

The Chalcis Treasure: A 14th-15th Century Hoard from Euboea, Greece – First Thoughts and Preliminary Results

The Chalcis Treasure consists of high status objects that were buried for safe-keeping in the port of Negroponte (as was Chalcis known then) in Euboea, Greece, on the eve of the Ottoman conquest of the city in 1470. Today, the hoard consists of some 630 objects and includes gold and silver-gilt pieces of jewellery, dress accessories and tableware, reflecting the rich material culture of the Aegean during the Late Byzantine period. The objects date to the 14th and 15th centuries while the event of the conquest offers a *terminus ante quem*.

In the 1870s, the treasure was recovered and came into the hands of a Greek dealer, Paul Lampros¹. Lampros assigned original ownership of the treasure to a Venetian prince from Negroponte, who buried it, but did not live to reclaim it. Following its recovery, the hoard was split up and sold off to various collectors. A small part consisting of rings, primarily, was acquired by the collector Charles Drury Fortnum, who later bequeathed it to the Ashmolean Museum in Oxford². Meanwhile, the remaining objects were bought by Augustus Woolaston Franks, curator and benefactor of the British Museum³. The hoard still remains divided between the Ashmolean and British Museums.

A 1911 article by Ormonde Dalton⁴ was for many years the only source of information about the Chalcis Treasure and this present ongoing study represents the first comprehensive evaluation of the assemblage⁵. The investigation focuses on

different aspects, including the artefacts themselves, their mode of production and use, as well as the socio-economic context of their owners and their collectors. Surface chemical characterization of a selected sample of some 200 objects was conducted with a handheld x-ray fluorescence (XRF) spectrometer (InnovX/Olympus Delta Premium)⁶. Non-invasive surface analyses aimed at complementing the assemblage's macroscopic investigation and classification, and contributing to its contextual interpretation were also conducted. Analytical examination may throw light on the precious alloy recipes⁷ used during the 14th and 15th centuries in Eastern Mediterranean workshops, as well as on gilding and manufacturing techniques. Finally, the results of the surface analyses were used to examine whether isolated pieces having some typological affinities could have originally belonged to a single artefact, as, for example, in the case of belt buckles, strap-ends and mounts coming from the same belt or for groups of buttons to have possibly adorned a single garment.

Late Medieval Aegean – Archipelagus Turbatus

For Euboea and its capital Chalcis, the Late Byzantine period was a time when insecurity and war co-existed with trade, riches and cultural exchange⁸. The island was initially part

1 McLeod, Finger-Rings 233. The relevant information comes from the correspondence of C. D. Fortnum in the archive of the Ashmolean Museum, Oxford.

2 For more information on Fortnum, see Thomas/Wilson, Fortnum.

3 For more information on Franks, see Caygill/Cherry, A. W. Franks.

4 Dalton, Ornaments.

5 Nikos Kontogiannis conducted the art-historical and comparative study of the material, while Vana Orfanou carried out the scientific analysis of the artefacts.

6 Surface analysis was conducted on 22 and 174 artefacts from the Ashmolean and the British Museums respectively. Several spot analyses of 2-3 mm each have been obtained per object, of which mean values have been used. Where traces of gilding were present, both gilt and non-gilt areas were examined where possible. Interpretation of results took into consideration the potential effects on the surface analyses of mercury gilding. Discussion of metals and alloy types is based solely on analysed areas free of gilding traces. During analysis, two sets of certified reference materials (CRMs) were used; a set of three pressed pellets (registered no. 10156, 3.2 cm diameter, MAC Micro-Analysis Consultants Ltd) prepared for XRF analysis for the gold-based alloys, and a set of three discs (AGA1-3, 2.5 cm diameter, MBH Analytical Ltd) for the silver-based alloys. CRM analysis suggested minimum detection limits for the gold, zinc, lead, tin and antimony at around 0.2%, while results are more accurate for tin at 0.5% and for bismuth, iron and cobalt at 0.04-0.05%. No silver values below 4.5% were present in the CRMs in order to test the minimum detection limit for this element. For the major elements, i.e., gold, silver, copper and tin, analytical errors were

found at around 0.05% (0.4-2.5% of the measured values), while for the trace elements at 0.02% (1.0-15.0% of the measured values). Analytical errors for the low-end values for cobalt and bismuth (0.05%) were found rather high, often at 100% of the measured value, and have thus been treated with caution. Overall, analysis of the CRMs suggested the rather good accuracy and precision of the data produced with the handheld XRF instrument.

