

FORSCHUNGEN IN EPHESOS XII/7

Alessandro Naso (Ed.)

AMBER FOR ARTEMIS

Amber Finds from the Artemision at Ephesos

With contributions by
Silvia Alaura, Laura Ambrosini, Marco Bonechi, Vanora Estridge, Sarjit Kaur, Tripta Kaur, Michael Kerschner, Alessandro Naso, Martina Ott, Caroline Posch, Serena Privitera, Andrea M. Pülz, Nunzia Laura Saldalamacchia, Edith Stout

AUSTRIAN ACADEMY OF SCIENCES PRESS

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Sabine Ladstätter (†), Martin Steskal

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PREFACE OF THE EXCAVATION MANAGEMENT

It is a central goal of the Ephesos excavation to systematically review projects that, for various reasons, have not yet been fully presented. On the one hand this is rewarding, on the other hand it is a great challenge, especially when there are gaps in the documentation of old excavations. It is all the more pleasure for the directors of the Ephesos excavation to be able to present a particularly extraordinary as well as complex group of finds: the amber finds from the Artemision at Ephesos. Not surprisingly, the full presentation of these finds has been long awaited. It is the most extensive find complex of amber objects known so far from a Greek sanctuary. Alessandro Naso and his team were able to show that the majority of the small jewelry elements belong to a single girdle, for which comparative examples can only be found in Oenotrian princess tombs in modern-day Basilicata in Southern Italy. This proves a hitherto completely unknown contact of Ephesos, which was not involved in the colonization of Southern Italy, with the Gulf of Taranto. It appears that this contact was established already in a very early time, i.e. in the first half of the 7th century BC. On the basis of the amber finds from the Artemision the complex object biography of such rare prestige objects can be shown: the raw material originates from the Baltic, came to Italy, there it was processed and came to Ephesos, whereby also local production of amber elements could be proven – either for finishing or repair. The knowledge that can be derived from this is impressive and will bring sanctuary research an important step forward. It is of great value that Alessandro Naso and his team provide an analysis of the finds in detail not only technically and typologically, but also within their find contexts, whereby for the first time a short-lived rebuilding phase of the first temple could be proven – the Naos 1a – under whose floor the amber girdle had been deposited as a building sacrifice.

The editors congratulate the team of authors led by Alessandro Naso, who have contributed their individual expertise to this volume. They are: Silvia Alaura, Laura Ambrosini, Marco Bonechi, Vanora Estridge, Sarjit Kaur, Tripta Kaur, Michael Kerschner, Martina Ott, Caroline Posch, Serena Privitera, Andrea M. Pülz, Nunzia Laura Saldalamacchia and Edith Stout. An important element of the provenance analysis was infrared spectroscopy carried out at the Amber Research Laboratory at Vassar College, Poughkeepsie, NY, and performed successfully by Edith Stout, Vanora Estridge, Sarjit and Tripta Kaur. Among the many individuals and institutions involved in the success of the volume, the series editors would like to mention in particular the colleagues from the team of the Ephesos excavation and from the Efes Müzesi Selçuk, who provided excellent working conditions. For the Efes Müzesi these are especially director Cengiz Topal and Feride Kat. At the Istanbul Arkeoloji Müzesi, the director at the time, Zeynep Kızıltan, and the curator at the time, Mine Kiraz, were extraordinarily helpful. At the British Museum we feel indebted to the curator Alexandra Villing.

The high quality of the volume is based on the outstanding work of several people who must be highlighted here: Niki Gail (photography), Barbara Beck-Brandt and Judith Kreuzer (editing), Nikky Math and Isabella Benda-Weber (graphics and plans), and Andrea Sulzgruber (final layout of the plates).

The research would not have been possible without the excellent cooperation with the General Directorate of Cultural Heritage and Museums in Ankara for which the Ephesos excavation is always grateful. Finally, the editors would like to thank the publishing house of the Austrian Academy of Sciences for including the volume in its publishing program and for funding through the Academy's Holzhausen Legat. Thanks are also due to the University of Naples Federico II for the financial support of the printing costs.

This volume provides a unique insight into world of amber, an organic gemstone that has captured the human imagination for centuries. The series editors are convinced that this volume will be appreciated by the scientific community. The systematic presentation of old excavations and their finds is, however, consistently maintained.

Sabine Ladstätter – Martin Steskal
Vienna, September 2023

PREFACE OF THE EDITOR AND ACKNOWLEDGEMENTS

The present publication may be the first book entirely devoted to pre-Roman amber finds from a single site, and it can be said that its roots run deep.

I had read the first reports on the amber carvings from the Artemision of Ephesos in summer 1991 while studying for my PhD. At the time, I was enjoying a fruitful period of study in Mainz, in the library of the Römisch-Germanisches Zentralmuseum (today Lebniz-Zentrum für Archäologie – LEIZA). I was intrigued by the new discoveries, amber being familiar to me as it is considered a common find in Central Italy but undoubtedly rare in Ionia. In those days, I could hardly imagine that, about twenty years later, I would begin research on the finds. I would have been even less likely to guess that, more than thirty years later, I would be publishing a book devoted exclusively to those amber carvings.

It is a real pleasure to mention and thank several colleagues in Vienna, Innsbruck and elsewhere, who supported the project in various ways. The late Sabine Ladstätter and Michael Kerschner entrusted me with publishing the amber finds from the Artemision at Ephesos. As director of the Austrian Archaeological Institute and head of the Ephesos Excavation, Sabine Ladstätter followed my research with great interest and patience, granting my team and me the use of several facilities in Selçuk and elsewhere, and finally suggested a book should be published in this series. Michael Kerschner first proposed that the amber finds from the Artemision should be the subject of a systematic study, and introduced me to the complex world of the Artemision »mit Rat und Tat.« He and Andrea M. Pülz provided literature and information from the archive of the Artemision excavation in Vienna and, as experienced staff members of the Artemision, wrote a chapter about the find contexts of the amber in the sanctuary. Niki Gail took beautiful photographs of the amber finds. With unstinting patience, Barbara Beck-Brandt carefully followed the gestation of this book, almost step by step, while the excavation profiles and the maps charting find distribution were masterfully drawn by Isabella Benda-Weber and Nicola Math to give visual shape to the information we had collected. Ruth Schleithoff (Berlin) composed the drawings in wonderfully laid-out plates.

A generous grant offered by the Oesterreichischen Nationalbank, Jubiläumsfonds, OeNB Projekt Nr. 15575 allowed my team and me to take trips to museums in Türkiye and England: I would like to thank the anonymous reviewers of the project for their advice and the administration staff of the OeNB for their assistance during each stage of the project.

The Leopold-Franzens-University Innsbruck (LFUI), financed the earliest research phases with the Berufungsgelder granted to my Chair of Pre- and Protohistory. I am grateful for their support to Karl-Heinz Töchterle, Klaus Eisterer and Walter Leitner, former Rector, Dean of the Faculty of Philosophy and History and Head of the Department of Archaeologies. At LFUI, I am indebted to Robert Rebitsch, Project Service Office, for his helpful advice regarding funding possibilities and to Andreas Matuella and Julia Stadler, both at the Department for Archaeologies, for taking care of the administrative aspects.

The University of Naples Federico II provided some funds to complete the manuscript and to support the printing of the book.

In my capacity as author, I would like to express my warmest gratitude to the General Direction of the Antiquities of the Republic of Türkiye: I wish to mention particularly Zeynep Kızıltan, former Director of the Istanbul Archaeological Museums, and Cengiz Topal, Director of the Ephesos Archaeological Museum in Selçuk, for granting permission to study the amber carvings from the Artemision at Ephesos which are held in Istanbul and Selçuk, and which Feride Kat

(Selçuk) and Mine Kiraz (Istanbul) respectively made accessible. In England, I am indebted to Alexandra Villing of the British Museum, London, for facilitating work there.

It is my pleasure to express my deep gratitude to many colleagues and friends for their advice on single finds and helpful discussions. Firstly Alfonsina Russo Tagliente (Rome) and then Salvatore Bianco (Lecce) introduced me to the impressive amber finds from the Oenotrian graves in modern-day Basilicata. Paolo Bellintani (Trento), Cecilia D'Ercole (Paris) and Marco Pacciarelli (Naples) discussed with me some amber finds from Italy. Giacomo Bardelli (Naples), Patrizia von Eles (Imola), Francesco Quondam (Rome, Vienna) and Roberto Spadea (Rome) provided information about unpublished amber finds from Numana, Verucchio, Francavilla Marittima and other sites in Calabria respectively. Volkmar von Graeve and Gamze Günay von Graeve (Izmir) showed me unpublished amber finds from Miletos. Alexander Mazarakis Ainian (Volos) provided general information about unpublished finds from Kythnos and useful literature. Stéphane Verger (Paris, Rome) described a few amber finds from Claros. Several colleagues were kind enough to provide specialist literature on various topics, which has been particularly useful during the COVID-19 pandemic and the library lockdown: I wish to warmly thank Vilma Basilissi (Rome), Elizabeth Baughan (Richmond), Salvatore Bianco (Lecce), Angelo Bottini (Florence), Alessandro Cocorullo (Paris), Massimo Cultraro (Catania), Raimon Graells (Alicante), Sandrine Huber (Lille), Borut Križ (Novo mesto), Ilze Loze (Riga), Dirce Marzoli (Madrid), Oscar Mei (Urbino), Monica Miari (Bologna), Aleksandar Palavestra (Belgrade), Alessandra Ricci (Istanbul), Maria Antonietta Rizzo (Rome), Christoph Reusser (Zürich), Giuseppe Scardozzi (Lecce), Udo Schlotzhauer (Berlin), Jutta Stroszeck (Athens), Geoffrey D. Summers (Ankara), Gregory P. Warden (Lugano) and Denis Zhuravlev (Moscow). Last but not least, I wish to thank Piero Guzzo, who read an early draft of the research and offered useful suggestions. I am grateful to the two anonymous revierwers for their suggestions and comments. I apologise to anybody I may have left out.

I am very thankful for the invitations to give public lectures extended by Alfonsina Russo Tagliente (Rome), Olivier de Cazanove and Francis Prost (both in Paris), Luca Cerchiai and Mauro Menichetti (both in Salerno) and Maurizio Harari (Pavia). Those lectures were more profitable for me than for my patient audience, and I was able to discuss the preliminary results of the research with several colleagues.

The book, conceived as an international initiative, takes advantage of the contributions provided by Silvia Alaura, Laura Ambrosini and Marco Bonechi (all CNR - ISPC, Rome): S. Alaura and M. Bonechi reviewed the cuneiform sources about amber in the Near East, and L. Ambrosini classified the style of the figured amber. The volume includes the analysis of the amber samples carried out by Edith Stout with Vanora Estridge, Sarjit and Tripta Kaur in the world-class laboratories of Vassar College (Poughkeepsie, NY). In 2018 I enjoyed a fruitful period as visiting professor at the Université Paris I Sorbonne thanks to the generous invitation of Olivier de Cazanove and Francis Prost, both of whom I wish to thank warmly.

Last but not least, I am glad to acknowledge the support of my enthusiastic Austro-Italian working team, which includes Martina Ott (Feldkirch), Caroline Posch (Vienna), Serena Privitera (Pordenone) and Nunzia Laura Saldalamacchia (Naples) as co-authors. Among them, Martina and Serena played a unique role: the former also as the author of several photographs and Serena as a skilled draughtsperson. Manuela Bonadies and Martina Zinni (both Rome) improved some drawings.

Olivia Diana Ercoli (Rome) was patient enough to review and improve my basic English, Nicola Wood is to thank for the careful English proofreading.

All errors and omissions are my responsibility.

Alessandro Naso
Rome

1 STRATIGRAPHY AND CONTEXT OF THE AMBER FINDS

1.1 METHODS OF EXCAVATION AND PROCESSING: EXCAVATION AND RECONSTRUCTION OF THE STRATIGRAPHY

The archaeological exploration of the Artemision between 1965 and 1993 by the Austrian Archaeological Institute (OeAI) under the direction of A. Bammer, was mainly carried out as a metrical or arbitrary excavation (»Abhubgrabung«)[1], after its beginnings as a dredging excavation. It was not until the year 1994 that a stratified excavation was executed[2].

In preparation, the entire excavation area was divided according to an orthogonal coordinate system, which was fixed to the edges of the Late Classical altar of Dipteros 2, namely the altar east edge (AOK) and the altar south edge (ASK) (plan 1). This internal excavation system is related to the axes of the temple and altar, which deviate slightly from magnetic north[3]. All trenches (with a few exceptions) were basically oriented to this system. Also, the heights were related to the internal survey system of the excavation. They refer to a local zero point, which was fixed at the foundation of the Late Classical altar, i.e. +0.888 m above sea level[4] (see plans 1 and 2 for the following remarks).

The excavation was carried out as a trench excavation according to a metrical system[5]. Only occasionally was consideration given to stratigraphic elements identified during the excavation, such as different floors and layers. This inevitably means that natural strata were ignored and frequently intersected. As a consequence, finds from the same natural layer were found in different excavation units; on the other hand, the metrical units often contain material from two or more natural layers. Therefore, the actual stratigraphy had to be reconstructed afterwards. The metrical excavation unit (»Fundkiste«) in itself is not a stratigraphic unit but a self-defined unit (pl. 1, 1). This fact was often misunderstood in the older literature on the Artemision, which sometimes created pseudo-contexts[6].

