 in Beit She'arim, were made of glass in shades of bluish – greenish and bluish.

Two other goblets with an elongated and hollow base were discovered in the complex of a trough tomb, which was discovered in Nablus in the Rafidia neighborhood[23]. The hanging goblets were discovered in the tomb cave hall on the floor together with discus candles dating from the Roman period. The bases of the two goblets thicken towards the edge, which is truncated and straight because of the vessel being disconnected from the blowing tube of the glass volume and the alignment of the base edge and its processing on the craftsman's work surface. The outline of the sides of the bases is not straight. These are straight from their origin at the bottom of the goblet bowl and widen slightly and round towards the lower part of the base. Both goblets were made of transparent glass and according to their typological similarity it seems that they were made in the same glass workshop.

Another goblet of this type was discovered in the complex of a residential building at Giv'at Yasaf – Tel A – Ras[24]. The goblet was discovered together with another goblet with an edge bead base which was discussed earlier. As mentioned, the goblets were discovered in a complex dating to the Mamluk period, and the author assumes that the origin of the goblets is from the tomb complexes dating to the Roman period, which were discovered near the structure[25]. So, it is possible, and like the goblets that originate from the grave complexes at the sites: in Gilboa, Beit Shearim and the Rafidia neighborhood in Nablus, which were described earlier, that the goblet discovered at the Givat Yasaf site also originate from grave complexes from the Roman period. The glass shade of the cup is greenish blue.

Another goblet with an elongated and hollow base was discovered in the complex of the glass workshop at the Jalame site[26]. The vessel is part of the waste found on the site and serves as a representative of other goblets of this type that were discovered as part of the production waste of the workshop. The sides of the base are straight, and the edge is concave. The round recess that appears in the center of the base is evidence of the position of the blowing tube and the disconnection of the goblet from it. The vessel is made of glass with a bluish-green tint.

The goblet	The tint of the glass	site and assemblage
	Bluish	1. Gilboa – Burial niches cave[27]
	Bluish Green	2. Giv'at Yasaf – Burial cave[28]
	Bluish Green	3. Jalame – Glass workshop[29]
	Transparent	4. Nablus – Burial cave[30]

[21] GORIN-ROZEN 2000, 66.
[22] AVIGAD 1976.
[23] HIZMI 1997.
[24] ROCHMAN-HALPERIN 1999.
[25] GORIN-ROZEN 1999.
[26] DAVIDSON-WEINBERG 1999.
[27] GORIN-ROZEN 2000, 66, Fig. 8/66.
[28] GORIN-ROZEN 1999, 138, Fig. 1/138.
[29] DAVIDSON-WEINBERG 1988, 43, Fig. 4–17/333.
[30] HIZMI 1997, 128, Fig. 1/125, Fig. 6/127.

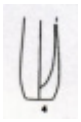
The goblet	The tint of the glass	site and assemblage
	Transparent	5. Nablus – Burial cave[31]
	Bluish Green	6. Beit Shearim – Burial system – Katakomb n.20[32]

Fig. 4. Hanging glass goblet with an elongated and hollow base: Typology and division on color.

Conic shape Polycandelon

The outline of the body of this type gets narrower according to a uniform axis of symmetry from the level of its lip to its tip. Naturally and due to its conical shape into a pointed base, the goblet was hung by a polycandelon holder, shaped into a round hoop. From Israel, in the Roman period these glass goblets are known so far only from the glass workshop that was discovered at the Jalame site[33]. Due to this fact it is not possible to place the tool in a defined functional context and follow the practices of its use.

1.	2.	3.
		
Transparent	Transparent	Bluish Green

Fig. 5. Conic shape Polycandelon[34].

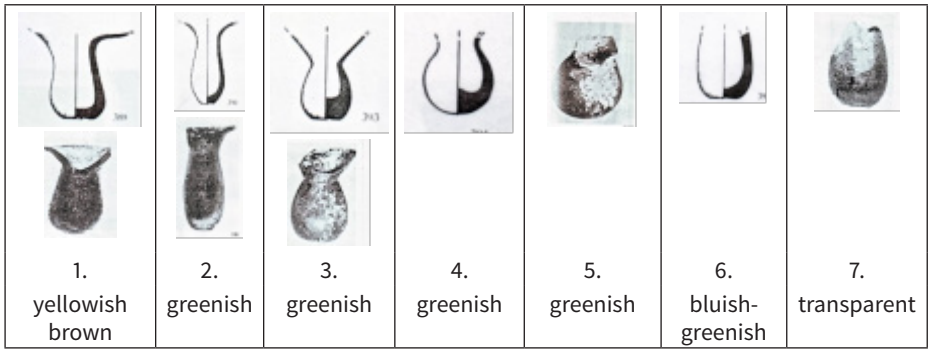


Fig. 6. Glass hanging goblets with a hollow drip base from the glass workshop from Jalame[35].

Glass hanging goblets with a hollow drip base

Two types of hollow drip base goblets are known from this period; One, a goblet whose base tube is hollow, while the drop at the end of the base is sealed. The second type, a hollow drop base goblet that forms the base of the entire vessel, the beginning of the drop is from the bottom of the goblet/. The hollow drop bases are found in a variety of shapes and described as a rounded outline /, rounded and narrow, rectangular, and a round drop. A group of drip goblets was discovered in the glass workshop in Jalame[36]. Most of the goblets were made of glass with a greenish tint, one goblet was made of glass with a bluish greenish tint and another goblet was made of glass with a yellowish-brown tint. These cups were discovered as part of the workshop debris, but they have not yet been discovered in the settlement area from the Roman period.

Glass hanging goblets with a sealed drip base

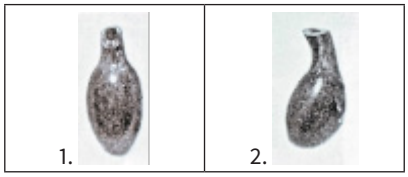


Fig. 7. Glass hanging goblets with a sealed drip base[37].

Two hanging goblets with a sealed drip base, were discovered in Jerusalem in the Jewish Quarter, in a mikveh complex on top of the steps of the mikveh[38]. The diameter of the base pipe is very narrow, and it cannot be ruled out that this is the waste of a glass workshop that existed near the mikvah, or perhaps later, and used the mikvah as a waste pit. In this case – where the original use of the mikvah (Religious purification pool) was abolished and it was converted into a waste pit, one should expect a much larger amount of remains of glass vessels and associated waste, related to this industry. The cups were discovered in the mikvah complex without the accompaniment of clay candles or other lighting glass goblets. The color of the glass from which the vessels were made was not specified in the excavation report.