7 The limitations resulting from the surface examination of silver-gold alloys with handheld XRF equipment were acknowledged and addressed during the interpretation of the results. Previous studies have already proven that gold- and silver-containing alloys may present significant discrepancies between the surface and the core of the objects (Beck et al., Silver Surface – Blakelock, Surface Analysis). An additional limitation could prove the nature of the material itself as jewellery pieces often lack flat surfaces, a fact that could further complicate their surface analyses (Karydas et al., Jewellery Collection 20). Thus, the discussion of the results below is a cautious one and always takes into consideration the aforementioned. Consequently, the types of alloys and metals are discussed rather as qualitative information, in a way to show the differences between the various types of metals/alloys used (e.g. see also Pitarch/Queralt, Coins, on the discussion of ancient silver surface analyses). For example, it is safe to make a distinction between silver or gold with traces of copper on the one hand, and gold-silver alloys on the other.

8 Kontogiannis, Material Culture with previous bibliography.



Fig. 1 Finger rings. Ashmolean Museum Oxford: **a** Ornamental rings, inv. nos from left to right: WA1897.CDEF.F386, WA1897.CDEF.F389, WA1897.CDEF.F379. – **b** personal ring, inv. no. WA1897.CDEF.F393. – **c** ring attributed to Constantinople, inv. no. WA1897.CDEF.F396. – (© Ashmolean Museum, University of Oxford).

of the Latin Kingdom of Thessalonica, with a peculiar feudal system of three lordships, known as »triarchs«, and later became a Venetian colony until the Ottoman conquest of 1470.

During this period, Chalcis was the port of call for all seaborne travelling and trade between Italy and the Black Sea, as reflected in the well-documented diverse and mobile local population of merchants, sailors and craftsmen, whether Greeks, Westerners or Jews⁹. Venetians had set in place an efficient administration, which relied on governors, magistrates, notaries, naval and army officers. Alongside them stood the community council, a collective body formed by senior and prominent locals with considerable authority and autonomy from the appointed officials¹⁰. The feudal lords of the island resided in its capital, along with many noble Frankish families of the Aegean, thus following a pattern common in all Latin controlled territories of the Eastern Mediterranean. The city also became the seat of the titular Latin Patriarch of Constantinople, although many bearers of the title such as Bessarion or Isidore of Kiev administered their bishopric duties through representatives.

Artefact Groups in the Treasure

Personal Jewellery

The objects from the hoard that have traditionally attracted most attention are the rings, of which the Chalcis group comprises 25 (fig. 1). They are grouped under several headings, although we cannot positively conclude whether they were all products of specific workshops, or a random collection

of contemporary artefacts representing various production centres.

The first group, the Venetian group according to Dalton's terminology¹¹, comprises twelve ornamental rings (fig. 1a). They have various hoop forms and are always highly adorned with engraved motifs or inscriptions, enhanced by niello or enamel. Three of them have dragon-headed endings, which is a distinct feature with many similar examples in other museum collections. The bezel is decorated with cabochon stones held by claws or pearls on pins.

A second group includes the personal rings, namely those specifically made for a certain individual whose mark they bear (fig. 1b). The lion rampant and the double-headed eagle are among the most distinctive Medieval symbols, which also comprise the starting point for a long-standing scholarship. Another point of interest is the presence of two almost identical rings both with almond-shaped bosses on the shoulders and an octagonal bezel bearing a lion rampant, each though made of different metals, i. e., gold and copper. The latter could hint to a specific circumstance as, for example, the use of the lesser, namely the copper, ring by a messenger in order to prove the identity of the sender, etc.

Two other rings have been attributed by Jeffrey Spier to a 14th-century Palaiologan imperial workshop operating in Constantinople (fig. 1c)¹². They both bear the same inscribed epigram by the renowned early 14th-century Greek poet Manuel Philes. In the collection of Philes' poems, this epigram is specifically entitled as destined for a ring and serves as a *memento mori*. The fact that the Chalcis treasure contains a pair of rings bearing an identical epigram presents an interesting case and opens an array of questions regarding their commission and ownership.

⁹ For the population of Negroponte, see Jacoby, *Euboea – Borsari, Euboea*.

¹⁰ Papadia-Lala, *Thesmos*, esp. 41-42. 195-200.

¹¹ Dalton used terms such as »products of a colonial art« concluding that the hoard should be regarded as Veneto-Byzantine in character, and »the emphasis

should certainly be placed on the first rather than the second word« (Dalton, *Ornaments* 402).

¹² Spier, *Rings* 35-36 nos 13. 19.

A fourth group includes simple rings decorated with a single cabochon stone, or a pearl set on elaborate bezels¹³. The calyx form of two bezels finds parallels in contemporary Europe, but also in much earlier jewellery production.

Finally, a fifth group encompasses rings, which for the moment seem unique, such as an Islamic product of Mamluk workshops as identified by Beth McLeod¹⁴, or two items, which were thought to be representative of chivalric culture imitating a knight's belt and his spurs¹⁵.