The metrical excavation units were given a unique number consisting of the excavation year and a serial number (e.g. *892938* = excavation year [19]89 + serial number 2938). A similar height of two numbers does not always say anything about the spatial relationship between them, since serial numbers can also be located in different trenches. In the older publications a K (»Kiste« = box) was placed in between (e.g. 89 K 2938). However, since this letter is meaningless, it is now omitted. Instead, one or more zeros are placed between the year and the serial number to achieve a consistent six-digit number sequence, as is necessary for entry into the digital finds database.

During the excavation, each trench was divided into stripes of basically 1 × 1 m[7]. These stripes were excavated in metrical or artificial spits (»Abhub«), the height of which varied. As a rule, it

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1 Weißl 2002, 315. For the metrical or arbitrary excavation see Bammer – Muss 1996, 20; Kerschner et al. 1999, 49. 51 n. 16; Kerschner – Konuk 2020, 156 f.; Praetzellis 1993.

2 Kerschner 1997.

3 Ohnesorg 2007a, 4 f. (with literature on older measurements).

4 Bammer 1982, 62; Kerschner et al. 1999, 51; Ohnesorg 2007a, 3 f. for remapping.

5 On the method and its faults: Harris 1989, 15–20 (»arbitrary excavation«); Praetzellis 1993, 68–86 (»metrical excavation«).

6 Misleading equation of a metrical excavation unit with a natural layer i.e. in: Bammer – Muss 2013, 155 f.

7 On the excavation system, its problems as well as its possibilities and limits of evaluation: Kerschner et al. 1999, 49–51; Weißl 2002, 314 f.; Kerschner 2011, 19–21; Kerschner – Konuk 2020, 155–162.

is between 5 and 15 cm, depending on whether a large or small hoe was used for digging[8] (pl. 1, 2; 2, 1). The individual excavation units are, geometrically speaking, flat rectangular cuboids. By levelling, the upper edge and the lower edge were measured after each excavation at one or more points in a trench. However, since the excavation was not carried out absolutely flat, there were fluctuations in the centimetre range, which can lead to uncertainties in the evaluation. The excavated finds were stored separately for each metrical unit, which was called a »Fundkiste« or simply »Kiste« (= box) by A. Bammer. From 1981 onwards, the soil was additionally wet-sifted. This brought to light numerous small objects such as beads and other jewellery, but also electrum coins. These were assigned to the corresponding metrical excavation unit[9]. Many of the small amber objects were among the finds from wet-sifting (pl. 2, 2).

Since the excavation was carried out on a large scale with numerous workers and also in sensitive areas often with coarse tools (large hoes)[10] (pls. 1, 2; 2, 1), there could occasionally be minor mixing of the soil from adjacent excavation units during the excavation procedures, which can play a role, especially in the case of finds that only came to light during wet-sifting[11].

According to the theory of metrical excavation, the finds from the metrical excavation units have to be assigned to the natural strata afterwards by comparing the stratigraphy documented in profile drawings and photos with the schematic metrical excavation grid (»Fundkistenmatrix«)[12]. In practice, however, such a subsequent assignment of geometrically defined excavation units to irregularly running natural strata has its limits[13]. Since the cuboidal units *de facto* never coincide with a natural stratum *in toto*, in many cases two or more contexts are mixed which cannot be separated afterwards.

The number of mixed units depends on four factors: 1. the size of the metrical units, 2. the height of the natural strata, 3. the angle of inclination of the natural strata in relation to the strictly horizontal metrical spit, and 4. the presence of pits and postholes[14]. The assignment of certain finds to stratigraphic contexts must therefore be reconstructed. Only then is it possible »in aussagekräftigen Sondagen die Schichtenfolge zu beschreiben und durch Keramikfunde die Termini für einzelne Deponierungsvorgänge festzulegen« and to eventually define find contexts[15].

The systematic processing of the stratigraphy and the find contexts of the Artemision excavations began in the year 1996[16]. For this purpose, a viable system was developed to arrive at a reconstruction of the stratigraphic sequence, its chronology and the associated construction phases of the sanctuary, taking into account the excavation methods described and the nature of the existing documentation.

This system, which has already been explained in detail elsewhere[17], is also used in the present volume to determine the find contexts of the amber objects. It is in the nature of the evaluation of a metrical excavation that not all finds can be assigned to an individual context with the same degree of certainty. Objects whose excavation units fall completely within a single natural layer

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8 Bammer 1984, 58.

9 Bammer 1984, 58 f.; Bammer 1994, 30.

10 Kerschner – Konuk 2020, figs. 13–14. 36–37.

11 Kerschner – Konuk 2020, 158 f. The problem becomes evident at figs. 37–38.

12 Bammer 1984, 3–11; Bammer 1994, 30.

13 Harris 1989, 20; Praetzellis 1993, 84. See Bammer 1983/1984, 97; Kerschner et al. 1999, 49–52; Weißl 2002, 315; Kerschner 2011, 20 f.

14 See Praetzellis 1993, 84.

15 Weißl 2002, 315.

16 The study with M. Kerschner as principal investigator was financed by the Austrian Science Fund and the Austrian Archaeological Institute. M. Weißl carried out fundamental work such as the critical edition of the excavation diaries of the excavator and the trench supervisors, as well as the creation of a database of the excavation units. He also gained essential insights into the building and stratigraphic sequence of the Geometric, Archaic and Classical periods: Weißl 2002. Further important contributions were made by J. Auinger, S. Karl, M. Kerschner, A. Sokolicek, B. Pulsinger, S. Radbauer and U. Turgutarıkan.

17 Kerschner et al. 1999, 49–51; Kerschner 2011, 19–21.

can be assigned with certainty. If an excavation unit contains material from two (or more) natural layers, both (or more) contexts are possible.

However, certain criteria may make it possible to weigh the likelihood of attribution. Often the following constellation can be found: if, for example, a metrical unit comprises two layers, one of which turns out to be devoid of finds in its remaining units – this includes, for example, sand layers resulting from flooding – but the other is rich of small finds, then it is very likely that the objects from the mixed metrical unit originate from the second context. This conclusion then is an argument of probability.

We have taken this complex situation into account in our definition of each context. In our listing of the numbers of metrical units belonging to a particular context, readers will find a gradation between certain and probable allocations.

1.2 CONSTRUCTION PHASES OF THE ARCHAIC SANCTUARY AND CONTEXTS OF THE AMBER FINDS

In the following, only those areas and contexts of the Artemision will be discussed that are related to the amber finds presented in this book. For a better understanding, it is necessary to give a short overview of the structures, especially the Early Archaic temples of Artemis, as the deposition of most of the amber objects is closely related to the construction of the temples Naos 1a, Naos 2, Sekos 1 and Sekos 2 and the levelling of the area surrounding them (pls. 1, 1–2, 1; tabs. 1. 3; also Appendix 2). When discussing the find contexts, we consider not only the amber objects, but also the artefacts made of other materials, especially bronze, gold and glass, that have already been published or are in the process of publication[18] (tab. 2).

Table 1 Coordinates of the metrical excavation units organised by spit heights (A. M. Pülz)

Metrical unit	Trench	öAOK	öAOK	nASK	nASK	TL	BL	Comment/Context
760238	**352**	26.4	30	–12	–11	–0.3	–0.44	
880974	**591**	30	31.5	7	8	–0.255	–	
892609	**620**	30	32	35	39	–	–0.5	
800006	**370**	35.3	39	–6	–5	–	0.73	
800431	**370**	35.3	39	–8	–7	–	–0.58	uncertain height
800433	**370**	35.3	39	0	–1	–0.3	–0.58	
892645	**701**	37	38.1	15.4	18	–0.453	–0.568	
860217	**430**	42	46	–8	–7	–0.06	–0.08	

[18] In the following explanations, the catalogue numbers in parentheses for the amber finds refer to the present study: see catalogue. – For the gold finds see Pülz 2009. – For the bronze objects see Klebinder-Gauß 2007. – For the glass beads see Pulsinger – Pülz (in preparation). Further mentions of objects of other materials such as ivory or terracotta were taken from the diaries and distribution cards or are quoted. See also tab. 2.

Metrical unit	Trench	öAOK	öAOK	nASK	nASK	TL	BL	Comment/Context
850314	**406**	44.5	48	50	51	–0.07	–	
850316	**406**	44.5	48	50	51	–0.07	–	
860155	**420**	55	58	44	45	–0.045	–0.08	
860203	**420**	55	58	47	48	–0.14	–0.26	
860344	**421**	58	61	44	45	–0,01	–0.07	
870081	**560**	67	72	44	45	–0.25	–0.31	
901329	**772**	75	77.7	18	19	0.05	–0.01	
900374	**772**	75	77.7	21	22	–0.51	–0.65	
900483	**772**	75	77.7	23	24	–1.05	–1.13	
900486	**772**	75	77.7	20	21	–1.05	–1.13	
870104	**562**	78	82	46	47	0.2	0.16	
870119	**562**	78	82	48	49	0.08	–0.04	
910611	**940**	78.5	81.5	10	14	–0.38	–0.4	
910496	**900**	78.9	83	24	24.6	0	–0.11	
900380	**771**	79	83.5	18	19	–0.64	–0.93	
900402	**771**	79	83.5	17	18	–0.93	–1	
900427	**771**	79	83.5	15	16	–1	–1.15	
900434	**771**	79	83.5	22	23	–1	–1.15	
880128	**583**	80.8	81.8	19.1	20.1	–	–0.11	
880915	**583**	85	86	23.1	24.1	–0.79	–1.03	
880170	**583**	86.8	87.8	22.1	23.1	–0.14	–0.2	
880594	**583**	86.8	87.8	16.1	17.1	–0.56	–0.59	
880443	**583**	87.8	88.8	20.1	21.1	–0.5	–0.54	
880822	**583**	88.8	89.8	20.1	21.1	–0.79	–0.94	
880807	**583**	90.8	91.9	17.1	18.1	–0.79	–0.94	
880947	**583**	89.2	92.1	21.1	22.1	–0.9	–1	
880943	**583**	89.2	92.1	21.1	22.1	–0.94	–1	uncertain height
880949	**583**	89.2	92.1	21.1	22.1	–1	–1.03	
880946	**583**	89.2	92.1	17	18.3	–1.045	–1.1	
870348	**582**	91.95	92.8	20.7	22.1	–0.78	–0.86	Hoard
870298	**582**	92.8	93.8	17.1	18.1	–	–0.76	
870354	**582**	92.8	93.8	17.1	18.1	–0.86	–0.95	

Metrical unit	Trench	öAOK	öAOK	nASK	nASK	TL	BL	Comment/Context
870272	**582**	93.8	94.8	21.1	22.1	–	–0.76	Hoard
870341	**582**	93.8	94.8	21.1	22.1	–0.78	–0.86	Hoard
870232	**581**	95.5	98.9	17.1	22.1	–0.66	–0.72	Rammed earth layer
870246	**581**	95.5	97.3	20.5	21.4	–0.71	–0.78	Hoard
870281	**581**	95.5	96.8	20.1	21.1	–	–0.82	Hoard
870349	**581**	95.5	96.8	18.1	19.1	–0.88	–0.92	Hoard
870362	**581**	95.5	96.8	18.1	19.1	–0.92	–0.98	Hoard (?)
870353	**581**	95.5	96.8	20.1	21.1	–0.86	–0.95	Hoard
870352	**581**	96.8	97.8	20.1	21.1	–0.86	–0.95	Hoard
870374	**581**	96.8	97.8	19.1	20.1	–1.17	–1.18	Hoard (?)
870233	**581**	97.3	98	18.75	20.5	–0.66	–0.72	Rammed earth layer
870245	**581**	97.3	98	18.75	20.5	–0.72	–0.78	Hoard
870324	**581**	97.8	98.8	19.1	20.1	–0.83	–0.88	Hoard
870409	**581**	91.95	101	15.1	24.1	–	–	Cleaning of profile (no stratigraphic assignment possible)
930697	**1020**	108.7	109	22	23.3	–0.7	–0.76	
930984	**1020**	109	110	23.25	24.5	–0.99	–1	
931289	**1020**	111	112	23.25	24.5	–1.5	–1.55	
931010	**1020**	113	114	23.25	24.5	–1.03	–1.1	
931107	**1020**	113.5	114	22	23.3	–1.132	–1.21	
930672	**1020**	114	115	23.25	24.5	–0.74	–0.81	
910584	**913**	112	113	13	14	–0.18	–0.2	
940110	**1022**	115.5	117	22	23	0.1	0.03	
940135	**1022**	116.75	118	23	24.5	–0.35	–0.41	
940268	**1023**	114.5	116	25.5	26.5	–0.13	–0.23	
940242	**1023**	117	118	24.5	25.5	0.9	–	
940085	**1038**	114.5	116	19	20	0.46	0.25	
940014	**1032**	115	116	16.5	17.5	–0.61	–0.67	
940146	**1036**	118	119	16.6	17	–	–0.63	
870199	**570**	136.45	141	44	45	0.19	0.15	

Table 2 Concordance list: association of amber objects with finds made of other material (gold, bronze, glass, other within a metrical unit). The respective catalogue number is in parantheses (A. M. Pülz)

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
760238	**352**	female bust (1)				
800006	**370**	inlay (524)		needle (235. 262)		
800431	**370**	inlay (528)				
800433	**370**	needle head (534)				
850314	**406**	bead type 6 (257)			bead (197. 198. 212) pendant (730. 731. 739)	
850316	**406**	bead type 6 (256)		earring (474)		
860000		bead type 6 (275. 276)				
860155	**420**	inlay (529)				
860203	**420**	bead type 6 (258)		fibula (211) earring (548)	bead (233. 250. 266. 279. 532)	terracotta
860344	**421**	scarab (4)		fitting (931)		
860217	**430**	inlay (531)	miniature jug (411) appliqué (515) sheet (544. 624) workshop waste (699. 700)	needle (259)	bead (251. 267. 533)	

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
870081	**560**	inlay (526)		needle (281. 282) arm-ring (348. 349. 395) earring (493) coil (703)		ivory-hawk, terracotta head, alabastron
870104	**562**	bead type 7 (284)				
870119	**562**	bead type 2 (38. 39) bead type 4 (195)		sheet (961)		
870199	**570**	bead type 2 (45)			bead (538. 680)	
870232	**581**	bead type 1 (17. 18. 19. 20) bead type 2 (33. 34) bead type 3 (71. 97. 98. 99. 100) bead type 4 (106. 107. 108. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 191. 192. 193. 194. 204. 205. 206. 207. 215) bead type 6 (221. 222. 245) bead type 7 (279. 280. 281) pendant type 1 (297) pendant type 3 (303. 304. 305) pendant type 5 (333. 334) pendant frgt. (346. 347) spacer type 2 (352) spacer type 4–6 (389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406) spacer type 7 (442. 443. 444. 445. 446. 447. 448. 449. 450) spacer type 8 (473. 483) fibula type 2 (497. 498. 499. 500)		fibula (28)	bead (4. 5. 6. 36. 37. 38. 39. 40. 86. 87. 88. 89. 90. 91. 92. 93. 202. 215. 216. 217. 283. 298. 304. 328. 329. 330. 353. 372. 374. 389. 391. 405. 409. 410. 411. 412. 413. 414. 431. 432. 433. 451. 455. 463. 468. 650. 696. 714)	

Table 2 (cont.)