The hanging and resting glass candle cups

The second type that characterizes the glass goblets dating from the Roman period is the "Glass candle cup". The candle goblet is a bowl with mostly hollow sides, although different types are also discovered which will be described later. This type is divided into two main types according to the way the cup is used. One type – a hanging candle cup, while the other type of cup is a resting candle cup. The hanging candle cup is characterized as such by the three hanging handles that intended to maintain its balance when the three hooks of the hanging chains are threaded into the contents. The resting candle cup lacked the hanging handles and was used as a cup which was placed on a stable surface and could be moved more easily. Another distinction that also stems from the typological characteristics of the vessel and affects the way it is used, is that of candle goblets that have a hollow tube (candlestick: the common terminology

[31] HIZMI 1997, 128, Fig. 1/125, Fig. 6/127.
[32] AVIGAD 1955, 220, Fig. 43/96–97.
[33] DAVIDSON-WEINBERG 1988.
[34] DAVIDSON-WEINBERG 1988, 43, Fig. 4–4/86; Pl. 4–16/331; Pl. 4–17/332.
[35] DAVIDSON-WEINBERG 1988, 38, Figs. 3–2/26, Fig. 3–4/29, Fig. 3–7/33, Fig. 4–4/86.
[36] DAVIDSON-WEINBERG 1988.
[37] AVIGAD 1972, 199, Pl. 45A/201, Pl. 46A/202.
[38] AVIGAD 1972.

incorrectly in the research) which was installed in the base of the bowl that characterizes these goblets in the inner part of the candle. This tube is a "wick holding tube" feature – since it is intended for holding the wick in the center of the cup, when it is soaked in oil that was poured into the tube. The height of the tube, its outline and width vary and is not uniform. The wick tube holding was produced separately from the cup – by blowing and installed at the bottom by heating.

Four "Glass candle cup" dating from the Roman period, which were discovered in archaeological excavations, are known to us (and have been published) so far from the Land of Israel. The glass candles cups from this period are divided into three types: a hanging candle cup with three hanging handles, a resting candle cup and a candle cup with a tube holding the wick.

A hanging glass candle cup with three angled hanging handles

The candle goblet is characterized by three handles attached to the rim of the goblet and higher than it, the handles are curved, grooved, angled, and drawn outwards and thus have a triangular outline for a firm grip of the hanging hook and its grasp at the opening of the handle. The rim of the glass cup is folded and leans outward, creating between it and the walls of the body of the cup a tubular cavity, the body of the cup is polygonal. This lamination is created by gluing glass threads onto the walls of the vessel. The base of the handle is wide and thickened to strengthen the handle to the side of the cup in an optimal way and to prevent the handles from detaching from the vessel, when hanging on the mass of the vessel containing oil and water. The cup was discovered at the Beit She'arim site in the burial system – Catacomb number 20 – in the burial system hall[39]. The goblets were discovered together with a resting candle cup, which will be discussed later, and hanging glass goblets of various types that were discussed at the beginning of this article. The hanging candle cup was made, like most hanging goblets, from glass made of a bluish-green tint.

A resting glass candle cup

The resting glass candle cup was also discovered in system number 20 – catacomb in Beit She'arim[40]. From the candle cup survived only its concave base, and a little of its sides, so it is not known if it was a hanging candle cup with three hanging handles, or if it was a resting candle cup – without hanging handles, and in the absence of hanging signs it would be defined as a resting cup. The cup is made as a deep bowl whose sides gradually become narrower from the rim of the cup to its base. The base of the cup is concave. The shade of the glass from which the candle is made is bluish green.

A glass candle cup with a wick tube holding

The wick tube holding t was installed in the inner part of the glass candle cup on top of its concave base. This tube was filled with oil when the contents of the cup around it and at the level below it, were filled with water. A transfer wick was installed inside the tube. It is assumed that the wick was strengthened by an iron fixture so that its tip would remain above the oil level and not sink into it, thus causing the flame to go out. These goblets – with the wick tube holding were used both as a resting candle and as a hanging candle goblet with three hanging handles. The pair of glass candles cups were discovered as part of the waste of the glass workshop which was discovered at the Jalame site[41].

One tube was made of glass with a greenish tint, while the other tube was made of glass with a bluish green tint. As mentioned, the outline of the wick holding tubes varies, and with the help of its height, and in cases where the candle cup did not survive, it is possible to reconstruct the depth of the candle cup, since the length of the tube was adjusted to the height of the cup, and therefore it was produced after the production of the cup and in a separate blowing process.

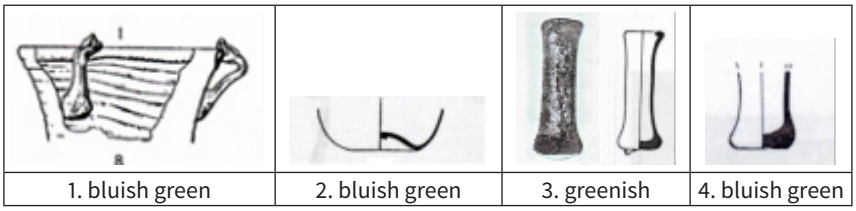


Fig. 8. The hanging and resting glass candle cups. 1–2. Beit Shearim; Katakomb.20[42]. 3–4. Glass workshop – Jalame[43].

A comparative: chronological – spatial discussion of the find of the glass lighting goblets from Israel with a similar find from countries around the Mediterranean basin:

Glass lighting goblets with an ax rim throughout the periods: Roman to early Muslim discovered in Israel, Turkey, Tunis, and Egypt

The parallels reviewed in this discussion are based on the presence of the ax ridge that characterizes these goblets, which date to the Roman period. The position of the ax ridge changes, and it sometimes appears as part of the cup rim and sometimes as a strip of ridge in the center of the cup body. In addition, the presence of the ax ridge appears in the two types of goblets that were used for lighting: polycandalon glass lighting candles and candle goblets. As mentioned, two burial cups of this type are known from Israel with a ridge shaped like an ax in the complex of tomb systems – the catacombs that were uncovered at the Beit She'arim site. The one cup discovered in system number 14[44] and the other cup was discovered in system number 20[45]. The amplified is in a pair hanging glass goblets that have beaded bases, but the sharing parameter is, as mentioned, the presence of an ax ridge which was installed on the side of the bowl's goblets and is intended to be hung with the help of the hook holder made of metal.