Analysis of the rings¹⁶ showed the use of gold-silver alloys in a variety of ratios, while only a single ring is made of silver. Interestingly, the above outlined typological groups do not directly correspond to specific metals or alloys used. Silver was found from 3 % to 45 %¹⁷ and gold from 30 % to 95 %, and gold to silver ratios between 1 and 30. Copper is typically up to 10 %, while four rings contained up to 17 % copper. Two alloy recipes could be distinguished: one (five rings) with both low silver and copper contents (gold 84-85 %, silver 3-12 %, copper 1-5 %); and a second (14 rings) with variable but typically higher silver and copper contents (gold 30-75 %, silver 17-45 %, copper 7-17 %). The single ring made from silver had a content of 88 % silver with 8 % copper and only traces of gold (<1 %). Gold to silver ratios for the first group is typically high, between 7 and 30 due to the low silver content, while for the second one is much lower, namely between 1 and 4. The silver to copper ratios for both groups are found at comparable levels with mean values of 3.

Three pairs and a single earring form part of the jewellery group in the treasure. Two of these pairs belong to a typical Byzantine style¹⁸. Although their size and circular layout point to the popular lunate-type of Middle and Late Byzantium, as well as to that known as »garlic clove« or kidney-shaped Late Byzantine earrings, their exact form is not so common among the surviving pieces.

The remaining earrings (a pair, **fig. 2**, and a single piece) belong to »the articulated type«, consisting of two or three interlocking components. According to Dalton, these pieces were rather Late Antique and an intrusion into the hoard, or – less probably – late Medieval revivals of ancient forms¹⁹. However, at the present state of research, the articulated type may find contemporary 14th-15th century parallels, although admittedly none of those is identical to the Chalcis pieces.

Dress Accessories

Belts and dress accessories comprise a large part of the hoard. Studies on Medieval fashion have relied principally on written

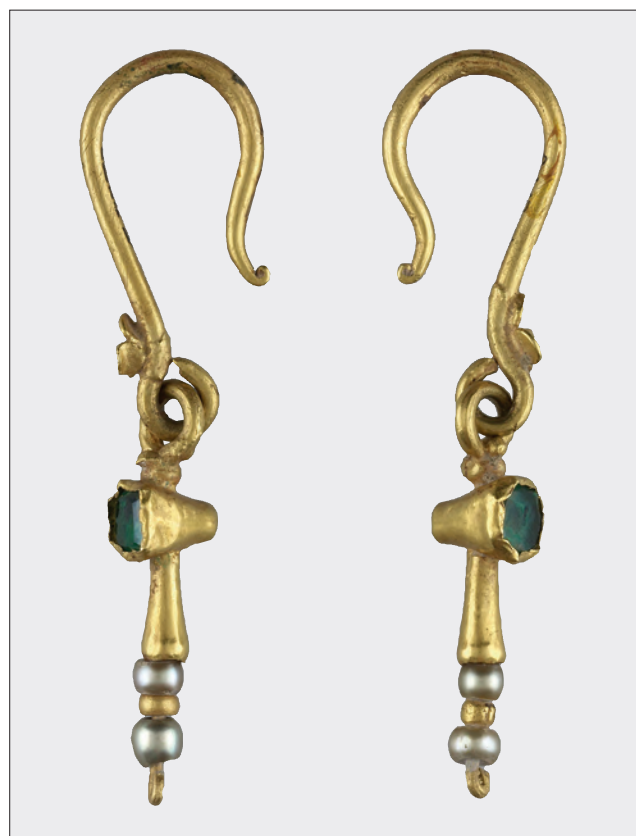


Fig. 2 Earrings of the articulated type. British Museum London, inv. no. AF.2779. – (© The Trustees of the British Museum).

and visual records, as well as on a few recovered objects, which further highlights the importance of the present study and the interdisciplinary investigation of the Chalcis Treasure. From the belts of the treasure, only the metal parts survive, which are almost exclusively made of gilt silver. On their reverse sides, many of them preserve silver threads that would have decorated the braiding. These were probably tablet woven and had simple V-shaped designs, which also appear on a number of contemporary Medieval belts.

The metal parts can be grouped as buckles, strap ends, strap-slides and mounts in various forms and decoration techniques. Regarding the strap ends and buckle parts, many of the decorative motifs belong to a late Gothic repertory with trefoil arches and rosettes (**fig. 3a-b**); a semi-nude female and a helmeted head (**fig. 3a, upper centre**), both in low relief, seem very different and Renaissance in style. An array of figures, human, animal and animals with human heads is engraved in profile on metal sheets with their backgrounds enlivened with translucent enamel.

13 British Museum, nos AF.1861, AF.1862, AF.1863, see collection online for all mentioned pieces (https://www.britishmuseum.org/research/collection_online/search.aspx [02.12.2018]).

14 McLeod, *Finger-Rings* 233-235.

15 Respectively: British Museum: no. AF.1860, Ashmolean Museum: nos WA1899, CDEF.F385 and WA1899.CDEF.F390.

16 A total of 25 rings have been analysed, namely all rings found in the British and Ashmolean Museums collections.

17 As mentioned above (footnote 6), all wt % values are provided for general guidance and to be treated as fully quantitative data.