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
870233	**581**	bead type 3 (86) bead type 6 (238) bead type 7 (278) pendant type 3 (312) pendant type 4 (318)	brooch – bird of prey (26) needle – bird of prey (28) pendant (81. 113. 145) bead (173. 179. 193. 194) needle (251) appliqué (329) sheet (464. 491. 559)	fibula (29. 30. 31. 93. 158. 217) ring (646)	bead (195. 315. 489) pendant (728)	ivory
870245	**581**	bead type 1 (21)			bead (31. 43. 44. 45. 46. 47. 48. 49. 50. 95. 96. 97. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 184. 203. 299. 375. 382. 392. 393. 394. 395. 415. 416. 434. 435. 458. 467. 499. 723) pendant-bird (729)	
870246	**581**	bead type 1 (7. 8. 9. 10. 11. 12. 13. 14. 15. 16) bead type 2 (46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56) bead type 3 (65. 66. 67. 68. 69. 70. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96) bead type 4 (105. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 180. 189. 190. 197. 200. 201. 202. 203. 214) bead type 6 (241. 242. 243. 244. 261. 262) bead frgt. (294) pendant type 3 (300. 301. 302)	eye-plate (20) earring (230) needle (245) ring (261) appliqué (363. 364. 365) sheet (465. 490. 508. 560)	fibula (7. 14. 21. 24. 33. 34. 35. 36. 37. 38. 89.90. 101. 102. 111. 127. 128. 129. 151. 159. 160. 161. 162. 163. 164. 165. 166. 194) arm-ring (444) finger-ring (672) bead (768) pendant (783. 795. 813) spiral roll (903) button (908) spout (933) sheet (962) fibula (D 1. D 2) bead (D 53)	bead (7. 51. 110. 111. 354. 358. 381. 417. 418. 452. 692)	2× faience scarabs, steatite scarab, faience amulet, ivory, terracotta

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
(cont) **870246**		spacer type 4–6 (362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388) spacer type 7 (423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441) spacer type 8 (476. 477. 478. 479. 480. 481. 482. 486. 487. 488) fibula type 1 (489) fibula type 2 (494) spacer (527) frgt. (538)					
870281	**581**	bead type 1 (22. 23. 24. 25. 26. 27) bead type 2 (35. 36. 37) bead type 3 (72. 73. 74. 101. 102) bead type 4 (109. 171. 172. 173. 196. 208. 209) bead type 6 (223. 224. 225. 226. 227. 228. 246. 247. 248) bead type 7 (282. 283. 285. 286. 287) pendant type 3 (306) pendant frgt. (317) pendant type 5 (330. 342) pendant frgt. (348) spacer type 3 (354) spacer type 4–6 (407. 408. 409. 410. 411. 412. 413. 414. 415) spacer type 7 (418. 451. 452. 453) spacer type 8 (484) fibula type 2 (501) fibula type 3 (503. 507. 514. 518. 521)	pendant (59) bead (172) sheet (565)	fibula (8. 50. 51. 52. 86. 135. 170. 171) ring (658) finger-ring (662) bead (763. 771) bead (D 54)	bead (55. 56. 122. 123. 124. 220. 363. 369. 371. 377. 396. 456. 469. 470. 676. 689)	faience statuette (Bes)

Table 2 (cont.)

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
870324	**581**	bead type 1 (29. 30) bead type 2 (42)		fibula (27. 57. 153)	bead (133. 186. 438)	
870349	**581**	bead type 2 (57) bead type 3 (75) bead type 5 (216) bead type 6 (251. 252. 274) bead type 7 (288. 289) spacer type 4–6 (416)		fibula (60. 96. 137) earring (596) bead (764)	bead (34. 254. 385. 482)	ivory
870352	**581**	human head (2. 3) bird-shaped protome (5) bead type 1 (28) bead type 2 (40. 41) bead type 3 (85. 103. 104) bead type 4 (110. 181. 182. 183. 184. 185) bead type 6 (217. 218. 236. 237. 249. 250. 253. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273) bead type 7 (277) pendant type 3 (313. 314) pendant type 5 (321. 322. 323. 324. 325. 326. 327. 328. 331. 335. 337. 338) spacer type 1 (350. 351) spacer type2 (353) spacer type 3 (356) spacer type 4–6 (358. 359. 360. 361. 417) spacer type 7 (419. 420. 421. 422. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472)	wire (420)	sheet (955)		ivory

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
(cont) **870352**		spacer type 8 (475. 485) fibula type 2 (491. 502) fibula type 3 (504. 506. 508. 511. 512. 513. 515. 516. 517. 519. 520. 522. 523)				
870353	**581**	bead type 6 (235) pendant type 5 (320. 340. 344. 345) fibula type 3 (509)	sheet (483. 570)	fibula (61) miniature wheel (900) ring (D 33)	bead (65. 144. 145. 255. 301. 309. 365. 657. 684)	ivory, terracotta, faience scarab
870362	**581**	pendant frgt. (315)		fibula (62) finger-ring (673) pendant (809)		ivory
870374	**581**	bead type 2 (60) bead type 4 (178)				
870409	**581**	pendant frgt. (316)	bead (204) needle (236)	ring (648)		
870272	**582**	bead type 6 (263)	sheet (564)		bead (117)	
870298	**582**	bead type 4 (210) bead type 6 (229. 230)		fibula (53) earring (605)	bead (59. 126. 127. 285. 355. 448. 465. 485)	ivory
870341	**582**	bead type 2 (43) bead type 3 (77. 78. 79. 80) bead type 4 (111) bead type 6 (233. 234) bead type 7 (290. 291) pendant type 5 (332) spacer type 3 (355)		spiral roll (905) fibula (D 3)	bead (64. 142. 683)	ivory
870348	**582**	bead type 2 (44) bead type 3 (76) bead type 4 (112. 174. 175. 176. 198. 211) bead type 6 (231. 232. 254. 255) pendant type 3 (307) pendant type 5 (336)	sheet (569)		bead (426)	

Table 2 (cont.)

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
870354	**582**	bead type 2 (58. 59) bead type 4 (177) bead frgt. (295)			bead (367)	
880000		bead type 1 (6)				
880128	**583**	inlay (525)				
880170/ 880109	**583**	bead type 3 (83)				
880443	**583**	bead type 2 (32)				bird bowl
880594	**583**	pendant type 3 (308)				
880807	**583**	bead type 5 (212) pendant type 4 (319)		pendant (784)		
880822	**583**	pendant type 5 (329)	appliqué (380)			
880915	**583**	fibula type 3 (505)		fibula (195) pendant (800)		
880943	**583**	bead type 6 (220) pendant type 3 (309) raw material (535)		fibula (196) handle bar (728) pendant (801)		ivory
880946	**583**	bead type 2 (31) bead type 6 (239. 240)				
880947	**583**	bead type 6 (219) fibula type 3 (510)				
880949	**583**	fibula type 2 (495)				
880974	**591**	bead type 4 (186)				
892609	**620**	pendant type 5 (341. 343)		omphalos bowl (820)		

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
892645	**701**	bead type 4 (187) fibula type 2 (496)				
900380	**771**	pendant type 3 (310) frgt. (536. 537)	ring (265)		bead (550)	ivory
900402	**771**	bead type 2 (61) pendant type 2 (299)		fibula (143. 180. 181. 182)	bead (265. 495. 496. 552)	ivory
900427	**771**	fibula type 2 (493)	fibula (47) ring (266) sheet (673)	fibula (D 31) ring (D 32) workshop waste (D 67)	bead (70. 159. 191. 553. 554. 638. 701. 707)	ivory
900434	**771**	bead type 2 (62) bead type 4 (179)	sheet (494)	fibula (9. 73) finger-ring (666)	bead (163. 164. 165. 166. 258) pendant (736)	
900374	**772**	bead frgt. (296) pendant frgt. (349)	wire (418) sheet (453)	fibula (15) earring (558)	bead (27. 68. 361. 548)	ivory, terracotta-hand
900483	**772**	bead type 4 (113)			bead (380. 492)	
900486	**772**	bead type 7 (292. 293) spacer 4–6 (357) frgt. (539)	sheet (590)		bead (259)	
901329	**772**	pendant type 1 (298)				
910496	**900**	bead type 3 (81) bead type 4 (199)	sheet (677)	fibula (17) earring (565)		
910584	**913**	bead type 3 (82)	sheet (446)	earring (505. 506. 507)	bead (207. 308. 573. 654)	
910611	**940**	inlay (530)	appliqué (302)	earring (514. 541. 542)		
930672	**1020**	inlay (532)				ivory *astragalus*

Table 2 (cont.)

Metrical unit	Trench	Amber	Gold	Bronze	Glass	Other materials
930697	**1020**	bead type 4 (188)			bead (593)	
930984	**1020**	bead type 5 (213)				
931010	**1020**	bead type 6 (259)			bead (449. 596)	
931107	**1020**	fibula type 2 (492)				
931289	**1020**	bead type 2 (63)		fibula (190)	bead (388. 597. 670)	
940110	**1022**	bead type 6 (260)			bead (612)	
940135	**1022**	pendant type 5 (339)	sheet (485)		bead (619)	bird bowl
940242	**1023**	bead type 2 (64)	appliqué (354. 355)		bead (498. 623)	
940268	**1023**	inlay (533)			bead (631. 675)	
940014	**1032**	pendant type 3 (311)				ivory, scarab
940146	**1036**	spacer type 8 (474)				
940085	**1038**	bead type 3 (84)				

Table 3 Concordance list: locations and amber finds (A. M. Pülz)

Location – Areas	Figural	Bead	Pendant	Spacer	Fibula	Inlay	Needle head	Raw material	Indefinable
Central Sekos – Eastern Cella	cat. 2. 3. 5	cat. 7–30. 33–37. 40–44. 46–60. 65–80. 85–112. 114–178. 180–185. 189–198. 200–211. 214–218. 221–238. 241–255. 261–274. 277–283. 285–291. 294. 295	cat. 297. 300–307. 312–318. 320–328. 330–338. 340. 342. 344–348	cat. 350–356. 358–381–473. 475–488	cat. 489. 491. 494. 497–504. 506–509. 511–523	cat. 527			cat. 538
Central Sekos – Western Cella		cat. 31. 32. 83. 212. 219. 220. 239. 240	cat. 308. 309. 319. 329		cat. 495. 505. 510	cat. 525			cat. 535
Area Basis D	cat. 4	cat. 38. 39. 45. 195. 256–258. 284				cat. 526. 529			
Area Basis B		cat. 64. 84. 260	cat. 311. 339	cat. 474		cat. 533			
Area Eastern Sekos		cat. 63. 82. 188. 213. 259			cat. 492	cat. 532			
Area Western Sekos		cat. 61. 62. 81. 113. 179. 199. 292. 293. 296	cat. 298. 299. 310. 349	cat. 357	cat. 493	cat. 530			cat. 536. 537. 539
Western Peristasis of Dipteros 1		cat. 187			cat. 496	cat. 524. 528. 531	cat. 534		
Southern Temple Forecourt	cat. 1								
Eastern Temple Forecourt		cat. 186	cat. 341. 343						
Stray finds	cat. 6	cat. 275. 276							
Without location					cat. 490				

There are several reasons why it is difficult to acquire an overview of the research situation on the early Artemision. The excavation of the Early Archaic structures spanned a period of 90 years from 1904 to 1994; with long interruptions in between[19]. Until 2002, there existed no phase plan of the Artemision that included the structures from all excavation periods[20]. The numerous preliminary reports deal with individual areas, buildings or partial aspects. They reflect constantly changing levels of knowledge and new hypotheses and use designations that changed several times. There are structures that appear in the archaeological literature under seven different names, although they designate the same architectural element. Appendix 1 compiles all the terms that have been used over time for those structures and layers that are discussed in this volume. This concordance table should make it easier for readers to make the connection with previous publications and preliminary reports on the Artemision excavation.