A parallel to this typological feature is known from Turkey

[39] AVIGAD 1976.
[40] AVIGAD 1976.
[41] DAVIDSON-WEINBERG 1988.
[42] AVIGAD 1976, 19, Fig. 43/96–97, 98, 204.
[43] DAVIDSON-WEINBERG 1988, 49, Pl. 4–17/332.
[44] AVIGAD 1955.
[45] AVIGAD 1976.

from the site of Elaiussa Sebaste. It was discovered, as appears from the find in Israel, in a complex of a tomb, inside a sarcophagus, in which a girl was buried whose estimated age was sixteen years[46]. The candle cup was discovered next to the girl's skeleton with other objects that accompanied the burial; Among other things, many jugs and spoons made of pottery as well as bowls made of glass were discovered; In addition, an imperial discus candle with two mouths was discovered, characterized by a tall and magnificent leaf handle and two lug handles in the shape of horse heads, which is a guide stone that extends the whole of the tomb and its vessels made of glass.

Another late parallel, which originates from Israel, found in a burial complex as well, was discovered at the Khirbet Tabalia site, inside a tomb complex on top of which a tower structure was built. The cup discovered resting on the buried skeleton[47] because it fell from the polycandelon holder which was discovered hanging by a holder fixed in a crack in the wall of the tomb. The goblet from Khirbet Tabalia is a candle cup characterized by high sides and a curved base. The ax ridge was mounted to the top of the cup below the level of the rim and is formed by a double wall. It is evident that most of the goblets characterized by the ax ridge, both in Turkey and Israel, were discovered in various burial assemblages. Most likely the production tradition that singled out these tools for this unique use, which is evident in these areas.

Candle cups similar to the cup that was discovered in the tomb complex in Khirbet Tabalia were discovered in the shipwreck complex that was discovered at the Skerki Bank underwater site, near Tunis, dating from the Byzantine period, which apparently originated in Italy[48]. The goblets do not have the origin ax ridge but are characterized by a dominant shelf edge rim that slopes slightly down, which serves in the same role as a ridge, and under which is caught the holder of the candle goblet which embraced the body of the goblet when it was hung. Additional goblet candle cups, polycandelon and a candle cup with a cup base and three hanging handles, were discovered in Egypt, at the Fustat site (ancient Cairo), within a complex of a residential building dating to the ninth and tenth centuries A.D and having ax ridges surrounding their bodies[49].

Due to the paucity of finds, it is difficult to establish the origin of the tool and its typological features. However, it is possible to establish the assumption that the origin of this typological feature is from the region of Israel and Turkey, where the cups date to the Roman period. It is possible that their spread from this area – north and south led to the formal development of the vessel and the use of the ridge feature in the later periods: Byzantine and Muslim.

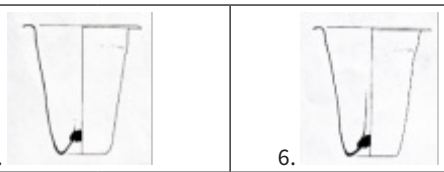
Glass tint:	Assemblage:	The object:	Origin:
Bluish greenish	Burial	 1. 2. 3.	1. Israel[50]
Did not report	Burial	 4.	2. Turkey[51]
transparent	A shipwreck	 5. 6.	3. Tunis[52]
Bluish greenish	Residential House	 7. 8.	4. Egypt[53]

Fig. 9. Glass lighting goblets with an ax rim throughout the periods: Roman to early Muslim from Israel, Turkey, Tunis, and Egypt.

Conic shape Polycandelon from the Roman and Byzantine periods from Lebanon, Israel, Jordan, Syria, Egypt, and Tunis

The outline of the body of this type gets narrower according to a uniform axis of symmetry from the level of its lip to its tip. This type, known from Israel and Jordan, already from the Roman period. Goblets of this type were discovered as mentioned in Israel in the Jalame glass workshop[54], and in Jordan, from which a single goblet is known, dating to the late Roman period, that was discovered at the Az Zenator site in Petra, in the complex of a palace, in the central hall, built as a basilica structure[55]. Another goblet from this typological family is known from Lebanon and dates to the early byzantine period. The goblet found in Beirut in a residential complex located in an area which was uncovered during the excavations of Market Street[56].

Another goblet which is also of northern origin (as the goblet known from Lebanon), was discovered in Syria, at the site of Enab al-Safina, in a complex of a tomb structure built of ash stones and decorated with statues of Sphinxes and a winged Psyche statute, dated according to its excavators to the Byzantine period. The goblet was discovered in one of the two chambers of the tomb, whose origin dates to the Roman period and whose use continued even during the Byzantine period[57]. Covering Goblet of this type were also discovered in Egypt from the Byzantine period and are part

[46] EQUINI-SCHNEINDER 2005.
[47] KOGAN-ZEHAVI 1998.
[48] McCANN/OLESON 2004.
[49] PINDER-WILSON/CALON 1973.
[50] AVIGAD 1955; AVIGAD 1976.
[51] EQUINI-SCHNEINDER 2005.
[52] McCANN/OLESON 2004.
[53] PINDER-WILSON/CALON 1973.
[54] DAVIDSON-WEINBERG 1988.
[55] KOLLB/KELLER 2000 2001.
[56] JENNINGS 1997.
[57] BOUNNI 1979.

of the Fitzwilliam collection; It probably originates from a complex of a Coptic church[58]. Another goblet, which is also of southern origin, is known from Tunis, from the Carthage site, from the Cardo Street excavation, and dates to the Byzantine period[59].

It appears, according to the data we have so far, and according to the dating of this type in the various regions, that there is a basis for the assumption that the typological origin of this goblet is from Israel, and that it originated there. This assumption is based on two aspects: chronological and spatial distribution and distribution directions. From a chronological point of view, the earliest appearance of the goblet is in the assemblage dated to the Roman period from Israel, and this in relation to its later dating in the other regions where it was discovered: Jordan, Lebanon, Syria, Egypt, and Tunis. In terms of the distribution of the goblet and the directions of its distribution, it was found in northern areas in relation to the source of its production and distribution in Israel: Jordan, Lebanon and Syria, and its southern areas of distribution – Egypt and Tunis. The absence of this find in the areas of Turkey, Greece and Italy, strengthens the assumption that the origin of this type is from the area of Israel, which is the core of its origin and from which it was distributed, whether through land or sea trade connections, or as a tradition and technological knowledge that was distributed by glassblowers who migrated by choice or not From a selection in the area of the ancient East in those periods.

The goblets of this type from Lebanon, and from the site El Bassa in Israel are identical parallels, dating to the Byzantine period. The El Bassa site is located near Ras Nakura (Rosh Hanikra) in the northeast part of the Land of Israel. The polycandalon goblet discovered in a complex of a Christian tomb, where a glass bowl decorated with a cross at the bottom[60]. The goblet from the tomb complex at the Al Bassa site, like the goblet from the residential area complex from Beirut – Lebanon, characterized by its bottom curve in the same way as a disconnection from the blowing tube, which leaves a shallow curve at the bottom. In addition, both goblets have a narrow waist located below the level of the rim, and their bodies are elongated and narrow. From those data's it can be assumed that they originate from the same manufacturer, or a product of the same technological tradition of glass blowing.