18 British Museum, nos AF.2775, AF.2776, AF.2777, and AF.2778. See also contribution by A. Antonaras in this volume.

19 Dalton, *Ornaments* 396.



Fig. 3 Dress accessories: **a** buckles, strap end and cloak clasps (centre piece), inv. nos. AF.2810, AF.2811, AF.2809, AF.2808, AF.2807 (clockwise from left), AF.2818, AF.2819 (center). – **b** strap ends, metal parts and buckle (centre piece), inv. nos AF.2815, AF.2814, AF.2817, AF.2816, (upper row, from left), AF.2821, AF.2822, AF.2813.a, AF.2813, AF.2812 (bottom row, from left), AF.2810 (centre piece). – (© The Trustees of the British Museum).

Fig. 4 Buttons. British Museum London: **a** made from filigree, inv. no. AF.2831. – **b** made from blanc spheres with added filigree, inv. no. AF.2829. – (© The Trustees of the British Museum).



The mounts that adorned the body of the belts come in sets of identical pieces, each including between 3 and 42 items. The simpler ones are star-shaped, X-form or in double-crescent²⁰. More elaborate pieces bear inlaid plaques decorated with opaque, filigree or translucent enamel. They are often decorated with either floral patterns or coat-of-arms identifying the owner of the belt²¹. A number of plaques preserve parts of inscriptions in Latin and Hebrew, complementing a group of fittings in the form of letters²².

All belt parts analysed (84 objects), including buckles, strap ends/slides, and mounts consisted of silver, typically with up to 10% copper and 2% gold²³, while they all bear traces of gilding, giving a bright yellow finish. The above general pattern suggests the existence of a common underlying metallurgical practice for the belt pieces regardless of whether produced in a single workshop or several. Finally, it was possible to match certain strap ends/slides to two buckles on the basis of their semi-quantitative surface analyses.

20 For ex. British Museum, nos AF.2796, AF.2786, AF.2787, AF.2844, AF.2795 etc.
21 British Museum, nos AF.2798, AF.2802, AF.2803.

22 British Museum, nos AF.2805, AF.2806, AF.2842, AF.2843, AF.2790.
23 As suggested by analysis on non-gilt metal areas.

The c. 340 buttons of the Chalcis Treasure have received almost no attention from past scholarship (fig. 4). They are presently grouped in the British Museum collection on the basis of their style in sets containing from 10 to 60 buttons each. In the vast majority, they are spherical or hemispherical, while the same types often come in various sizes. Based on their manufacturing techniques, we can discern various categories as described in detail below.

The openwork filigree buttons are hollow and spherical, the body was carefully constructed with filigree or simple wire starting from the two ends and working towards the mid-section (fig. 4a). The hoop, made of beaded wire, was either soldered to the upper body or pierced through the body ending with a pearl. The traces of cloth visible in the interior of a broken piece suggest that the filigree was possibly constructed around a core of cloth. This core may have served both as a structural element (in order for the filigree wires to acquire the desired shape), and as a decorative one (being visible through the openwork filigree offering a colourful visual effect).

The largest category of buttons was made using blank half-spheres. These hollow hemispheres were either directly soldered together to produce a spherical button, such as in a group of rattle bells (fig. 4b), or soldered with a flat underside resulting in a hemispherical shape²⁴. Their surfaces were either left plain, or decorated with filigree wire and then drilled to produce an openwork effect²⁵. In the latter case, the result is seemingly similar to the filigree buttons, only using a completely different and less elaborate technique.

Filigree buttons, which are both fewer and more refined, could be imports at Chalcis, while the blank sphere buttons would be products of (a) local or regional workshop(s) trying to imitate the former. The local character of the blank sphere buttons is further supported by the fact that the majority of extant Byzantine buttons belongs to that type²⁶. Similarly manufactured spherical or bi-convex beads, often with added filigree, were widely used in Balkan jewellery (earrings and pendants), particularly during the Middle and Late Byzantine period²⁷.

A local/Byzantine workshop origin for the blank half-sphere buttons may be further supported by the presence of half-finished pieces among the Chalcis hoard on which, after

the filigree was added on the blank sphere base, only a few holes were drilled. Regardless of whether the blank sphere buttons were imitations of the filigree ones or not, they provide evidence for the goldsmiths' attempts to produce the filigree effect via a less time-consuming and more cost-effective method, as a way to respond to the local demand for these high-status dress accessories.

Analyses of gilt-free areas of these two button groups (blank sphere and filigree) pointed to the use of high-grade silver with a mean value of 95% silver for the former, while the filigree ones had silver of variable but typically higher copper content up to 22% copper, compared to the blank spheres. This could indicate distinct technological traditions for the respective typological groups of buttons, supporting further their production by different (groups of) goldsmiths.