A particularly complex structure that plays an important role in research on the Early Archaic Artemision is the so-called Central Basis[21]. This is a term introduced by D. G. Hogarth and A. E. Henderson in 1908 to describe an excavation area in the centre of the sanctuary[22]. Originally conceived as a provisional term, this name has been widely adopted in scholarly literature (Appendix 1). However, the Central Basis is not itself a temple[23]. Rather, it consists of several structures originally belonging to different buildings: Naos 1, Naos 1a, Naos 2, Sekos 1, Sekos 2 and Dipteros 1, all dating from the Archaic period[24] (pls. 3, 1–4, 1).

1.2.1 Naos 1

Naos 1 is the earliest known stone building in the sanctuary and the first traceable temple of Artemis (pls. 3, 2; 4; 5, 1; plans 4–7). It was built between 660 and 640 BC[25]. The rectangular cella, measuring 6.3 × 11.1 m opened to the west. It was surrounded by 8 × 4 wooden columns on green schist bases, most of which were still encountered *in situ* during the excavation (pls. 3, 2; 4, 1; plan 4). Naos 1 is among the earliest Greek temples with a *peristasis*. The double-skin walls of the cella were built of marly limestone slabs, the lower layers of which are still preserved.

Inside Naos 1 there were two rows of wooden columns, of which six round bases of green schist were excavated. Presumably there were two more columns in the western part just behind the entrance; these were built over later by the so-called Large Western Basis of Sekos 2 and it was therefore impossible to uncover them. The shape of the roof is unknown. In the central axis of the cella, slightly shifted to the east, was an elongated rectangular basis of marly limestone slabs measuring 1.75 × 3.95 m. The edges of this so-called Rectangular Basis overlapped the inner edges of the column bases. The basis was therefore erected later, but probably shortly after the inner rows of columns. Both were used at the same time. The function of this Rectangular Basis has been variously interpreted as the location of the cult image[26], as an altar[27] and finally, as a combination of both[28]. Naos 1 was probably destroyed by heavy flooding.

19 Kerschner – Konuk 2020, 86–91 (with bibliography).
20 Weißl 2002, figs. 11. 14.
21 For a detailed discussion: Kerschner 2020 (with extensive bibliography).
22 Hogarth 1908c, 33; Hogarth – Henderson 1908a, 53 f.
23 Kerschner 2020, 192–194.
24 The following is a summary based on Kerschner 2020 as well as Kerschner – Konuk 2020 with all the literature.
25 Bammer 1988b, 1–19 figs. 1–11. 15–24; Bammer 1990; Weißl 2002, 321–327 figs. 3. 5–7. 11. 14; Bammer 2005, 182–198. 212–214. 218 figs. 1–4. 8–10. 16; Kerschner – Prochaska 2011, 77–82 figs. 1–3. 6–8; Kerschner 2020, 199–206 figs. 5–7. 20. 22 (with bibliography).
26 Bammer 1990, 156 fig. 30; Bammer 2005, 209. 218.
27 Weißl 2006, 192; Weißl 2011, 216.
28 Kerschner 2017, 36.

Amber finds in the floor of Naos 1 (?)

A few amber objects (3 items) were found at the level of the floor of Naos 1 (plans 5 a–b; 7; 10 below), which may be the oldest find context of amber jewellery from the Artemision[29]. However, it is conceivable that these few pieces actually belonged to the so-called Hoard under the floor of Naos 1a, which was deposited on the floor surface of the previous Naos 1 (see below). Since Naos 1 had probably been damaged by a flood, the floor had also been damaged. It is therefore impossible that parts of the hoard came to lie deeper in cavities in the original floor.

The floor surface of Naos 1 was at –0.90 m. The floor was up to 0.20 m thick and consisted of several layers of different, colour-differentiated materials. Under a layer of clay – the floor covering used as walking level – followed a white (lime [?]) layer only a few centimetres thick; below that a likewise thin reddish or yellow layer; and then, even deeper, a thick package of alternating black ash and yellow-brown clay layers. The individual layers of this subfloor were thin and each was made of special material intended to provide either a smooth, even surface (clay, lime) or an insulation against soil moisture (ash and charcoal). None of the thin layers consisted of debris with objects that would have disturbed the intended qualities. Therefore, it is unlikely that objects of amber or other material were deliberately deposited within the floor layers. Rather, the three amber objects were deposited after the flood damage of Naos 1 in shallow potholes and originally belonged to the large amber hoard in the filling under the floor of Naos 1a. The metrical excavation unit *870362* (plans 7. 10 below), containing the fragment of an amber pendant (cat. 315) as well as a bronze fibula[30], a bronze finger ring[31] and a bronze pendant[32], is located in the clay layer of the subfloor at a level between –0.92 m TL (top level) and –0.98 m BL (bottom level).

From a height between –1.17 m TL and –1.18 m BL and thus, at least according to the height data, still below the ashy layers of the subfloor[33], was unit *870374* (plans 5 b; 10 below) with two amber finds: a ring-shaped bead of type 2 (cat. 60) and a cylindrical bead of type 4 (cat. 178).

1.2.2 Naos 1a: an unfinished (?) reconstruction of Naos 1

The first temple of Artemis, Naos 1, was always threatened by flooding due to its location in the estuary of a river. This was probably the cause of the damage that necessitated repairs to the masonry. During a fundamental renovation, an attempt was made to overcome the problem of flooding by raising the floor level both outside and inside. A retaining wall was built around the outside of the cella wall – the so-called Collateral Wall; it was as low as a step or a bench and was perhaps used to place votive offerings on it. The column bases were raised by placing them on hypocaust-like stacks of slabs of marly and of blue limestone, as well as reused green schist bases[34]. It is doubtful whether this building – called Naos 1a (plan 4) – was completed[35], since

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29 The floor of Naos 1 was not excavated separately, but in the general system of metric units. It was only subsequently identified in the profile. Therefore, the corresponding metrical excavation units include material from the floor (covering and subfloor) as well as the uppermost parts of the underlying stratum. The find context given in the following for the individual metrical excavation units refer – if not already published and therefore quoted – to the entries in the diary. Information on the respective pottery finds also contained in the units is mostly missing, as these are still being processed. On the floor of Naos 1: Bammer 2005, 212 f.; Kerschner 2005, 126 f. figs. 9. 11.

30 Klebinder-Gauß 2007, cat. 62.

31 Klebinder-Gauß 2007, cat. 673.

32 Klebinder-Gauß 2007, cat. 809.

33 It is possible that the surface of the basis was disturbed in the course of Hogarth's excavation and thus the finds from *870374* would have slipped into the older phase but were originally from the hoard phase (see below).

34 Bammer 1990, 142 pl. 17 b; Bammer 2005, 182–186 fig. 1 (»Postamente«); Kerschner – Prochaska 2011, 83. A misleading impression is given by the schematic reconstruction drawing Bammer 2008a, 248 fig. 207 with ashlars placed on edge between the older, lower bases and the younger, upper bases. Such ashlars do not exist. This reconstruction is strongly reminiscent of a blind façade of the Roman Imperial period.

35 For the completion: Bammer 2008a, 244. Sceptical on this: Weißl 2002, 326; Kerschner – Prochaska 2011, 83. Bammer 2008a, 248 fig. 2 presented a schematic reconstruction of a hypothetical »2nd peripteros«, which combines

this construction seems quite unstable[36]. In any case, the reconstruction did not last long and was soon replaced by Naos 2. Consequently, this reconstruction is only counted as a subphase here.

Just like outside, the level was also raised on the inside[37]: the surface of the new floor was at the level of approx. –0.72 m and thus about 20 cm higher than the previous floor of Naos 1 (plans 4–7)[38]. In the north-eastern part of the cella, it was a little higher at about –0.68 m. The floor of Naos 1a was preserved in the west, north and north-east of the cella. The clay floor itself had a total height of approx. 13 cm (TL of –0.68/0.73 m and a BL of –0.81 m) and consisted of a thin surface covering and a subfloor beneath[39]. Along the north side, marly limestone slabs were laid in it[40].

In the middle of the cella, the clay floor of Naos 1a ran up against the old Rectangular Basis, which continued to be used (plans 5–6). Due to the raising of the floor, the visible upper part of this basis was now about 20 cm lower than before, but still more than 0.25 m high. The original height of the basis is unknown, as its original surface has not been preserved[41].

A major change in the cella was the abandonment of the interior columns that were originally located along the long sides of the Rectangular Basis and divided the room into three naves[42]. The floor of Naos 1a covered the round bases of green schist (plans 5. 7). They can therefore no longer have supported wooden pillars[43]. The cella was now one interior without subdivision of about 6.30 m width[44].

The Hoard under the floor of Naos 1a

The so-called Hoard (»Hortfund«) lay under the floor covering of Naos 1a (pl. 4, 2; plans 4; 5 b; 6–7). It was placed on the floor of its predecessor, Naos 1, and then covered with a filling on top of which a new floor was laid. In the subfloor of Naos 1a many small amber objects were found in the metrical excavation units *870272, 870298, 870245, 870246, 80249, 870281* (plan 9 below) as well as three fragments of a Phrygian omphalos bowl made of clay *870249.1*[45]. This was an

elements from different construction phases: the raised column bases of Naos 1a are combined with the collateral wall of Naos 2. The cella is reconstructed hypaethral with a canopy over the Rectangular Basis, which, however, cannot have existed because the inner column bases were covered by the clay floor of Naos 1a (and also by the floor of Naos 2).

36 Weißl 2002, 326; Kerschner – Prochaska 2011, 83.

37 A. Bammer described the upper floor, but could not assign it to any of the construction phases he reconstructed. This floor remains without function in his phase sequence, while on the other hand Bammer's »elevated peripteros« or »2nd peripteros« (which roughly corresponds to Naos 1a) remains without a floor of its own. Cf. Bammer 2005, 123: »Von einem Boden, welcher im Inneren der Cella der Erhöhung der Peristasis außen entsprechen würde, ist nicht[s] zu sehen, auch keine Ansatzspuren an den Cellainnenwänden. Es erscheint daher sehr fraglich, ob im Inneren der Cellaboden überhaupt jemals erhöht wurde.«

38 This floor was either not completely horizontal, or it was preserved at a slightly different height when it was excavated. This reported elevation measurements vary between –0.68 m in the north-east of the cella (Bammer 1988b, 7 figs. 5–6; Kerschner 2005, 136 fig. 9) and –0–72 m, –0–72.5 m as well as –0–73 m for the west and north side of the cella (Bammer 2005, 212).

39 Bammer 2005, 212 stated that the floor is about 8–10 cm thick.

40 Bammer 2005, 212.

41 The best-preserved part of the Rectangular Basis is under the west wall of the Green Schist Basis, for which it serves as a foundation see pls. 4, 2; 5, 1; plan 6; cf. Kerschner – Prochaska 2011, 79 f. figs. 6–8; different, Bammer 2005, 197.

42 On the reconstruction of a three-aisled cella see above chap. 1.2.1 and Weißl 2006, 192 fig. 3 b; Kerschner – Prochaska 2011, 82; Kerschner 2017, 35 f. and n. 167; Kerschner 2020, 200 fig. 5. On the dimensions of the column bases: Bammer 1988b, 13 f. figs. 8. 11. 15–18; Bammer 2005, 182–186 figs. 1–2 photos 1–7.

43 This rules out the assumption in Bammer 2005, 219: »…, daß der Baldachin [= die Innenstützen] überhaupt erst in dieser Bauphase mit einem rechteckigen Sockel in Zusammenhang mit der Erhöhung der Peristasis errichtet wurde, scheint möglich.«

44 For the exact dimensions: Bammer 2005, 189 f. fig. 2.

45 Kerschner 2005, 126 f. figs. 1–3.

irreversible deposition which had preservative intention[46]. The Hoard, with numerous objects made of precious materials, among which the amber girdle was the most representative single piece (see A. Naso, chap. 5.6), can most probably be interpreted as a building sacrifice deposited in connection with construction phase Naos 1a around 650–640 BC[47]. The Hoard thus belonged to an older construction phase than the so-called Foundation Deposit (found by D. G. Hogarth; see below), which was deposited in the so-called Green Schist Basis as a building sacrifice for the subsequent temple Naos 2.

A total of 202 amber objects derived from this clay subfloor: unit *870272* (plans 6. 9 below) from a level of –0.76 m BL contained a gold sheet[48] and a glass bead[49], in addition to a biconical amber bead of type 6 (cat. 263). At the level between –0.72 m TL and –0.78 m BL derived *870245* (plans 5 b; 9 below), which contained 40 glass beads[50] and a glass bird pendant[51], in addition to a single globular amber bead of type 1 (cat. 21).

From *870246* (plans 7. 9 below) came 141 amber finds: 10 globular beads of type 1 (cat. 7–16), 11 ring-shaped beads of type 2 (cat. 46–56), 16 disc-shaped beads of type 3 (cat. 65–70. 87–96), 34 cylindrical beads of type 4 (cat. 105. 114–137. 180. 189. 190. 197. 200–203. 214), 6 biconical beads of type 6 (cat. 241–244. 261. 262), one bead fragment (cat. 294), 3 bulla-shaped pendants of type 3 (cat. 300–302), 27 bird-like spacers of type 4–6 (cat. 362–388), 19 triangle-shaped spacers of type 7 (cat. 423–441), 10 round spacers of type 8 (cat. 476–482. 486–488), one fibula of type 1 (cat. 489), one fibula of type 2 (cat. 494), one inlay (cat. 527) and one broken fragment that cannot be identified (cat. 538). This metrical excavation unit as part of the subfloor of Naos 1a[52] also contained 11 gold finds (eye plate[53], earring[54], needle[55], ring[56], appliqués[57], sheet metal[58]), 28 bronze fibulae[59], as well as 10 further objects made of bronze (arm-ring[60], finger ring[61], pendant[62], spiral scroll[63], button[64], spout[65], sheet[66]), 3 objects made of white metal alloys (fibulae[67], bead[68])

46 Kerschner 2017, 46–48. On building and foundation offerings: Lambrinoudakis et al. 2005, 337–346; Patera 2012, 146–154.