The distribution of this unique type is from the northern region of the Land of Israel only, and from Lebanon, so that apparently it is a regional – northern type, limited to this region only. The distribution of the cup from Israel – the core of its origin according to its early dating there to the Roman period, moves eastward – to Jordan, where it dates to the late Roman period, from there to Lebanon, where the cup dates to the early Byzantine period and then to Syria where it dates to the Byzantine period. The distribution of the cup towards the south took place at a later chronological stage and was discovered in Egypt and Tunisia in sites: a church and a street dating from the Byzantine period.

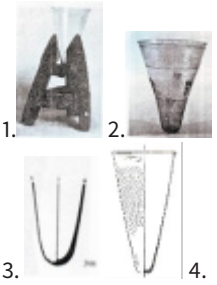
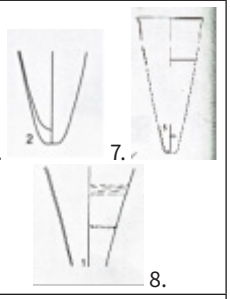
Origin:	Glass tint:	Assemblage:	The object:
1. Israel[61]	1. Bluish Green 2. Transparent 3. Transparent	Jalame glass workshop	
2. Jordan[62]	bluish	Ez Zantur: Petra: The main hall of the palace – has a basilica structure	
3. Lebanon[63]	Beirut Residential area	bluish greenish	
3. Syria[64]	Transparent	Grave: Anab al Safinah	
4. Egypt[65]	Bluish and dark blue dot decorations	Coptic Church	
5. Tunis[66]	unknown	Cartago: Cardo Street in Insula B	

Fig. 10. Conic shape Polycandelon from: Israel, Jordan, Lebanon, Syria, Egypt, and Tunis.

Polycandelon with a hollow drip base from Lebanon, Turkey, Cyprus, Greece, Israel, Tunis, and Italy

Polycandalon goblets with a hollow drip base dating to the Roman period have been so far, discovered only in Israel, in the glass workshop complex at the Jalame site[67]. Therefore, it can be assumed that their early dating in Israel constitutes the earliest production source of the goblet and the nucleus of its distribution to other spaces outside its borders. Similar goblet belonging to this typological family dating from the

[58] BOURRIAU 1988.
[59] VAN DEN DRIESCH 1999.
[60] ILIFFE 1934.
[61] 1–3: DAVIDSON-WEINBERG 1988, 45, Fig. 4–4/86. Pl. 4–16/331, Pl. 4–17/332; 4: ILIFFE 1934, 87, Fig.1/82.
[62] KOLB/KELLER 2000, 360, Fig. 2/15; KOLB/KELLER 2001, Fig. 15.
[63] JENNINGS 1997, 136, Fig. 20/141; JENNINGS/ABDALLAH 2001–2002, 259, Fig. 10/258.
[64] BOUNNI 1979, 56, Fig. 54.
[65] BOURRIAU 1988, 202, Pl. XXIV.
[66] VON DEN DRIESCH 1999, 15, Fig. 766; HURST 1984, Fig. 1/15.
[67] DAVIDSON-WEINBERG 1988.

late Roman period and the beginning of the Byzantine period were discovered in Italy in the complex of the temple which was uncovered at the Palatino site in Rome[68] Additional parallels, dating to the early Byzantine period, are known from Lebanon – from Beirut – from a complex of residential areas excavated on Market Street.[69] It is evident that the course of the distribution of the cups of this type during the Roman period and through the early Byzantine period is from the source of their production – Israel and their distribution north from Lebanon to Italy. It is possible that their distribution will not be done in a serious procedural way: Israel – Lebanon – Italy, but through two commercial axes from Israel: by land – to Lebanon and by sea – to Italy.

The circulation of these glass goblets expanded in the Byzantine period and their quantity increased; In this way, a typo-morphological picture is obtained that allows tracing the practices of using these tools. The polycandalon goblets with the hollow drip base from the Byzantine period have been discovered so far in Turkey, at the Demre Myra site, in the Aziz Nicholas (St. Nicholas) church. It discovered in the complex of the bishop's residences adjacent to the church building on the north and northeast sides and connecting with it at the entrance[70]. Two additional cups, also from Turkey (see candles 4.384, 13.384), discovered at the Limyra site, in two different assemblages; The one, discovered in a residential building complex located in the western quarter of the city[71]. Another goblet from this site, discovered in the complex of a bathhouse building, located near the city wall and utilizes natural hot springs[72].

Three goblets from Cyprus discovered in the site of Aeos Philon – Ancient Cyprus, in the church courtyard complex[73]. Additional goblets from this typological group discovered in Greece at three different sites: Athen, in a complex of a massive public building with a northern apse wall, which borders the Agoura Square, at the Corinth site from an unknown complex[74], and at Aliki, in the complex of a church in the middle hall[75].

Another goblet was discovered in Tunis, in Carthage, in the complex of the central residential district of the city, with a church in the center[76]. Two additional goblets were discovered in Israel at two different sites; The first, at the site of Kherbat Tablia – Givat Hamatos, near Jerusalem, in the complex of an agricultural farm[77]; The second, was discovered in Caesarea, in the governor's palace complex, in its northern corner, of an apse complex part of the audience hall[78].

From the review of the assemblages in which the polycandalon goblets with a drip base were discovered, goblets of this type were discovered in three types of assemblages. The first type, church complexes, such as the church at the Demre Myra site, in Turkey (together with other cups),[79] in the church complex at Aios Philon in Cyprus[80], and in the complex of the church at the Eliki site in Greece, in the middle hall complex[81]. The second type of assemblage that constitutes the main assemblage in which the goblets of this type were discovered, is residential assemblages. Goblets from these assemblages discovered in Lebanon – in the complex of the residential area of the Market Street in the Beirut[82], in Turkey, at the Lymra site, in the residential buildings in the western quarter of the city[83]. This also appears in Israel, where goblets of this type were discovered at the site of Kherbat Tablia – Giv'at Hamatos, in the complex of an agricultural farm[84].