A distinct group of buttons is made of simple wire²⁸. These buttons give the impression of openwork globes and originally had a fabric core enclosed by metal wire. Parts of the fabric are preserved on the interior surface of this type of button. In addition, imprints of the fabric detected microscopically on the inner surfaces of these wire rings suggest that the metal was not in a complete solid state when it came into contact with the fabric.

A fourth category includes the less elaborate solid globular buttons, represented in the hoard by a small group of four²⁹. Even though few surviving objects of this type are known in the archaeological record, a matching mould recovered at Mystras in the Peloponnese, most likely destined for similar objects, suggests the origin for these buttons within the provinces of Byzantium³⁰.

Lastly, among the Chalcis hoard, a single ring button belongs to a jewellery type of large circular buttons and brooches that was often depicted in murals and paintings³¹. This artefact stands out, both for its high quality craftsmanship (filigree and beaded wire on a flat disc), the precious stones (pearls, garnet), and for its gold-silver alloy as opposed to gilt silver.

Another group of dress ornaments is related to the use of cloaks. A pair of richly decorated plaques (fig. 3a, centre) with the openwork lion of St Marc, can be interpreted as fasteners with a preserved – yet currently dissociated – silver chain in between³². Among the dress accessories, two sets of

24 Such as British Museum nos AF.2825, AF.2827, AF.2836, AF.2839.

25 British Museum nos AF.2845, AF.2838, AF.2834.

26 See for e.g. finds from Mystras (Cat. Mystras 2001, 156-157 nos 8-9 [P. Kalamara]). – Hagios Achilleios, Florina (Moutsopoulos, Prespa I, 176 pl. 52.3. – Moutsopoulos, Prespa II, 159 no. A52, pl. 31.1. – Moutsopoulos, Prespa II, 170-171 nos A56. A59 pl. 30.2; 31.2. – Moutsopoulos, Prespa II, 199-201, 215-223. – Cat. Thessaloniki 2002, 397 no. 491 [M. Paisidou]). – Golem Grad, Prespa (Bitrakova-Grazdanova, Golem Grad 111-112 fig. 9, grave 84). – Redina Castle (Moutsopoulos, Rentina 216-217. 219. 221-222. 296-297). – See also contributions by A. Antonaras and A. Steinert in this volume.

27 See, e.g., objects from the Preslav Treasure (10th c., Cat. New York 1997, 334-335 no. 228 [J. D. Alchermes]). – Bosselmann-Ruickbie, Byzantinischer Schmuck 25-26. 28-29 fig. 3; 244-248 no. 63-64) – the Crete Treasure of the Stathatos Collection (10th c., Bosselmann-Ruickbie, Byzantinischer Schmuck 41-44. 248-253 nos 65-68). – the Archaeological Museum of Zagreb, Croatia (10th-15th c.,

Cat. Zagreb 2014, 69-70 no. 20. – Cat. Zagreb 2014, 86-87 no. 27.1. – Cat. Zagreb 2014, 87-88 no. 27.2). – Corinth (9th-12th c., Bosselmann-Ruickbie, Byzantinischer Schmuck 224-243 nos 18. 23-24. 27-28. 30. 36. 61). – Hagios Achilleios, Florina (12th c., Bosselmann-Ruickbie, Byzantinischer Schmuck 225 no. 20). – Agrinio, Magnesia and Elassona (11th-14th c., Cat. Thessaloniki 2002, 434-435. 561-562 nos 562-566. 778-779 [F. Kefalonitou / A. Dina / S. Kougioumtzoglou]). – Golem Grad, Prespa (10th-11th c., Bitrakova-Grazdanova, Golem Grad 106-107 fig. 5).

28 British Museum no. AF.2835.

29 British Museum no. OA. 10826.

30 Cat. Mystras 2001, 158-159 no. 11 (P. Kalamara). See also the essay of Antje Steinert in this volume.

31 Ashmolean Museum no. WA1899.CDEFF103

32 Lightbown, Jewellery 302 fig. 161. For the chain see British Museum no. AF.2824.



Fig. 5 Silver plate with maker's mark. British Museum London, inv. no. 1887,0211.1. – (© The Trustees of the British Museum).

small bells, very much in fashion in late 14th century Europe, could have been either part of belts and sashes, or simply stitched on the garment³³. Meanwhile, the same stands true for a large filigree disc with a central medallion depicting a bird³⁴.

Tableware

Last but not least, one of the most valuable objects regarding the historic information, is a deep silver plate consisting of a rather pure silver with only 2 % copper, and traces of gold (0.03 %) and lead (0.07 %), undoubtedly part of high-quality domestic silverware (fig. 5). Thanks to its stamps, we know that it was produced in Naples in the early 1400s and surely before 1420³⁵. An engraved coat-of-arms was added at a later stage as the plate's owners changed. The plate's long period of use is also attested by a soldered repair. This is undoubtedly one of the key dating objects for the whole of the hoard. Similar plates formed part of every wealthy household during the late Middle Ages³⁶.