47 Contrary to the previous assignment of this hoard to Naos 2, which was based on an older state of elaboration of the stratigraphy – Kerschner 2017, 47 fig. 10; Kerschner – Konuk 2020, 125 f. The observation that »this hoard had been deposited on the floor of Naos 1« (Kerschner – Konuk 2020, 125) remains true.

48 Pülz 2009, cat. 564.

49 Pulsinger – Pülz (in preparation), cat. 117.

50 Pulsinger – Pülz (in preparation), cat. 31. 43–50. 95–97. 99–109. 184. 203. 299. 375. 382. 392–395. 415. 416. 434. 435. 458. 467. 499. 723.

51 Pulsinger – Pülz (in preparation), cat. 729.

52 Level of the metrical spit: TL –0.71 m, BL –0.78 m.

53 Pülz 2009, cat. 20.

54 Pülz 2009, cat. 230.

55 Pülz 2009, cat. 245.

56 Pülz 2009, cat. 261.

57 Pülz 2009, cat. 363–365.

58 Pülz 2009, cat. 465. 490. 508. 560.

59 Klebinder-Gauß 2007, cat. 7. 14. 21. 24. 33–38. 89. 90. 101. 102. 111. 127–129. 151. 159–166. 194. As well as G. Klebinder-Gauß in: Seipel 2008, 219 cat. 254: end of the 8th–1st third of the 7th cent. BC.

60 Klebinder-Gauß 2007, cat. 444.

61 Klebinder-Gauß 2007, cat. 672.

62 Klebinder-Gauß 2007, cat. 783. 795. 813 and G. Klebinder-Gauß in: Seipel 2008, 217 cat. 247: 1st half of the 7th cent. BC.

63 Klebinder-Gauß 2007, cat. 903.

64 Klebinder-Gauß 2007, cat. 908.

65 Klebinder-Gauß 2007, cat. 933.

66 Klebinder-Gauß 2007, cat. 962.

67 Klebinder-Gauß 2007, cat. D 1. D2.

68 Klebinder-Gauß 2007, cat. D 53.

and 11 glass beads[69], 2 scarabs[70] and an amulet depicting a horse (?) made of faience[71], another scarab made of steatite[72], an ivory[73] and a terracotta.

The metrical spit below *870281* (plans 7. 9 below), with the bottom level of –0.82 m, contained material from both the subfloor and the fill below. It comprised 61 amber finds: 6 globular beads of type 1 (cat. 22–27), 3 ring shaped beads of type 2 (cat. 35–37), 5 disc-shaped beads of type 3 (cat. 72–74. 101. 102), 7 cylindrical beads of type 4 (cat. 109. 171–173. 196. 208. 209), 9 biconical beads of type 6 (cat. 223–228. 246–248), 5 square beads of type 7 (cat. 282. 283. 285–287), one bulla-shaped pendant of type 3 (cat. 306), 2 fruit-shaped pendants of type 5 (cat. 330. 342), 2 pendant fragments (cat. 317. 348), one individual spacer of type 3 (cat. 354), 9 bird-like spacers of type 4–6 (cat. 407–415), 4 triangle-shaped spacers of type 7 (cat. 418. 451–453), one round spacer of type 8 (cat. 484), one fibula of type 2 (cat. 501) and 5 fibulae of type 3 (cat. 503. 507. 514. 518. 521).

In addition, *870281* contained 3 gold objects (pendant[74], bead[75], sheet[76]), 11 bronze finds (fibulae[77], ring[78], finger ring[79], beads[80]), one white metal alloy bead[81], 16 glass beads[82] and a faience statuette of the god Bes[83].

Further amber objects (144 pieces) and other small-format votives were found in the fill below the subfloor of Naos 1a which has a top level of –0.81 m and a bottom level of –0.90 m (plan 10 above). This fill lies directly on the floor of Naos 1. It includes metrical unit *870324* (–0.83 m TL to –0.88 m BL; plans 5 b; 10 above) with 3 amber finds (2 globular beads of type 1: cat. 29. 30; one ring-shaped bead of type 2: cat. 42) as well as 3 bronze fibulae[84] and 3 glass beads[85].

From a level between –0.78 m TL and –0.86 m BL derived *870341* (plans 6. 10 above), which contained 12 amber pieces: a ring-shaped bead of type 2 (cat. 43), 4 disc-shaped beads of type 3 (cat. 77–80), a cylindrical bead of type 4 (cat. 111), 2 biconical beads of type 6 (cat. 233. 234), 2 square beads of type 7 (cat. 290. 291), a fruit-shaped pendant of type 5 (cat. 332) and an individually designed spacer of type 3 (cat. 355). In addition, this metrical unit included a bronze spiral scroll[86], a white metal alloy fibula[87] and 3 glass beads[88].

In the northern part of the central area of Naos 1a[89], at a level of –0.78 m TL and –0.86 m BL was unit *870348* (plan 10 above) with 14 ambers: one ring-shaped bead of type 2 (cat. 44), one disc-shaped bead of type 3 (cat. 76), 6 cylindrical beads of type 4 (cat. 112. 174–176. 198. 211), 4 biconical beads of type 6 (cat. 231. 232. 254. 255), a bulla-shaped pendant of type 3 (cat. 307)

69 Pulsinger – Pülz (in preparation), cat. 7. 51. 110. 111. 354. 358. 381. 417. 418. 452. 692.
70 G. Hölbl in: Seipel 2008, 207. 209 cat. 226. 229: 2nd half of the 8th/beginning of the 7th cent. BC.
71 G. Hölbl in: Seipel 2008, 203 cat. 214: probably late 8th cent. BC.
72 On the scarabs and the amulet made of faience see Hölbl 1993, 236 fig. 1, 1. 2. 6 pl. 20, 1. 2. – Scarabs made of steatite: G. Hölbl in Seipel 2008, 207 cat. 225: 10th–8th cent. BC.
73 D. Tüzün in: Seipel 2008, 176. 180 cat. 132. 140: mid 7th and 7th cent. BC.
74 Pülz 2009, cat. 59.
75 Pülz 2009, cat. 172.
76 Pülz 2009, cat. 565.
77 Klebinder-Gauß 2007, cat. 8. 50–52. 86. 135. 170. 171.
78 Klebinder-Gauß 2007, cat. 658.
79 Klebinder-Gauß 2007, cat. 662.
80 Klebinder-Gauß 2007, cat. 763. 771.
81 Klebinder-Gauß 2007, cat. D 54.
82 Pulsinger – Pülz (in preparation), cat. 55. 56. 122–124. 220. 363. 369. 371. 377. 396. 456. 469. 470. 676. 689.
83 Hölbl 1993, 232 pl. 19, 2; G. Hölbl in: Seipel 2008, 201 cat. 211: late 8th/beginning 7th cent. BC.
84 Klebinder-Gauß 2007, cat. 27. 57. 153.
85 Pulsinger – Pülz (in preparation), cat. 133. 186. 438.
86 Klebinder-Gauß 2007, cat. 905.
87 Klebinder-Gauß 2007, cat. D 3.
88 Pulsinger – Pülz (in preparation), cat. 64. 142. 683.
89 Trench 582.

and a fruit-shaped pendant of type 5 (cat. 336). In addition, this metrical unit contained a gold sheet[90] and a glass bead[91].

870349 (plan 10 above), from the metrical spit between –0.88 m TL and –0.92 m BL, included 9 amber objects: a ring-shaped bead of type 2 (cat. 57), a disc-shaped bead of type 3 (cat. 75), a conical bead of type 5 (cat. 216), 3 biconical beads of type 6 (cat. 251. 252. 274), 2 square beads of type 7 (cat. 288. 289) and a bird-like spacer of type 4–6 (cat. 416) as well as 3 bronze fibulae[92], a bronze earring[93], a bronze bead[94] and 4 glass beads[95].

From a metrical spit between –0.86 m TL and –0.95 m BL[96] were the metrical units *870352* and *870353* (plans 7. 10 above). This metrical spit crosses the boundary of two stratigraphic layers: it contained material from both the fill of Naos 1a and the floor of Naos 1. However, since we have seen that the fill is rich in small finds, while no finds can be assigned with certainty to the floor of Naos 1, it is likely that these artefacts also come from the upper part of the unit which belonged to the fill of Naos 1a. *870352* contained 96 amber finds: 2 heads (cat. 2. 3), one bird-shaped protome (cat. 5), one globular bead of type 1 (cat. 28), 2 ring-shaped beads of type 2 (cat. 40. 41), 3 disc-shaped beads of type 3 (cat. 85. 103. 104), 6 cylindrical beads of type 4 (cat. 110. 181–185), 17 biconical beads of type 6 (cat. 217. 218. 236. 237. 249. 250. 253. 264–273), one square bead of type 7 (cat. 277), 2 bulla-shaped pendants of type 3 (cat. 313. 314), 12 fruit-shaped pendants of type 5 (cat. 321–328. 331. 335. 337. 338), 2 triangular spacers of type 1 (cat. 350. 351), one rectangular spacer of type 2 (cat. 353), one individually designed spacer of type 3 (cat. 356), 5 bird-like spacers of type 4–6 (cat. 358–361. 417), 23 triangle-shaped spacers of type 7 (cat. 419–422. 454–472), 2 round spacers of type 8 (cat. 475. 485), 2 fibulae of type 2 (cat. 491. 502) and 13 fibulae of type 3 (cat. 504. 506. 508. 511–513. 515–517. 519. 520. 522. 523). Within this metrical unit were also a gold wire[97], a bronze sheet[98] and ivory[99].

In unit *870353*, 1 m further east but on the same level, were 6 ambers: a biconical bead of type 6 (cat. 235), 4 fruit-shaped pendants of type 5 (cat. 320. 340. 344. 345) and a fibula of type 3 (cat. 509) together with 2 gold sheets[100], 2 bronze finds (fibula[101], miniature wheel[102]), a white metal alloy ring[103] as well as 9 glass beads[104], a terracotta[105] and a faience scarab[106].

From the area south of the Rectangular Basis and therefore most likely not associated with the Hoard, came *870298* (plans 5 a; 9 below) with a bottom level of –0.76 m. This metrical unit contained a total of 3 amber finds: a cylindrical bead of type 4 (cat. 210) and 2 biconical beads of type 6 (cat. 229. 230). Furthermore, a bronze fibula and a bronze earring as well as 8 glass beads were found. Another metrical spit at a level between –0.86 m TL and –0.95 m BL – albeit not part of the Hoard because of its location – contained material from the metrical unit *870354* (plans 5 a; 10

90 Pülz 2009, cat. 569.
91 Pulsinger – Pülz (in preparation), cat. 426.
92 Klebinder-Gauß 2007, cat. 60. 96. 137.
93 Klebinder-Gauß 2007, cat. 596.
94 Klebinder-Gauß 2007, cat. 764.
95 Pulsinger – Pülz (in preparation), cat. 34. 254. 385. 482.
96 Correction by M. Weißl (older information in the diary: »zwischen –0,88 m OK und –0,92 m UK«).
97 Pülz 2009, cat. 420. When classifying individual finds such as the gold wire, a specific factor of uncertainty of the elutriation process must be taken into account, as digging with coarse equipment may have resulted in isolated finds being placed in the wrong boxes: cf. Kerschner – Konuk 2020, 158 f. figs. 37–38.
98 Klebinder-Gauß 2007, cat. 955.
99 D. Tüzün in: Seipel 2008, 180 cat. 142: 2nd half of the 8th/1st half of the 7th cent. BC.
100 Pülz 2009, cat. 483. 570.
101 Klebinder-Gauß 2007, cat. 61.
102 Klebinder-Gauß 2007, cat. 900 and G. Klebinder-Gauß in: Seipel 2008, 223 cat. 265: end of 8th–1st half of 7th cent. BC.
103 Klebinder-Gauß 2007, cat. D 33.
104 Pulsinger – Pülz (in preparation), cat. 65. 144. 145. 255. 301. 309. 365. 657. 684.
105 G. Güney-von Graeve in: Seipel 2008, 227 cat. 273: 2nd half of the 7th cent. BC.
106 Hölbl 1993, fig. 1, 5.

above), which included a total of 4 amber objects: 2 ring-shaped beads of type 2 (cat. 58, 59), a cylindrical bead of type 4 (cat. 177) and a bead fragment (cat. 295). In addition, there was a glass bead[107].

With about 344 individual objects, the Hoard represents the largest single complex of amber objects in the Artemision. Apart from the amber finds, it contained – as already mentioned above – gold and bronze jewellery, glass beads, faience and a Phrygian omphalos bowl made of clay, the latter being unique in Ionia[108].

The Hoard was not recognised immediately during the excavation, but only afterwards during wet-sifting, when it was noticed that certain metrical excavation units included an unusually high number of small objects made of valuable material, especially amber (plans 3; 5 b–7; 9 below; 10 above). Only a few individual amber artefacts of larger size were noticed during excavation, and their findspot was precisely measured[109].