A third complex, where these goblets were discovered, is a complex of public buildings. Polycandalon from these assemblages were discovered in two areas: the first area – Greece, in Athens, in the complex of a massive public building with the northern apse wall[85], and in Israel, in Caesarea, in the complex of the Governor's House in the audience hall in the northern part of the apse area[86]. It is evident that the infiltration of this glass goblets in all the areas surveyed, for everyday – civil use, manifested in their exposure in the complexes of residential buildings, represents the gradual suppression of the clay candles. This process – and in the unique case of the goblets characterized by hollow drip bases, is widespread in complexes of residential buildings in relation to public complexes such as churches and public buildings, which characterizes other types of goblets.

The distribution map of the goglets, characterized by a primary distribution kernel and a secondary distribution kernel that affects the direction of distribution and its extent. The initial nucleus of the distribution dates, as mentioned, to the Roman period in Israel. From there, the cups spread northward and along the shores of the Mediterranean basin, either in coastal sites or inland sites and were discovered in Lebanon, Turkey, and Greece. The secondary core of circulation, which dates to the first core of circulation – to the late Roman period and the early Byzantine period – in Italy, from where it seems that the goblets were spread in the Byzantine period to Tunis via maritime trade routes. As obtained from the data analysis, a spatial distribution model emerged – as a chronological one indicating the origin of the tool, the ways of trade in which it was distributed and the methods of its use in the different spaces. The discussed goblets with the hollow drip base are absent from Syria and Jordan, Egypt, and Italy.

[68] STERNINI 2001.
[69] JEENNINGS 1997.
[70] OTUKEN 1996.
[71] BAYBO 2005.
[72] GANZERT 1984.
[73] DU PLAT TAYLOR/MEGAW 1981.
[74] DAVIDSON 1952.
[75] SODINI/KOLOKOTSASS 1989.
[76] VAN DEN DREISCH 1999.
[77] KOGAN-ZAHAVI 2007; GORIN-ROZEN 2007, 90.
[78] PATRICH 2008.
[79] OTUKEN 1996.
[80] DU PLAT TAYLOR/MEGAW 1981.
[81] SODINI/KOLOKOTSASS 1989.
[82] JENNINGS 1997.
[83] BAYBO 2005.
[84] KOGAN-ZAHAVI 2007; GORIN-ROZEN 2007.
[85] DAVIDSON 1952.
[86] PATRICH 2008.

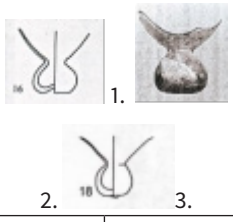
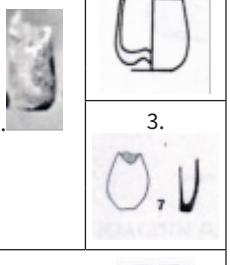
Origin:	Glass tint:	Assemblage:	The object:
1. Israel – Early Byzantine Period[87]	Bluish Green	Khirbet Tabaliya – Farm	
2. Italy – Late Roman Early Byzantine[88]	Greenish	Paltino Rome - Tempio della Magna Mater	
3. Lebanon – Early Byzantine[89]	1. Bluish Green 2. Un Known 3. Greenish	Beirut – Residnece complex	 1. 2. 3.
4. Turky – Byzantine[90]	Un Known	1. Demre – Church Myra 2. Limyra – Residnece complex 3. Limyra – bathing place	 1. 2. 3.
5. Cyprus – Byzantine[91]	Un Known	Ayios Philon, the Ancient Carpasia – Church	
6. Greece – Roman[92]	Transparent	A massive public building with an apse	
7. Greece – Byzantine[93]	Transparent	Aliki – Church	

Fig. 11. Polycandelon with a hollow drip base.

Hanging lighting glass goblet – polycandalon with a hollow beaded base from Israel

As mentioned, the beginnings of the inclusion cups, which are characterized by a hollow beaded base, date from the Roman period and these are known from Israel from the Workshop in Jalame[94]. Goblet of this type continue to appear in the Israeli space even during the Byzantine period in the southern and eastern sites of the country as Ashkelon, in a complex of a tomb that dates to the Roman period and was converted into a garbage pit in the Byzantine period[95].

Another cup was found in the monastery complex in the church of Dominus Flabit in Jerusalem in the complex of a prayer hall[96], and in another church complex from Nessana, in the complex of the middle hall which was uncovered in a bud[97]. Gonlet of this type are not known from the sites of Jordan, Lebanon, Syria, Egypt, Tunisia, Greece, Cyprus, and Italy. From this typological group, from the Byzantine period, a single goblet (which has been published) is known from Turkey. The cup was discovered at the Limyra site, in a complex of a residential area located in the west part of the city inside one of the residential buildings[98]. It is possible that these were traded on maritime trade routes between Israel and Turkey: which may have enabled the direct trade from region to region – without unloading the goods from the cargo of the trading ship and bypassing the circulation of the vessel in the areas between the seas of Israel and Turkey or that the tradition of their production took root following this commercial process in Turkey as well.

Origin:	Glass tint:	The object:	Assemblage:
Israel 1. Jalame[99]	Greenish		glass workshop
2. Jalame[100]	Greenish blue		glass workshop
3.Ashkelon[101]	olive green		Painted Tomb
4.Jerusalem[102]	Un Known		Dominus Flavit monastery
5. Nessana[103]	Un Known		Church
Turky 6. Limyra[104]	Un Known		Residential building

Fig. 12. Hanging lighting glass goblet with a hollow beaded base from Israel and Turkey dating to Roman and Byzantine periods.

[87] GORIN-ROZEN 2001, 74, Fig. 3/90.
[88] STERNINI 2001, 42, Fig. 12/54.
[89] JENNINGS 1997, 147, Fig. 19/139.
[90] OTUKEN 1996, 88, Fig. 10/85.
[91] DU PLAT TAYLOR/MEGAW 1981.
[92] ROBINSON 1959, 183, Pl. 54.
[93] SODINI/KOLOKOTSAS 1984, 84, Fig. 11/11.
[94] DAVIDSON-WEINBERD 1988.
[95] KOGAN-ZAHAVI 1999.
[96] BAGATTI 1969.
[97] DUNSCOMBE-COLT 1962.
[98] BAYBO 2005.
[99] DAVIDSON-WEINBERD 1988, 35, Fig. 3–7/33
[100] DAVIDSON-WEINBERD 1988, 35, Fig. 3–7/33.
[101] KOGAN-ZAHAVI 1999; KATSNELSON 1999, 78, Fig. 5/79.
[102] BAGATTI/MILIK 1958, 26, Fig. 13/204.
[103] DUNSCOMBE-COLT 1962, 80, Pl. XX/54.
[104] BAYBO 2005, 232, Ciz. 24.