Precious Metals in Fashion: Remarks on Alloys and Techniques

The hoard comprises both gold and silver metal objects, while gold- and silver-based alloys have also been used. Copper-based objects are absent, as copper was only used to dilute the precious metals and alloys. Based on analysis of gilt-free areas of 37 artefacts, four compositional groups were identified. These groups can be described as:

- a) silver metal (16 objects) with minor concentrations of copper and gold with maximum values of 5 % and 2 % respectively, and with traces of lead and tin;
- b) silver with copper (3 objects) in which copper was found between 8 % and 22 % and lead up to 1 % while gold levels are comparable to those for the silver metal, namely up to 2 % gold;
- c) gold metal (3 objects) with up to 4 % silver and 2 % copper with only traces of lead detected;
- d) gold-silver alloys (15 objects) with a variety of gold-silver ratios and with silver between 7 % and 45 %, and gold between 30 % and 89 %, often containing copper between

33 Piponnier/Mane, Dress 68. British Museum nos AF.2784 and AF.2785.

34 British Museum no. AF.2823.

35 Catello/Catello, Napoli 37 pl. 9.

36 Such items were usually recorded in wills and inventories, with isolated objects usually surviving as part of recovered hoards (see below).

3 % and 17 %, and with traces and up to 3 % of tin, zinc and arsenic detected. As mentioned above, this classification is based on surface results, while the metal core of the objects remain to be determined by future research.

Lead was rarely present in levels to suggest its deliberate addition. Only 13 objects, all gilt, were found with more than 5 % lead, while just three objects (two rings and a button) were found with lead above 10 %. Nonetheless, the presence of niello on the surfaces of all these three high-lead objects could account for the lead content detected during surface analyses, which should not be considered at the moment as an alloying element. Tin and zinc were typically found at low impurity levels in both metals and alloys.

Silver and silver with copper additions were largely used for the manufacturing of dress ornaments, including the mounts, fittings, belt parts and buttons. As already noted, only a signet ring was made of a silver, with 8 % copper and traces of gold (<1 %). In contrast, gold metal and gold-silver alloys were used for the manufacturing of all jewellery pieces including rings and earrings. The ring button mentioned above comprises the single exception as it consists of a gold-silver alloy with 67 % gold, 25 % silver and 9 % copper. This compositional difference is better understood when considering its high-quality craftsmanship and its stylistic differences with the rest of the buttons.

Mercury Gilding

The vast majority of the artefacts were gilt, with 176 objects providing evidence for surface treatment, namely mercury gilding³⁷. Gilt objects mostly consist of silver or silver with copper, whereas few objects of gold-silver alloys were found gilt, too³⁸.

Gilt objects were often identified with the naked eye due to the characteristic bright yellow colour of their surfaces. However, this gilding layer was often eroded by long-term use and the analyses of a small number of objects that did not seem to be gilt initially showed traces of mercury suggesting the original presence of the surface treatment. Finally, mercury gilding was used not only to imitate gold metal, but also as a decoration technique. For example, both gilt and non-gilt silver had been combined in the strap-sides and ends in order to visually enhance the belt by the interplay between white-silver and yellow-gilt areas, perhaps following contemporary aesthetics.

37 The origins of the use of mercury gilding or fire gilding is still somewhat unclear, but it became widespread in the Mediterranean during the late Roman times and still widely practiced during the Medieval period until it was abandoned due to mercury poisoning (Lins/Oddy, Mercury Gilding – Oddy, Gilding – Martínón-Torres/Ladra, Mercury Gilding). Different methods of mercury gilding have been identified, however, for the objects in the Chalcis Treasure the one that should be considered is one in which a gold-mercury amalgam is applied to heat-treated silver (or copper) objects followed by a second stage of heating in order to bond the gold with the base metal and to evaporate the mercury (Lins/Oddy, Mercury Gilding 370).

Cuttlefish Casting

Observation of the casting techniques employed in the manufacturing of the Chalcis hoard objects offered an insight into the craftsmanship of Medieval goldsmiths. Noteworthy is the evidence for cuttlefish casting as seen amongst reverse faces of the mounts and cloak fasteners where the characteristic traces of cuttlefish bone were visible. Casting pieces of jewellery in moulds carved out of cuttlefish bone was a practice used by metalworkers and goldsmiths throughout Antiquity and one that is still in use today³⁹.

As a relatively fast and inexpensive technique, cuttlefish casting was deemed particularly suitable for small pieces of jewellery due to the size limitation posed by the bone itself. Evidence for this practice is seldom found in the archaeological record due to the fragility of these organic moulds. A 15th-century mould fragment recovered in London is a notable example as it is also contemporary to the Chalcis Treasure⁴⁰. Meanwhile, this technique has also been noted on many goldsmith products attributed to 14th-century Lucca, Italy⁴¹.