The reason why the deposit was not recognised *in situ* was the excavation method mentioned above: in order to clarify the architectural contexts more quickly[110], several workers, working side by side, chopped up the soil with big hoes (pls. 1, 2; 2, 1)[111]. The soil broke up into clods and lumps, which were shovelled into wheelbarrows and transported to the margins of the excavation area, where they were temporarily stored in piles and then separated according to the metrical excavation units (pl. 2, 2). Finally, the soil was crushed and wet-sifted through a fine-meshed sieve, whereby the majority of the particularly small artefacts – including many of the amber objects – came to light. In most cases therefore, no precise location of an individual find can be given, but only the metrical excavation unit in which it was found, as visualised in plans 3–7 and 9–10. Rarely were layers observed during the excavation and no plans were drawn. For this reason, pits were usually only recognised when they appeared by chance in the profile. The same applies to concentrations of very small finds (which include the amber beads and the electrum coins).

The idea that the particularly numerous amber objects from the north-eastern part of Naos 1a must have belonged to a »Hortfund« (Hoard) was already formulated by A. Bammer in the first preliminary report[112]. It offers a convincing explanation for the accumulation of so many, mostly similar amber artefacts in connection with other small finds of valuable materials in this area of Naos 1a. It is likely that this intentional deposition was part of a foundation sacrifice, as in the case of the two hoards of valuable votives in the subsequent temple, Naos 2 – the Foundation Deposit in the Green Schist Basis and the Pot Hoard in the south-west corner of the cella[113].

In later publications, Bammer distanced himself from his original hypothesis of an intentional deposition: he interpreted the filling layer in which the objects were found as a »Schwemmschicht« (alluvial layer) due to its sandy texture[114]. According to this altered hypothesis, the small finds were not deliberately deposited, but rather transported there with the floods (»mit der Überschwemmung«)[115]. He nevertheless retained the original name »hoard find« without noticing that this contradicts the flood hypothesis, since finds that were washed away by the chaotic natural force of a flood cannot reassemble by accident as a closed hoard. The force of the water masses

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107 Pulsinger – Pülz (in preparation), cat. 367.

108 Kerschner 2005, 125–134 figs. 1–3.

109 Excavation diary Artemision 1987, entry 4th of September: »[Sondage 581]: Weiterarbeit an der Nordseite der neuen Basis [= Rechteckbasis des Naos 1]: [870]246: großer durchlochter Bernstein, … Taube aus Bernstein.«

110 Cf. Bammer 1994, 30: »Da es sich bei der Artemisiongrabung, wie gesagt, vor allem um eine Architekturgrabung handelt …«.

111 Cf. Kerschner – Konuk 2020, 155–162 A.

112 Bammer 1988b, 22: »An der Nordseite der Rechteckbasis dagegen wurde ein *in situ* befindlicher Hortfund geborgen. Dieser wurde in den Kisten K 235, 246, 247, 335, 271, 307, 340 untergebracht.« The wording *in situ* is misleading in that the find was not recognised *in situ*, but only when it had already been dug away with the soil material. Cf. Bammer 1990, 150.

113 Hogarth 1908c, 42 f.; Hogarth 1908d, 235. 238; Williams 1991–1993; Weißl 2005, 364–366 fig. 1; Kerschner 2017, 46–48; Kerschner – Konuk 2020, 122–128 figs. 12. 15 (with bibliography).

114 Bammer 2004, 72.

115 Bammer 2004, 72 fig. 3; cf. Bammer 2001a, 11 f. 22 fig. 3.

that obviously damaged Naos 1 would undoubtedly have ruptured the amber belt and washed away the feather-light beads. They would then not have been found gathered in one place, but rather scattered over a wide area[116]. Since this is not the case, the find situation clearly speaks for an intentional deposit[117].

Since the Hoard was not recognised *in situ* and therefore was not excavated as a unit but in bits and pieces, it can only be reconstructed retrospectively. The conspicuously high concentration of amber objects in the north-eastern area of Naos 1a is shown in plans 3–7, 9 below and 10 above. Since the finds from wet-sifting can only be localised *per se* by metrical excavation units, the result is a ›pixelated‹ picture consisting of the rectangles of the excavation grid. The exact demarcation of the Hoard cannot be recovered either in the horizontal nor in the vertical dimension[118]. However, there is a clear focus of the Hoard along the north and east side of the old Rectangular Basis of Naos 1, the lower part of which was backfilled to a height of 20 cm when the ground was raised for the floor of Naos 1a.

1.2.3 Naos 2

Naos 2 was built shortly after a damage of Naos 1a, around 640–620 BC[119]. Naos 2 was a major reconstruction of the temple which rebuilt and reused the cella walls, but changed the layout of both the interior and the exterior (pls. 2. 4. 5, 1; plan 9 above). The *peristasis* that was raised in Naos 1a was eventually abandoned. The Collateral Wall continued to be used. The floor inside was raised by 0.3 m and the outside level was also raised accordingly in order to prevent future flooding (plans 5–7). The building was probably roofed[120].

The interior of Naos 2 was also remodelled: the Rectangular Basis of Naos 1 was abandoned and replaced by the larger Green Schist Basis in the east of the cella and the so-called Small Western Basis made of marly limestone slabs in front of it. The Green Schist Basis was presumably the location of the *xoanon*, the wooden cult image of Artemis, while the Small Western Basis was used as an offering table. In a later construction phase, the Large Western Basis of Sekos 1, which is at a higher level, was added to the western long side of the Small Western Basis (pl. 3, 2; plan 5 a). The lowest stone layer of the small basis lay in the so-called Rammed Earth Layer. This is how D. G. Hogarth described the filling under the floor of Naos 2[121]. Both bases, the Green Schist Basis and the Small Western Basis, were connected by a narrow strip that was formerly the surface of the western section of the old Rectangular Basis of Naos 1 (labelled »T-foundation« by Hogarth; pl. 3, 1; cf. plan 5 a).

The Green Schist Basis, measuring 4.32 × 2.86 m, was free-standing, separated from the cella walls by a narrow corridor: 0.33 m to the north and south and a slightly wider one to the east

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116 Kerschner 2005, 137 n. 72; Kerschner – Prochaska 2011, 84. Another contradiction is that Bammer 1988b, 7 describes the compact Rammed Earth Layer as »reinen Flußsand« which is »weitgehend fundfrei«. Later, Bammer 2004, 72 describes the same layer as »voller Kleinfunde, welche mit der Überschwemmung dorthin gelangten«.

117 Cf. Weikart 2002, 125.

118 Bammer 1990, 150 assumes: »Hogarth may therefore have scraped the top of the amber hoard.« Individual amber objects, however, were also found in other places inside Naos 2 in the Rammed Earth Layer. Since the Hoard can only be roughly delimited, a possible connection with finds from the Hogarth excavation can no longer be verified.

119 Hogarth – Henderson 1908a, 56. 58–63 figs. 17–20; Bammer 1988b, 17–19 figs. 15–16. 20–24; Bammer 1990, 142 f. 148 figs. 10. 15–21 pls. 17 b; 18 d; Weißl 2002, 326 f. figs. 3. 5–6. 11; Bammer 2005, 190–197. 219 figs. 3–4. 11–15 below; 17. 20 photos 8. 11 (»Rechteckbau«); Kerschner – Prochaska 2011, 82–88 figs. 1–2. 9; Kerschner 2017, 43–48 figs. 7–9; Kerschner 2020, 206–213 figs. 6–13.

120 An Early Archaic terracotta roof (Schädler – Schneider 2004) deposited in the backfilled riverbed around 600 BC possibly belonged to Naos 2, but it is also possible that it covered a roofed porch of Sekos 1; cf. Ohnesorg 2007b, 156 f. For a detailed discussion see Kerschner (in print).

121 Hogarth 1908c, 42. 45; Smith 1908, 169. Cf. Kerschner – Prochaska 2011, 83 f.; Kerschner 2020, 223–225 fig. 18; Kerschner – Konuk 2020, 124–128 fig. 12 (with a list of the different designations of this layer in the older literature).

(pls. 4, 2; 5, 1, plan 9 above). The inner filling of the Green Schist Basis was contemporaneous with its walls[122]. It consisted of marly limestone slabs, some reused green schist blocks with clayey sand in between: in this inner filling D. G. Hogarth discovered the so-called Foundation Deposit, consisting of 800 to 1,000 small finds that were carefully embedded in the sand (plan 9 above, labelled with X). Among them were 120 amber objects (cat. 540–659) as well as 24 electrum coins[123]. This was an intentional deposit, probably connected with the construction of Naos 2 around 640–620 BC which is the *terminus ante quem* for the deposited objects[124].

The floor of Naos 2 consisted of alternating layers of ash and clay (as in Naos 1). The filling beneath the floor was called »rammed earth layer« by D. G. Hogarth, who excavated the northern and western areas of the cella down to the bottom of the Green Schist Basis and in some places even deeper[125]. This Rammed Earth Layer covered the upper part of the Rectangular Basis of Naos 1/Naos 1a up to its surface, which remained visible and served as a connection between the Green Schist Basis and the Small Western Basis[126]. It was in this stratum that the so-called Pot Hoard was found in 1905: consisting of 17 electrum coins in a jug and a further 5 coins outside of it[127] (pl. 5, 2). The typological dating of the jug by D. Williams points to the third quarter of the 7th century BC[128].

A. Bammer excavated the remaining parts of the Rammed Earth Layer in the east and south of Naos 2 in 1987[129]. Based on diagnostic pottery fragments, this layer can be roughly dated to the second half of the 7th century[130]. Since the subsequent temple Sekos 1 was built in the last quarter of the 7th century BC, Naos 2 must have been built earlier, i.e. between 640 and 620 BC. Therefore, the stratigraphic sequence supports the typological dating of the Pot Hoard jug by D. Williams[131].

Amber Objects from the Rammed Earth Layer under the floor of Naos 2

More, but scattered finds of amber objects came from the compact Rammed Earth Layer [132] (see above). This layer was placed over the floor of the previous Naos 1a during the construction of Naos 2 in order to raise the level within the reused and renewed cella walls. In this way, the temple rebuilt as Naos 2 on a modified ground plan was better protected against flooding.

The lower edge of the Rammed Earth Layer was at –0.68/–0.73 m (plans 5–7). The finds (a total of 149 amber objects) from this layer (see below) thus have a *terminus ante quem* between 640 and 620 BC.

The metrical unit *870232* (plans 7. 9 above) between –0.66 m TL and –0.72 m BL had a total of 130 amber finds: 4 globular beads of type 1 (cat. 17–20), 2 ring-shaped beads of type 2 (cat. 33. 34), 5 disc-shaped beads of type 3 (cat. 71. 97–100), 45 cylindrical beads of type 4 (cat. 106–108. 138–170. 191–194. 204–207. 215), 3 biconical beads of type 6 (cat. 221. 222. 245), 3 square beads of type 7 (cat. 279–281), one drop-shaped pendant of type 1 (cat. 297),

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122 It consists of several layers of limestone slabs and some reused green schist blocks with clayey sand in between.

123 Kerschner – Konuk 2020, 114–122; Kerschner 2017, 46; Hogarth 1908c, 36 f.; Hogarth – Henderson 1908a, 54 f.; Hogarth 1908d, 232–234; Jacobsthal 1951.

124 Kerschner 2020, 206–223; Kerschner – Konuk 2020, 114–123.

125 Hogarth 1908c, 42. 45; Smith 1908, 169.

126 Cf. Kerschner 2005, 136 fig. 9; Weißl 2005, 365 f. fig. 1 b; Kerschner – Prochaska 2011, 83 f.; Kerschner – Konuk 2020, 124–128.

127 Hogarth 1910, 153; Weißl 2005, 364–366 fig. 1; Kerschner – Konuk 2020, 122–128.

128 Williams 1991–1993.

129 Bammer 1990, 141, here mistakenly called »flood layer«.

130 Kerschner – Konuk 2020, 127 f. fig. 18.

131 See above and Kerschner – Konuk 2020, 128.

132 The components clay and sand are weighted differently in the strata descriptions of the profile drawings and the preliminary reports, so that it is often not easy to understand that they are one and the same stratum. See in detail Kerschner 2005, 136 n. 67.

3 bulla-shaped pendants of type 3 (cat. 303–305), 2 fruit-shaped pendants of type 5 (cat. 333. 334), 2 pendant fragments (cat. 346. 347), a rectangular spacer of type 2 (cat. 352), 18 bird-like spacers of type 4–6 (cat. 389–406), 9 triangle-shaped spacers of type 7 (442–450), 2 round spacers of type 8 (cat. 473. 483) and 4 fibulae of type 2 (cat. 497–500). Further finds include a bronze fibula[133] and 48 glass beads[134].

870233 (plan 9 above), with the level between –0.66 m TL and –0.72 m BL, included 5 amber finds: a disc-shaped bead of type 3 (cat. 86), a biconical bead of type 6 (cat. 238), a square bead of type 7 (cat. 278), a bulla-shaped pendant of type 3 (cat. 312) and a bottle-shaped pendant of type 4 (cat. 318). In addition, this metrical unit contained 14 objects made of gold (bird of prey brooch[135], bird of prey needle[136], 3 pendants[137], 4 beads[138], one pin[139], one appliqué[140], 3 sheets[141]), 7 finds made of bronze (fibulae[142], ring[143]) as well as 3 glass beads[144] and one pendant made of glass[145] and a pendant in the form of a miniature aryballos made of ivory[146].

The unit *870409* should also be added here. It includes stray finds that were found during the cleaning of walls and profiles. For this reason, they cannot be assigned to any particular construction phase. In addition to a pendant fragment made of amber (cat. 316), it contained a gold bead[147], a gold pin[148] and a bronze ring[149].