Polycandelon with an elongated and hollow base from Turkey, Israel, Lebanon, Syria, Jordan, Greece, Cyprus, Italy, and Tunis

The beginnings of this type, characterized by elongated and hollow bases from the Roman period from Israel. They are Known from tomb complexes[105] and in residential complexes[106]. Another goblet from this type dated to the roman period discovered in Jordan from Aman, in a temple complex[107]. Another goblet of this type, also dating to the Roman period, was discovered in France in the Upper Normandy area, in the complex of a tomb similarity to Israel[108]. The outline of the goblet's bowl from France is very similar to the structure of the glass bowls of the lightning goblet from Turkey, which are characterized by a pantry rim that creates prominent and rounded shoulders. From the late Roman period, early Byzantine, goblets from this type were discovered in Italy, in the complex of a temple, the Temple of the Great Mother (Templio Della Magna Mater), which was discovered at the Palatino site in Rome[109].

The glass lamps of this type were found in Turkey in three different sites. Three lamps were found at the Amorium site in two different complexes related to the world of religion and worship. One was found in a church complex, in the atrium space[110]. The other two were found in the complex of the city gate, in one of the gate rooms inside a niche decorated with the image of Mary mother of Jesus[111]. Five additional lamps were found at the Demre site in various spaces of the church that was exposed there, carved into a rocky hillside. Two lamps were found in the apse area near the church platform[112] together with additional clay oil lamps and no candlestick lamps. Three more goblet lamps from this church complex were found in the atrium, in one of its aisles, near a wall built of niches decorated with a magnificent wall painting[113].

Three additional lamps of this type from Turkey, were found at Limyra, in two different complexes, whose definition differs from that of the previous complexes at the Amorium and Demre sites (church complexes). One lamp was found in a bathhouse complex adjacent to the city wall, utilizing natural hot springs flowing at the site, in the hot room[114]. The lamp was found together with another oil lamp which had a dripping hollow base. Two additional lamps were found in a residential building complex which constitutes part of a residential quarter exposed at the site[115].

A similar bathhouse complex to the one found in Limyra is known from Israel at the Hamat Gader site[116], which also constitutes a bathhouse utilizing its hot springs flowing at the site. Regarding the glass lamp assemblage, it does indeed appear that the one found at Hamat Gader is far richer relative to the glass lamp assemblage found in Limyra, but they share a common denominator relating to the usage of lamp types found at both. As mentioned, at the bathhouse complex in Turkey two lamps of different types were found, one which this discussion focuses on, characterized by an elongated hollow base, and the second, an oil lamp which had a dripping hollow base. Reviewing the finds from Hamat Gader shows that both these types were found, oil lamps with elongated hollow bases and a single lamp as in Turkey which had a dripping base but sealed. The goblets from Hamat Gader were found together with various polycandelons and oil lamps with an end bead base, an oil lamp with a beads base, oil lamps with hollow conical bases. Glass lamps with three braided hanging handles and a lamp in which a wick tube. It may be assumed based on what emerges from these two assemblages that the use of oil lamps including those types, and combinations between them, with hollow elongated bases as well as those with dripping bases was common in bathhouse complexes.

The specialized functional use characterizing the picture of the finds as arises from reviewing the data from the various sites in Turkey, where these lamps were primarily found in church complexes and religious complexes, stands in contrast to the picture of the finds obtained from the various sites in Israel where these lamps were found, in diverse use in many complexes with different functional definitions such as many residential buildings, agricultural facility, tombs, public buildings like a governor's residence and a fortress, as well as church and monastery complexes as arises in Turkey, which constitute the majority of this find.

In Lebanon and Syria, a more similar find picture to Turkey is obtained, which may stem from the lack of additional excavation data, and the limited scope of the find. In Lebanon most of the find was uncovered, as in Turkey, in church complexes like in Nahr Ibrahim, in the atrium space[117], and at the Iqlim al-Kharub site, also found in the atrium, with mosaic pavement[118]. Additionally, lamp of this type was found, in a residential building complex which constitutes part of a residential district complex exposed on the market street in Beirut[119]. In Syria, the goblets were found in two types of complexes: one, as in Turkey and Lebanon, and as the most prevalent complex type in Israel, in church complexes, at the Raṣāfa site, in the northern apse area of the Holy Cross church[120], and at the Apamya site in the atrium space[121], and in another church complex in the atrium space as well, exposed at the Qal'at Sema'n[122]. Two additional lamps of this type were also found at the Ampaya site as part of the earthen rampart complex which surrounded the necropolis[123].

The lamps of this type from Jordan, dated to the Byzantine period, were found only in church building complexes. As mentioned, the earliest appearance of these lamps in Jordan is from the Roman period from the temple complex at Aman[124].

105 AVIGAD 1976; HIZMI 1997; SION 2000.
106 GORIN-RIZEN 1999.
107 HERR 1983.
108 SENNEQUIR 1994.
109 STERNINI 2001.
110 HERRISON/CHRISTIE 1993.
111 LIGHFOOT/MERGEN 1993.
112 OTUKEN 1998.
113 OTUKEN 1998; OTUKEN 2005.
114 GANZERT 1984.
115 BAYBO 2005.
116 HIRSCHFELD 1977
117 GATIER 2002; GATIER 2004; GATIER 2005.
118 EL TAYEB 2002.
119 JENNINDS 1997.
120 THILO 1986.
121 NAPOLEONE-LAMAIR/BATLY 1969.
122 DUSSART 2004.
123 NAPOLEONE-LAMAIR/BATLY 1969.
124 HERR 1983.

It is evident that the usage customs practiced with these vessels in cultic assemblages carry on along with the continued use of the vessel from period to period. The lamps were found in the church complex at the Lejjun fortress (see Lamp 1.192), inside a room that was used to store the church vestments[125] together with an ornate multi-nuzzled lamp. Additionally, many lamps of this type were found in the church building complex at Mt. Nebo, in the atrium space[126]. Also, lamps of this type were found in the church complex exposed at the Um Al-Rasas site in the St. Stephen complex in its various spaces such as in the apse area[127], and in a room used as the church storeroom, in the atrium space and in an additional side room (Room F) which was used as an anteroom[128]. An additional lamp was found in another church complex exposed at Uyun Musa in its atrium space[129]. The glass oil lamps in Jordan continue to appear in the transition between the Byzantine and Muslim periods and most usage of them continues in church complexes as in the previous period.