Producers and Users

For a deeper understanding of the Chalcis hoard, the artefacts need to be seen within their wider socio-economic context by focusing largely on the historic reality and commercial activity of the late Medieval Aegean region. Concerning the commerce, circulation and use of raw materials, it was imperative for the Venetian administration to strictly control the procurement of precious metals, as well as the consistencies of the produced objects, in order to give a sense of security to the consumers. These rules were apparently standardised and regulated over the years and recorded in a number of decrees, which were enforced in the metropolis, as well as in the colonies, including Chalcis and Crete. However, archival evidence is unfortunately preserved only for the latter case⁴².

When it comes to the silver- and goldsmiths who produced these high-status objects, we have to rely again on the documents concerning Crete. For the period from the early 14th until the end of the 15th century, i. e., roughly the period corresponding to the Chalcis treasure, there were over 150 such craftsmen active in Cretan workshops⁴³. These professionals neither emerged from thin air, nor operated in isolation; they learned their craft, manufactured and sold their products,

38 Due to the presence of the gilding layer on the objects' surfaces, it is presently not possible to describe more accurately the nature of the gilt metal(s).

39 Brepohl/McCreight, Goldsmithing.

40 Cuttlefish mould fragment (find record BOY86[1487]<1291>) found at the site of the former City of London Boy's School, 5-11 Tudor Street, City of London, excavated by the Museum of London in 1986 (Murdock et al., Treasures. – Schofield/Maloney, Archaeology).

41 Morigi, *Tecnologia* 29. 37.

42 Gasparis, *Epaggelmaties*, esp. 102-104. 130-131.

43 Konstantoudaki-Kitromilidou, *Apotheca* 363-364.

competed and collaborated within the Aegean market, unified under and regulated by the Venetian administration. It is this Venetian »commonwealth«, within which goldsmiths circulated and many of them must have travelled through or lived in Chalcis, although references are very scarce.

Inherent to the production and diffusion of jewellery and dress accessories was a specialised network of merchants and bankers, including: a) those involved in the trafficking, both of the precious metals and gems, and of the finished goods; b) those who certified the metal quality and the value of the objects at the time when they first entered the market, and later on, when they were used as collateral for loans or resold; and c) those who transferred and procured funds with which to buy or traffic in luxury commodities⁴⁴.

The consumer, for whom the goldsmiths worked, can be discovered through two sets of data. Firstly, there is the archival material. Jewellery is mentioned in wills, being a considerable part of the movable inheritance as well as in acts of donation, usually to monastic foundations, and in notarial documents, relating to the pawning of valuables and their use as guarantees and collaterals⁴⁵. Secondly, there is a considerable body of artistic information, such as visual representations of dress accessories and jewellery in murals, manuscripts, tombstones and silver revetments, which give us a fair idea on the wide use of these objects⁴⁶. The 14th century marks the advent of fashion throughout Europe and dress accessories ought to fit constantly changing fashionable garments⁴⁷. These were worn, not only at the princely courts as in previous times, but also by the upcoming merchant classes and the burgesses of the maritime cities of the Mediterranean.

Precious Artefacts as Social Indicators

The above aspects point to a complex social reality, not only regarding the place of manufacture, which is very hard to pinpoint when it comes to small portable items like jewellery and dress accessories, but also the place of consumption, so we ought to consider the two independently. Furthermore, the Chalcis Treasure should be studied within its wider European context as part of a series of 14th-15th century hoards whose concealment is linked to devastating events of a certain magnitude. These were found all over Europe, reaching Crimea in the East and Scandinavia to the North. Many of the hoarded items were similar to those of Chalcis, in materials, techniques, value and style. These hoards prove in the most eloquent way, a common notion of what was considered

valuable and worthy of preserving. Their size varies from the 30 kgs of the Erfurt Treasure, Germany, and the thousands of objects in the Gotland cases, Sweden, down to the few silver brooches in Canonbie, Scotland⁴⁸. Another common thread is that most of them come from civic environments, hidden at the foundations or within the walls of large houses, as in the case of Colmar, France.

Regarding the manufacturing of the hoard's artefacts, the rather clear distinction between gold reserved for jewellery pieces and gilt silver for dress ornaments, and the consistency of this pattern, raise additional questions on the signification of colour, value and the properties of the metals themselves in conjunction with their role in Medieval design and fashion, and by extension in the contemporary Aegean society. Objects of adornment expressed elegance and conveyed a sense for cosmopolitan fashion, but they were also strong statements of class and status. They represented a system of social classification, which was translated in the visual vocabulary of design and material. The existence and careful concealment of the Chalcis Treasure marked, on the one hand, its high value, and, on the other, the effort prominent members of the local community invested in order to distinguish themselves within the community through fashion and jewellery. This identity constructed with the aid of metal objects on the part of high-status groups served its purpose as a very specific social signifier. Nevertheless, this self-constructed high-status identity does not seem to have helped the owners of these prestigious artefacts to escape the common fate of the Chalcis community and the city's destruction during the Ottoman conquest. They were apparently never able to recover their luxury items.