Western part of the cella of Naos 2 (plan 3)[150]

South of the Small Western Basis in Naos 2 (pl. 3, 2; plan 5 a) derived *880807*, at a level between –0.79 m TL and –0.94 m BL, with 2 amber finds: a conical bead of type 5 (cat. 212) and a bottle-shaped pendant of type 4 (cat. 319). Furthermore, a bronze pendant[151] was found in it. From the metrical spit between –1.045 m TL and –1.1 m BL was unit *880946* with 3 amber objects: a ring-shaped bead of type 2 (cat. 31) and 2 biconical beads of type 6 (cat. 239. 240).

West of the Small Western Basis, at a level of –0.5 m TL to –0.54 m BL, was *880443* with a ring-shaped amber bead of type 2 (cat. 32). Also, in this unit was a bird bowl. The metrical lift between –0.79 m TL and –0.94 m BL contained *880822* with a fruit-shaped amber pendant of type 5 (cat. 329) and a gold appliqué[152].

From the area north of the Small Western Basis came the metrical units *880947, 880943* and *880949*, from different metrical spits. *880947* at –0.9 m TL to –1 m BL contained 2 amber finds: a biconical bead of type 6 (cat. 219) and a fibula of type 3 (cat. 510). From *880943* (–0.94 m TL

133 Klebinder-Gauß 2007, cat. 28.
134 Pulsinger – Pülz (in preparation), cat. 4–6. 36–40. 86–93. 205. 215–217. 283. 298. 304. 328–330. 353. 372. 374. 389. 391. 405. 409–414. 431–433. 451. 455. 463. 468. 650. 696. 714.
135 Pülz 2009, cat. 26.
136 Pülz 2009, cat. 28: 2nd half of the 7th cent. BC.
137 Pülz 2009, cat. 81. 113. 145.
138 Pülz 2009, cat. 173. 179. 193. 194.
139 Pülz 2009, cat. 251.
140 Pülz 2009, cat. 329.
141 Pülz 2009, cat. 464. 491. 559.
142 Klebinder-Gauß 2007, cat. 29–31. 93. 158. 217; G. Klebinder-Gauß in: Seipel 2008, 219 cat. 253: 2nd half of the 8th–7th cent. BC.
143 Klebinder-Gauß 2007, cat. 646.
144 Pulsinger – Pülz (in preparation), cat. 195. 315. 489.
145 Pulsinger – Pülz (in preparation), cat. 728.
146 U. Muss in: Seipel 2008, 181 cat. 145: mid 7th cent. BC.
147 Pülz 2009, cat. 204.
148 Pülz 2009, cat. 236.
149 Klebinder-Gauß 2007, cat. 236.
150 Trench 583.
151 Klebinder-Gauß 2007, cat. 784.
152 Pülz 2009, cat. 380.

and –1 m BL: but uncertain data) derived 3 amber objects: a biconical bead of type 6 (cat. 220), a bulla-shaped pendant of type 3 (cat. 309) and raw material (cat. 535). Also, 3 bronze objects – a fibula[153], a handle of a belt[154] and a pendant[155] – were found. The following metrical spit between –1 m TL and –1.03 m BL contained *880949* with an amber fibula of type 2 (cat. 495).

Below the outer level of Naos 2

A few amber objects were found outside Naos 2, close to its western front. To the west, with a metrical spit between –0.79 m TL and –1.03 m BL, was unit *880915* (plan 3). It contained an amber fibula of type 3 (cat. 505), a bronze fibula[156] and a bronze pendant[157]. From a metrical spit between –0.56 m TL and –0.59 m BL derived unit 880594 with a bulla-shaped pendant of type 3 (cat. 308).

1.2.4 Sekos 1

The next temple, Sekos 1, was built at the end of the 7th century BC[158]. With dimensions of 33.3 × 16.35 m, it was about three times larger than Naos 2. Sekos 1 introduced a fundamentally new layout that became exemplary for the three subsequent temples of Artemis. Its main part was a large inner courtyard surrounded by a perimeter wall. A small shrine in its centre sheltered the cult image. Sekos 1 had a *pronaos* in the west. There is no clear evidence of the existence of a *peristasis*. A wall which ran parallel to the eastern enclosure wall of Sekos 1, at a distance of 1.6 m, probably supported a terrace for placing votives and for protecting the temples against flooding. The floor in Sekos 1 was paved with yellow limestone slabs.

The shrine in the courtyard of Sekos 1 used structures from Naos 2 as foundations, namely the cella walls in the eastern area, together with the western wall of the Green Schist Basis (pl. 3, 1). In Naos 2, a narrow corridor surrounded the already discussed Green Schist Basis to the south, north and east (plan 9 above)[159]. This corridor was filled in after the abandonment of Naos 2, presumably during the construction of the successor temple Sekos 1, when the entire eastern part of the cella of Naos 2 was used as a foundation for the shrine[160]. By filling in the former corridor around the abandoned Green Schist Basis, a high podium was created for the new cult image shrine of Sekos 1. The infill in the corridor consisted of slabs of sand and marly limestone, with a few finds and bones in between[161]. This infill is later than the Foundation Deposit inside the Green Schist Basis belonging to the preceding Naos 2. Nevertheless, the filling of the corridor during the construction of Sekos 1 still belongs to the late 7th century BC which gives a *terminus ante quem* for the finds.

To the west of the shrine was the Large Western Basis, built at the end of the 7th century BC and probably rebuilt around 600 BC for Sekos 2. Most likely it represents an altar: a cube built of small stone blocks (2.66 × 2.9 m) (pls. 3, 2; 4, 1)[162]. The Large Western Basis was built above the Rammed Earth Layer and the floor of Naos 2, separated from it by a grey sand layer (plan 5 a). The stratigraphic sequence therefore demonstrates that it belonged to Sekos 1.

153 Klebinder-Gauß 2007, cat. 196.
154 Klebinder-Gauß 2007, cat. 728.
155 Klebinder-Gauß 2007, cat. 801.
156 Klebinder-Gauß 2007, cat. 195.
157 Klebinder-Gauß 2007, cat. 800.
158 On Sekos 1 and 2: Hogarth – Henderson 1908a, 63–69 figs. 22–28 Atlas pls. 1–2; Bammer 1993, 143–152 figs. 1–12; Weißl 2002, 327–329 figs. 5. 8. 11. 14; Kerschner – Prochaska 2011, 88–91 figs. 10–12; Kerschner 2017, 56–58 figs. 11–12; Kerschner 2020, 225–234 figs. 15–18.
159 Hogarth 1908c, 36; Hogarth – Henderson 1908a, 55. 60, called it »extension of the basis or addition«.
160 Kerschner 2020, 227–231.
161 On the objects see Hogarth – Henderson 1908a, 55.
162 Kerschner – Konuk 2020, 128–130.

The shrine and the basis were surrounded by the so-called Inner Sekos Enclosure, two long walls running parallel in an east-west direction. In the foundation of the southern wall of this Inner Sekos Enclosure, five electrum coins were found[163], along with other small finds, which were given a *terminus ante quem* by the construction of Sekos 2 around 600 BC. Presumably, this was an intentional foundation sacrifice during the construction of the temple.

1.2.5 Sekos 2 and the surrounding temenos

Sekos 2 was built around 600 BC, reusing most of the structures from Sekos 1, but with a slightly raised floor[164]. At the same time, the temenos was extended and two cuboid limestone bases – named B and D – were constructed.

Limestone Basis B (plans 3. 8)

Around 600 BC, the riverbed to the east of the temple, which was already almost dry at that time, was filled in and the temenos was extended to the east in the course of the construction of Sekos 2. On top of this fill, the Limestone Basis B (pl. 6, 1; plan 8) was built in the longitudinal axis of the temple[165]. The infill incorporated two layers of (approx.) the same date: the lower layer, infill B, consisted of reddish grey, sandy soil with pottery, animal bones and charcoal[166]. The broader layer above, infill A, consisted almost exclusively of fragments of an Early Archaic terracotta roof, which may have belonged to Naos 2 (see above)[167].

The metrical unit *940242* belongs to the northern part of infill A (roof tile levelling)[168]. Infill A was dumped at the end of the 7th century BC[169]: it contained a ring-shaped amber bead of type 2 (cat. 64), as well as 2 gold appliqués[170] and 2 glass beads[171].

A mixed metrical excavation unit from infill A is *940110,* dating to the end of the 7th century[172], which contained a biconical amber bead of type 6 (cat. 260) and a glass bead[173].

Unit *940135* in infill B comprised objects spanning the period from the second half of the 8th to the late 7th century BC[174], among them a fruit-shaped amber pendant of type 5 (cat. 339) as well as a gold sheet[175], a glass bead[176] and a bird bowl[177].

Unit *940268* belonged partly to infill B[178]. It contained an inlay of amber (cat. 533) and 2 glass beads[179]. It was presumably a secondary deposition. This layer can be interpreted as a filling under the floor of Basis B and was infilled around 600 BC[180]. An electrum coin also derived from this infill[181].

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163 Kerschner – Konuk 2020, 130 f.
164 Kerschner 2020, 234 f. fig. 15 (with bibliography).
165 Bammer 1993, 156 fig. 7; Kerschner 1997, 87–90 figs. 2–3; Weißl 2002, 331 f. figs. 8–11; Kerschner – Konuk 2020, 137–143 figs. 19–20. 22–28 (with bibliography).
166 On the stratigraphy beneath Basis B: Kerschner 1997; Kerschner – Konuk 2020, 137–143 figs. 24–25.
167 On the terracotta roof: Schädler – Schneider 2004; Ohnesorg 2007b; Kerschner (in print).
168 Trench 1023.
169 Kerschner 1997, 182.
170 Pülz 2009, cat. 354. 355.
171 Pulsinger – Pülz (in preparation), cat. 489. 623.
172 Trench 1022. See Kerschner 1997, 224.
173 Pulsinger – Pülz (in preparation), cat. 612.
174 Trench 1022. See Kerschner 1997, 225.
175 Pülz 2009, cat. 485.
176 Pulsinger – Pülz (in preparation), cat. 619.
177 Kerschner 1997, 147 cat. 75 fig. 32 pl. 10.
178 Trench 1023. Kerschner 1997, 225.
179 Pulsinger – Pülz (in preparation), cat. 631. 675.
180 Kerschner 1997, 104. 181 figs. 3. 10. 11, 224–226 (infill B: 140–155).
181 Kerschner – Konuk 2020, 93 no. 107.

The just described infill B covered a total of five successive older layers, called C to G (from top to bottom), all dating to the final third of the 7th century BC[182] (pls. 5, 3; 6, 1; plan 8). They have been interpreted as sacrificial deposits because, in addition to eating and drinking equipment and numerous animal bones, they also contained iron *obeloi* that were intentionally deposited[183]. In addition, there existed also individual votive offerings, most prominent among them four golden lion-headed fibulae and a golden statuette of the *kore* type, presumably representing the goddess[184]. These depositional layers were separated from each other by narrow layers of river sand that thinned out towards the west. The depositional layers E, F and G were chronologically very close together, between 630–615 BC.

Unit *940146* in depositional layer D[185], located in the southern part of the excavated river bed, contained a round amber spacer of type 8 (cat. 474).

From the area west of Basis B[186] came unit *940085* with a disc-shaped amber bead of type 3 (cat. 84) (plan 8).

The uppermost metrical spit in trench 1032, south-west of Basis B, at a level between –0.61 m TL and –0.67 m BL contained unit *940014* with a bulla-shaped amber pendant of type 3 (cat. 311). Further finds were an ivory artefact and a scarab. A chronological assessment cannot be made here, as this layer was disturbed by older excavations.

Limestone Basis D

Limestone Basis D, in the temenos north-west of Sekos 2, was also constructed at the end of the 7th century BC[187] (pls. 6, 2. 3; 29; plan 1). The ashy layer to the east of the basis contained a large quantity of small finds.

The basis itself was built on a layer of sand about 0.66 m thick. This sandy layer with only very few finds in it, lay on an irregular layer of marly limestone slabs, probably a loosely laid pavement, at a level of –0.96 m[188]. Directly above the sandy layer was a dark layer of charcoal, ash and small finds, and animal bones – the so-called Ashy Layer – extending to the east of Basis D. This Ashy Layer contained the remains of what were probably sacrificial meals together with small votive offerings, many of them made of precious material: seven electrum coins and a total of 244 gold, bronze, ivory, amber and faience objects – among them many imported pieces. How far this layer extended to the east, north and south is unknown, as its boundaries lie outside the excavated trenches (pl. 29; plan 1). So far we only know the western end of the layer which lies at 49 m east of the southern edge of the Classical altar (plan 2).

Several hypotheses have been expressed about the chronological and functional relationship between Basis D and the Ashy Layer. A. Bammer interpreted the Ashy Layer as a primary deposit that accumulated as a sacrificial deposit during the use of Basis D, which he therefore interpreted as a »cult basis«, yet without defining what the precise function of such a cult basis may have been[189]. According to M. Weißl, the Ashy Layer was only a fill, dumped after Basis D was abandoned (secondary deposition)[190]. G. Forstenpointner's analysis of the archaeozoological remains indicates

[182] Kerschner 1997, 225 on the stratigraphic sequence. Kerschner 2020, 234 f. fig. 15; Kerschner – Konuk 2020, 137–143 figs. 23–28.

[183] Kerschner 1997, 96–103. 204. 224 fig. 6; Kerschner – Konuk 2020, 137–143 figs. 24–28.

[184] Pülz 2009, cat. 6. 38. 40. 41. On the situation of discovery: Kerschner – Konuk 2020, 140 fig. 26.