These hanging glass oil lamps, characterized by an elongated hollow base constitute the most prevalent type among the oil lamps in the various research areas represented within this research framework. Lamps of this type dated to the Byzantine period in Turkey have also been found in Greece, Cyprus, Italy and Tunis. From Greece, two lamps are known, which were found in a church complex constituting the most widespread functional characteristic of these lamps, exposed at the Aliki site in the atrium space[130] From this period in Italy, lamps were found at two different sites from two different complexes. One lamp (see Lamp 1.333) was found at the Farfa site in a monastery complex (the report does not specify in which area of the monastery the lamp was found)[131]. Another lamp was found in a fortress complex exposed at the Monta Baro site, north of Milan[132]. In Italy these lamps continue to exist into the transition to the Muslim period, in which up until now a single lamp was found in an atrium space church complex exposed in Sicily, dated to the 10th century CE[133].

From Cyprus, lamps of this type were found in four different sites, and two different complex types. Nine lamps were found in three different church complexes such as at the Ayios Philon site, old Karpasia, where lamps were found, buried inside a jug interred in the courtyard adjacent the church building[134]. Three additional lamps were found in the church complex exposed at the Maroni Petrera site in the narthex and atrium space (the report does not distinguish between lamps found in different areas of the structure). The church is dated to the 5th century CE[135]. Another church in which a pair of lamps was found at the Kalabasos site, dated to the late Byzantine period and early 7th century CE. The lamps were found in the atrium space[136]. The latest dating of oil lamps of this type in Cyprus is from the early 7th century CE, and their use does not continue into the period parallel to the Muslim period in Cyprus. A single lamp (see Lamp 6.251) was found at Amatonte, in a storeroom complex[137]. From the above it appears that in Cyprus as in most sites where lamps of this type were found in the various areas, they were found in church complexes, primarily in atrium spaces and the narthex courtyard.

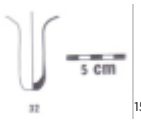
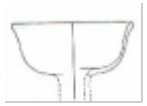
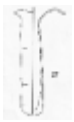
In Tunisia, polycandalons of a certain type have been discovered in two different complexes. One complex consisted of residential buildings and the other consisted of church buildings. The lamps found across these sites, which are part of this study, exhibit differences indicating usage customs as were accepted in the various sites.

In most of the research areas where polycandalons of this type were discovered, they were found primarily in church building complexes in their various spaces. In Tunisia, however, the find pattern is different from the other regions. Here, the finds are almost equally divided between residential complexes and church building complexes. One goblet discovered in Carthage's large residential neighborhood; in whose center a church was built[138]. Another pair of goblets dated to the late Byzantine period and early Muslim period was also found in a residential building complex located in the northern area of ancient Carthage's round harbor[139]. As part of these excavations, an additional goblet was found inside a storage building complex on the Port dock[140]. In addition to the polycandalons found in various residential buildings, three goblets were found in three different church building complexes exposed across three different sites. One goblet was discovered in a church building complex in Carthage, dated to the 5th century CE, inside the nave. Another goblet was found in another church building complex, also inside the nave, exposed at the Oued R'amel site. An additional, third goblet (see lamp 4.307) was likewise discovered inside a church building at the Sidi Jdidi site, dated like the Carthage church to the 5th century CE. It appears that in Tunis, use of these cups began in the middle Byzantine period, the 5th century CE, and their use continued until its end and into the early Muslim period[141].

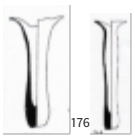
According to the distribution pattern characterizing the goblets with elongated, hollow bases, two centers of dissemination can be discerned. Based on their dating, it can be assumed that these constituted the origin source of the cups. One dissemination center constitutes the regions of Jordan and Israel, where the initial appearance of beaker cups of this type is dated to the Roman period. In Jordan, as mentioned, a cup was discovered in a temple complex exposed in Amman (Aman Airport)[142]. In Israel, goblets from this period were found in tomb complexes[143] and in a residential complex[144].

[125] PARKER 1987, 1985.
[126] SYLVESTER/SALLER 1991; CORBO 1970; TUSHINGHAN 1972.
[127] PICCIRILLO 1987.
[128] ALLIATA 1991.
[129] ALLIATA 1990.
[130] SODINIAD-KOLOKOTSAS 1984.
[131] NEWBEY 1991.
[132] UBOLDI/VERITA 2003.
[133] GASPARETTTO 1979.
[134] DU PLAT TAYLOR/MEGAW 1981.
[135] MANNING 2002.
[136] RAUTMAN 2003.
[137] AUPERT 1978.
[138] VON DEN DRIESCH 1999.
[139] HURST 1994.
[140] STERNINI 1999.
[141] FOY 2003.
[142] HERR 1983.
[143] AVIGAD1976; HIZMI 1997; SION 2000.
[144] GORIN-RROZEN 1999.

Fig. 13. Polycandelon with an elongated and hollow base from Turkey, Israel, Lebanon, Syria, Jordan, Greece, Cyprus, Italy, and Tunis.

Isael – Roma Period:	 145	residential complexes:	 146		 147	 148	Tombs:
Jordan – Roman period:		 149	Tomb:	3**. Franc** – Roman Period:		 150	temple complex:
Italy – late Roman period, early Byzantine						 151	Temple: Tempio della Magna Mater:
Turky – Byzantine Period			 152		The city gate, one of the gate rooms inside a niche:	 153	Amorium: Church:
				 154		 155	Demre: Church:
			 156	residential complexes:	 157		Limyra: bathing place
Israel – Byzantine Period			 158				Hamat Gader: bathing place:
Lebanon: Byzantine Period			 159	Beirut: residential complexes:	 160	 161	Nahr Ibrahim in the Yanouh Valley: Church:
Syria: Byzantine Period			 162	Apamee: An earthen embankment surrounding the necropolis of the city:		 163	Rasafa: Church:

145 GORIN-ROZEN 1999, 138, Fig. 138/1.
146 HIZMI 1997, 128, Fig.127/6.
147 AVIGAD 1955, 2017, Pl. 3.
148 GORIN-ROZEN 2000, 66, Fig. 66/8.
149 SENNEQUIER 1994.
150 HERR 1983, 48, Fig. 22/5, 53.
151 STTERNINI 2001, 47, Fig. 3/23.
152 LIGHTFOOT/MERGEN 2001.
153 HARRISON/CHRISTIE 1993, 158, Fig. 4/161.
154 OTUKEN 2005, 291, Res. 7/283, Res. 12/285.
155 OTUKEN 1998, 493, Res. 1, c2/496.
156 GANZERT 1984, 25, Abb. 32/62.
157 BAYBO 2005, 235, Res. 56/236.
158 HIRSCHFELD 1977, 126, Fig. 1/1.
159 JENNINGS 1997, 133, Fig.19/139.
160 EL-TAYEB 2002, 74, Fig. 5/13.
161 GATIER 2002, 245, Fig. 11/219; 2004; Pl. 22; 2005; Pl. 5/173.
162 NAPOLEONE–LEMAIR/BALYY 1969, 91, Fig. 20/79.
163 THILO 1986, 63, Tafel. 72/1977, 18, 6.