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44 The subject has been poorly studied in relation to the former territories of Byzantium. For 14th-century Italy, see Stuard, *Gilding*, esp. 118-119. 122. 180-181, with references to more specialised bibliographies.

45 In this respect, a helpful tool is the online database Ludovic Bender, Maria Parani, Brigitte Pitarakis, Jean-Michel Spieser, Aude Vuilloud, *Artefacts and Raw Materials in Byzantine Archival Documents/Objets et matériaux dans les documents d'archives byzantines*, www.unifr.ch/go/typika (01.11.2018).

46 Parani, *Reality* 58-72. 74-80.

47 See, e.g., Scott, *Dress* 79. 84. 96-101.

48 For the Erfurt Treasure with parallels from other cases, see Stürzebecher, *Schatzfund*. For the Gotland cases, see Thordeman/Nørlund/Ingelmark, *Armour* 27-30 figs 25-29. For the Canonbie find, see Campbell, *British Perspective* 28. For the Colmar treasure, see also Descatoire, *Colmar Treasure* 40-45.

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Summary / Zusammenfassung

The Chalcis Treasure: A 14th-15th Century Hoard from Euboea, Greece – First Thoughts and Preliminary Results

Chalcis (known in the Late Medieval period as Negroponte) was an international port of call, where insecurity and war co-existed with trade, riches, cultural exchange and personal adventure. The city was under Frankish and Venetian Rule for some 270 years, ending with the Ottoman conquest of 1470. An important hoard of jewelry and dress accessories, currently in the collections of the British Museum, London, and the Ashmolean Museum, Oxford, is usually attributed to the events just before the city's fall.

The jewellery consists of rings, both decorative and personal (i. e., bearing the mark of their owner), and earrings. A large number of metal objects (buckles, strap-ends, strap-slides, mounts) belonged to belts and accessories whose exact number and form is a matter for further research. The hoard comprises some 340 buttons, all silver or silver gilt, belonging to various groups distinguished by their technique and craftsmanship. Finally, a large silver plate can be attributed on the basis of its markings to a Neapolitan workshop of the early 15th century.

Following a presentation of the various categories included in the hoard and the results from macroscopic and surface chemical characterisation, the chapter explores a number of issues, such as questions of alloys and techniques, the wider socio-economic context, and, finally, the role of these artefacts as social indicators.

Der Chalkis-Schatz: ein Hortfund des 14.-15. Jahrhunderts aus Euböa, Griechenland – erste Gedanken und vorläufige Ergebnisse

Chalkis, in spätmittelalterlicher Zeit bekannt als Negroponte, war ein internationaler Anlaufhafen, wo Unsicherheit und Krieg nebeneinander mit Handel, Reichtum, kulturellem Austausch und persönlichen Abenteuern existierten. Die Stadt war für etwa 270 Jahre unter fränkischer und dann venezianischer Vorherrschaft, die mit der osmanischen Eroberung im Jahr 1470 endete. Ein wichtiger Hortfund aus Schmuck und Kleidungsaccessoires, welcher sich in den Sammlungen des British Museums in London und des Ashmolean Museums in Oxford befindet, wird zumeist mit den Ereignissen kurz vor dem Fall der Stadt in Zusammenhang gebracht.

Der Schmuck besteht aus Ringen, sowohl dekorativen als auch individuellen Anfertigungen (d. h. mit den Zeichen ihrer Besitzer), und Ohrringen. Eine große Anzahl von Metallobjekten (Schnallen, Riemenzungen, Riemenbügel, Appliken) gehörte zu Gürteln und Accessoires, deren genaue Anzahl und Form weiter untersucht werden müssten. Der Schatzfund umfasst etwa 340 Knöpfe, allesamt silbern oder versilbert, die anhand ihrer Technik und ihrer Handwerkskunst differenzierbar sind und verschiedenen Gruppen zuzuordnen sind. Schließlich kann eine große Silberplatte aufgrund ihres Stempels einer neapolitanischen Werkstatt des frühen 15. Jahrhunderts zugeschrieben werden.

Nach der Darstellung der verschiedenen Gruppen, die im Fund vertreten waren, sowie der Ergebnisse der makroskopischen und der chemischen Oberflächenanalyse, erforscht dieser Aufsatz eine Reihe von Aspekten, wie die Frage nach den Legierungen und Techniken, dem weiteren sozioökonomischen Kontext und schließlich die Rolle der Artefakte als soziale Indikatoren.