Jordan: Byzantine Period			 164	Qal'at Sem'an: Church:		 165	Apamee: Church:
						 166	Lejjun: fortress:
				 167	 168	 169	Dibon – Moab: Church:
		 170	 171			 172	Um El Rasas: Church:
						 173	Uyun Musa: Church:
Greece: Byzantine Period		Monte Barro: fortress:		Farfa: monastery:	**Italy:** Byzantine Period		Aliki: Church:
Cyprus: Byzantine Period	(Uboldi, & Verita, 2003; Fig.1/118) Amatonte: Storage:  177	 174 	Newby, 1991; 33/32) Kalavasos: Church:	  175	Maroni Petrera: Church:	(Sodini & Kolokotsas, 1984; Fig. 11/11)  176	Ayios Philon, the Ancient Carpasia: Church:
Tunis: Byzantine Period	 Karthago: Warehouse dock in the port:[178]		Karthago: Church:[179]		Karthago: The Round Harbor – Late Byzantine Period:[180]		Karthago: The residential district:[181]

[164] DUSSART 2004, 59, Fig. 1–2/68.
[165] NAPOLEONE–LEMAIR/BALYY 1969, 90, Fig. 19/14/2.
[166] PARKER 1987, 114, Fig. 72–75/653.
[167] SYLVESTER/ALLER 1941, 143, Pl. 39/2.
[168] CORBO 1970, 156, Fig. 8/286.
[169] TUSHINGHAM 1972, 17, Fig. 13/20.
[170] PICCIRILLO 1992, 72, Fig. 2/1.
[171] ALLIATA 1991; ALLIATA 1992, 19, Fig. 1/200, Fig. 2/201.
[172] PICCIRILLO 1987, 96, Fig. 7/228.
[173] ALLIATA 1990, 270, Foto. 3/3.
[174] RAUTMAN 2003, 28, Fig. 6.7/232.
[175] MANNING 2002, 75, Fig. 1/1.
[176] DU PLAT-TAYLOR/MEGAW 1981, 23, Fig. A/211.
[177] AUPERT 1978, 964, Fig. 22/953.
[178] STERNINI 1999, 77, Fig. 5/94.
[179] FOY 2003, Fig. 1/79.
[180] HURST 1994, Fig. 2.6/24.
[181] VON DEN DRIESCH 1999, Abb. 530.

		Sidi Jdidi: church:[182]		Uued Ra'mel: Church:[183]			

The other dissemination center, also dated to the Roman period, constitutes the Upper Normandy region of France, where goblets of this kind were discovered in tomb complexes[184]. The cups were likely disseminated from France to Italy, where the earliest among them are dated to the late Roman period and early Byzantine period. From Italy, the goblets were probably disseminated from the middle Byzantine period (5th century CE based on the Carthage and Sidi Jdidi church complexes[185] to Tunisia via known maritime trade routes, as evidenced by the shipwrecks discovered connecting the two landmasses of Africa (Tunis) and Europe (Italy). An additional supporting assumption for the described dissemination circuits is the absence of the cups in Egypt, which constitutes a linking chain between the regions of Tunis and Israel as an initial distribution center.

An additional primary distribution center where the cups are dated to the Roman period, constituting the earliest dating as in France, is the region of Israel and Jordan, in a temple complex (Jordan), tomb complexes and a residential building (Israel), from where the cups were disseminated over the Byzantine period to Syria, Lebanon, Turkey and Greece. In Jordan, a distinct and prominent functional specialization can be discerned in these goblets during the Byzantine period, manifesting in their discovery exclusively in church complexes. In contrast, in Israel, despite the extensive use of these cups in similar complexes of churches and monasteries, they were also found across a broad variety of other complexes including residential buildings, industrial and agricultural facilities, public administrative buildings and entertainment facilities, as well as synagogues and ritual baths.

In Syria, where beaker cups of this kind were discovered in church and tomb complexes, and in Lebanon during the same period, where they were found in church and residential complexes – secondary areas of dissemination to which the goblets had spread – the influence of the distribution centers can be discerned in the manner of their use. Jordan, as an ideological distribution center whose influence was primarily visible in Syrian sites, according to the specialized, ritualistic manners of use discernible there, manifesting in their discovery exclusively in ritual and burial complexes; and the diverse manners of use as reflected in sites in Israel, and their partial influence on usage customs as evident from sites in Lebanon, church, and residential buildings. This presents a model of parallel axial distribution, whereby two primary distribution centers (Israel and Jordan) each independently influence parallel adjacent spheres (Lebanon and Syria) in which the manner of use is determined by the zone of influence. Regarding the find from Greece, whereas mentioned a pair of goblets of this kind was discovered in a church complex at the Aliki site, dated to the Byzantine period[186], their origin or influence may have come from Turkey, where they are dated to the Byzantine period, or perhaps their origin is from Italy whereas mentioned they are dated to the late Roman period.

[182] FOY 2003, 82, Fig. 78/79.
[183] FOY 2003, 48, Fig. 1/60.
[184] SENNEQUIR 1994.
[185] FOY 2003.
[186] SOODINI/KOLOKOTSAS 1984.

SUMMARY

The central importance of this synthesis is that it presents for the first time a process that traces a vessel made of glass with a functional definition – as an illuminated vessel from Israel and follows its chronological course dating back to the Roman period and its spatial distribution within Israel and abroad until the Byzantine period. It turned out that the northern region of Israel, where a large-scale workshop was discovered, served as the center of distribution – the export, the earliest of which dates to the Roman period, and from which the distribution of the tested vessel spread to other regions. It is evident that the main ways of its distribution were through maritime transport routes, when it can be assumed that the port of the ancient city of Acre served as the source of distribution. It also emerged that the practices of use sometimes change from place to place, but it is evident that to the distribution of the tool was also added its conceptual – useful distribution that went hand in hand with the process of trading the tool and in many cases a similar functional designation is also obtained. This picture is sometimes reflected in the chronological sequence of a defined period and sometimes in the transition between the periods as part of models of processes of distribution and acceptance of a tool as part of its adoption by those who chose to use it. Another interesting figure obtained from the analysis of the assemblages' points to a relatively slow process of accepting the use of goblets made of glass and especially lighting goblets, both due to the fragility of the vessel, perhaps its cost and a long tradition of using candle made of pottery. Another aspect that came up is the directions of the tool's spread and their intensity changes in relation to the center of spread – towards the north and south. The main distribution from Israel is towards the north and it is evident that in some cases the distribution is partly eastward – to Jordan and from there northward.

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