[185] Trench 1036. Kerschner 1997, 182 on the chronology of the depositional layer D: 620–615 BC.

[186] Trench 1038.

[187] Bammer 1988a; Weißl 2002, 334 n. 107 fig. 14; Weißl 2003/2004, 177. 184. 188 f. fig. 2; Patera 2012, 151 f.; Kerschner 2017, 48–52 figs. 12–13; Kerschner – Konuk 2020, 143–155 figs. 29–35.

[188] This level corresponds roughly to the level of Naos 1, this means that the layer of marly limestone slabs in the north-west was probably part of the Early Archaic Temenos.

[189] Bammer 1988b, 2–4 (»die Form der Basis selbst … [kann] wenig über Kultgebräuche oder ihre Kultbestimmung aussagen«).

[190] Weißl 2002, 334 n. 107: »Die Basis wurde beim Aufbringen einer fundreichen Aufschüttung, die derjenigen im

a secondary deposition, as the animal bones from the Ashy Layer were not sorted by species or skeleton part, which one would expect for residues of a specific sacrificial ritual[191]. The fact that the Ashy Layer covered Basis D up to half of the preserved height also speaks in favour of a secondary deposit which was infilled to construct a new open space in the northern temenos. In consequence, »the possibility of a primary deposit cannot be ruled out on the available evidence, but it is the less likely variant«[192]. The Ashy Layer was deposited around 590 BC or shortly thereafter[193].

Some amber objects were found in the area around Basis D (pl. 32; plan 2):

West of the basis (and north of the northern *krepis* foundation of Dipteros 1, which was built later)[194] at a level of –0.07 m are the units *850314* and *850316*. According to their location data (see tab. 2), both lie outside the western boundary of the Ashy Layer[195]. *850314* contained a biconical amber bead of type 6 (cat. 257), 3 glass beads[196] and 3 pendants of glass[197]. *850316* included a biconical amber bead of type 6 (cat. 256) and a bronze earring[198].

Other metrical excavation units with amber objects lie in the area south-east of Basis D[199]. Close to Basis D, though not adjacent to it, were the units *860155* and *860203*, *860155* with a height of –0.045 m TL to –0.08 m BL. They belong to the layer above the Ashy Layer, i.e. the construction debris of the Late Archaic Dipteros 1[200], and contained an inlay of amber (cat. 529) and a sheet of gold[201]. *860203* from a metrical spit below (–0.14 m TL and –0.26 m BL) yielded a biconical amber bead of type 6 (cat. 258) and a fibula made of bronze[202], a bronze earring[203] and 5 glass beads[204].

860344 is from a metrical spit between –0.01 m TL and –0.07 m BL, till the beginning of the Ashy Layer[205]. From this metrical unit came the amber scarab (cat. 4) and, among other things, a bronze fitting[206] and a kotyle of Lydian type[207]. This unit also belongs to the construction layer of Dipteros 1 with pottery from the late 7th century and the first third of the 6th century BC[208].

From unit *870081* at a level between –0.25 m TL and –0.31 m BL[209], farther to the east of Basis D, is an amber inlay (cat. 526), 7 bronze finds (pins[210], arm-rings[211], earring[212], coil[213]) as well as an ivory falcon[214], a fragment of an alabastron and a terracotta head.

Hekatompedosbereich entspricht, aufgegeben und von der Euthynterie der untersten Tempelstufe, dem Stereobat, überdeckt … Der stratigraphische Befund spricht dafür, dass die Kleinfunde mit dem Überschütten der sog. Kultbasen, also dem Ende ihrer Nutzungszeit, in Verbindung zu bringen sind.«

191 Forstenpointner 2001, 66 fig. 1; cf. Kerschner – Konuk 2020, 154 f.

192 Kerschner – Konuk 2020, 155.

193 Kerschner – Konuk 2020, 163–170 figs. 39–42.

194 Trench 406.

195 Excavation diary of September 3rd, 1985: »Abhub direkt des weißen Bodens« (white layer).

196 Pulsinger – Pülz (in preparation), cat. 197. 198. 212.

197 Pulsinger – Pülz (in preparation), cat. 730. 731. 739.

198 Klebinder-Gauß 2007, cat. 474.

199 Trench 420.

200 Kerschner – Konuk 2020, fig. 33.

201 Pülz 2009, cat. 631.

202 Klebinder-Gauß 2007, cat. 211.

203 Klebinder-Gauß 2007, cat. 548.

204 Pulsinger – Pülz (in preparation), cat. 233. 250. 266. 279. 532.

205 Trench 421.

206 Klebinder-Gauß 2007, cat. 931.

207 Kerschner 2007, 233–235 fig. 2 pl. 33.

208 Kerschner – Konuk 2020, 168–170. 179 and A. Naso in this volume.

209 Trench 560.

210 Klebinder-Gauß 2007, cat. 281. 282.

211 Klebinder-Gauß 2007, cat. 348. 349. 395.

212 Klebinder-Gauß 2007, cat. 493.

213 Klebinder-Gauß 2007, cat. 703.

214 Illustrated in: Hölbl 1993, pl. 21, 3.

Several amber objects came from units *870104* and *870119*[215]: *870104,* +0.2 m TL till +0.16 m BL, contained a square amber bead of type 7 (cat. 284), and *870119*, +0.08 m TL and –0.04 m BL, a total of 3 ambers: 2 ring-shaped beads of type 2 (cat. 38. 39) and a cylindrical bead of type 4 (cat. 195); furthermore, a sheet of bronze[216] was found here.

Very far to the east of limestone Basis D, at the level of the northern *krepis* foundation of Dipteros 1[217], lies the metrical unit *870199* at a level of +0.19 m TL and +0.15 m BL, containing a ring-shaped amber bead of type 2 (cat. 45) and 2 glass beads[218].

SUMMARY

In summary, the amber objects were mostly found in four major contexts.

1. The Hoard under the floor covering of Naos 1a (north of the Rectangular Basis), deposited ca. 650–640 BC (excavation 1987).
2. The filling of the Green Schist Basis – Hogarth's Foundation Deposit – deposited ca. 640–620 BC in the course of the construction of Naos 2 (excavations 1904/1905)[219].
3. Backfilling of a riverbed east of Sekos 2[220], deposited shortly before 600 BC (excavation 1994).
4. The Ashy Layer east of Limestone Basis D[221], deposited around 590 BC (excavation 1984–1990).

Apart from these four large find complexes, other find locations were[222] underneath the western *peristasis* of Dipteros 1[223], in the southern[224] and eastern[225] temple forecourt, the western Sekos[226]

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215 Both from trench 562.

216 Klebinder-Gauß 2007, cat. 961.

217 Trench 570.

218 Pulsinger – Pülz (in preparation), cat. 538. 680.

219 Hogarth 1908d, 238; Kerschner 2020, 206–223; Kerschner – Konuk 2020, 114–123.

220 Kerschner 1997, 182.

221 Kerschner – Konuk 2020, 145–155. 163–167.

222 See therefore the horizontal distribution plan (plan 2) and the tab. 3.

223 **Area beneath the western *peristasis* of Dipteros 1**: From trench 370 came the metrical units *800006, 800431, 800433. 800006*: amber inlay (cat. 524), 2 bronze needles (Klebinder-Gauß 2007, cat. 235. 262). – *800431*: amber inlay (cat. 528). – *800433*: amber pinhead (cat. 534). From trench 430 under the south-west corner of Dipteros 1 came *860217* from a layer of the late 7th and early 6th cent. (see Weißl 2002, 333–344 fig. 13). In addition to an amber inlay (cat. 531), it contained 6 gold objects (miniature oinochoe: Pülz 2009, cat. 411; sheets: Pülz 2009, cat. 515. 544. 624; workshop waste: Pülz 2009, cat. 699. 700), a bronze needle (Klebinder-Gauß 2007, cat. 259) and 3 glass beads (Pulsinger – Pülz [in preparation] cat. 251. 267. 533). From trench 701 is *892645* from a fill of marly limestone at level –0.57 m BL with a cylindrical bead of type 4 (cat. 187) and a fibula of type 2 (cat. 496), both amber.

224 **Area of the southern temple forecourt**: *760238*: a female bust made of amber (cat. 1) came from trench 352 between the so-called Apsidal Building and the so-called Channel.

225 **Area of the eastern temple forecourt**: *880974* in trench 591 contained a cylindrical amber bead of type 4 (cat. 186). In trench 620, in a burnt layer under the fill of marly limestone below the krepis of Dipteros 1, in *892609* were 2 fruit-shaped amber pendants of type 5 (cat. 341. 343) and a bronze omphalos bowl (Klebinder-Gauß 2007, cat. 820).

226 **Area western Sekos**: Trench 771 in the area east of Sekos 1/2 contains several metrical units with amber finds. *900380* originated from the area east of Sekos 1/2 at a level between –0.64 m TL and –0.93 m BL*:* a bulla-shaped amber pendant of type 3 (cat. 310), a fragment of amber (cat. 537), a gold ring (Pülz 2009, cat. 265), a glass bead (Pulsinger – Pülz [in preparation] cat. 550). At a height between –0.93 m TL and –1 m BL is *900402:* a ring-shaped bead of type 2 (cat. 61), an elongated pendant of type 2 (cat. 299), 4 bronze fibulae (Klebinder-Gauß 2009, cat. 143. 180–182) and four glass beads (Pulsinger – Pülz [in preparation] cat. 265. 495. 496. 552). Below this, between –1 m TL and –1.15 m BL, are two units, namely *900427* and *900434*. *900427:* an amber fibula of type 2 (cat. 493), 3 objects made of gold (fibula: Pülz 2009, cat. 47; ring: Pülz 2009, cat. 266; sheet: Pülz 2009, cat. 673), 3 objects made of a white metal alloy (fibula: Klebinder-Gauß 2007, cat. D 31; ring: Klebinder-Gauß 2007, cat. D 32; workshop waste: Klebinder-Gauß 2007, cat. D 67), 8 glass beads (Pulsinger – Pülz [in preparation] cat. 70. 159. 191. 553. 554. 638. 701. 707) as well as a needle made of ivory (D. Tüzün in: Seipel 2008, 183 cat. 155: 7th cent. BC). *900434:* 2

and the eastern Sekos[227] – most of these contexts have not yet been studied in detail.

APPENDIX 1: GLOSSARY OF THE NAMES USED FOR THE ARCHAIC AND CLASSICAL TEMPLES, STRUCTURES AND LAYERS IN THE ARTEMISION OF EPHESOS

Central Basis

Name used in this text	Names used in earlier publications	Bibliography
Central Basis	Great Altar	Wood 1877
	Steinsetzung H	Wilberg 1906
	Central Basis, Basis	Hogarth 1908c; Hogarth – Henderson 1908a; Robinson 1951; Bammer 1990; Weißl 2002
	Zentralbasis, Hogarthbasis	Bammer 1988b
	Hogarths Basis	Weißl 2002

Naos 1

Name used in this text	Names used in earlier publications	Bibliography
Naos 1	Peripteros	Bammer 1990; Bammer 1993; Weißl 2002; Bammer 2005
	Naos B	Bammer 1988b[228]

amber beads, a ring-shaped one of type 2 (cat. 62), a cylindrical one of type 4 (cat. 179), a gold sheet (Pülz 2009, cat. 494), 2 bronze fibulae (Klebinder-Gauß 2007, cat. 9. 73), a bronze finger ring (Klebinder-Gauß 2007, cat. 666), 5 glass beads (Pulsinger – Pülz [in preparation] cat. 163–166. 258) and a pendant made of glass (Pulsinger – Pülz [in preparation] cat. 736). – Trench 772 was excavated west of the eastern perimeter wall of Sekos 1/2. From this came *900374, 900483, 900486* and *901329* with amber finds. *900374:* a fragment of an amber bead (cat. 296), fragment of an amber pendant (cat. 349), 2 gold objects (wire: Pülz 2009, cat. 418; sheet: Pülz 2009, cat. 453), a bronze fibula (Klebinder-Gauß 2007, cat. 15), a bronze earring (Klebinder-Gauß 2007, cat. 558), 4 glass beads (Pulsinger – Pülz [in preparation] cat. 27. 68. 361. 548) and a hand, made of terracotta. *900483:* a cylindrical amber bead of type 4 (cat. 113), 2 glass beads (Pulsinger – Pülz [in preparation] cat. 380. 492). *900486:* 2 square beads of type 7 (cat. 292. 293), a bird-like spacer of type 4–6 (cat. 357) and an unidentifiable fragment (cat. 539), a gold sheet (Pülz 2009, cat. 590), a glass bead (Pulsinger – Pülz [in preparation] cat. 259). *901329:* a drop-shaped amber pendant of type 1 (cat. 298). – Trench 900 was created east of Sekos 1/2. From this comes *910496:* a disc-shaped amber bead of type 3 (cat. 81), a bead of type 4 (cat. 199), a gold sheet (Pülz 2009, cat. 677), a bronze fibula (Klebinder-Gauß 2007, cat. 17), a bronze earring (Klebinder-Gauß 2007, cat. 565). – Trench 940 contained *910611* with an inlay of amber (cat. 530), a golden appliqué (Pülz 2009, cat. 302) and 3 earrings of bronze (Klebinder-Gauß 2007, cat. 514. 541. 542).

227 **Area eastern Sekos**: *910584* was from trench 913 east of the so-called parallel wall: a disc-shaped amber bead of type 3 (cat. 82), a gold sheet (Pülz 2009, cat. 446), 3 bronze earrings (Klebinder-Gauß 2007, cat. 505–507), 4 glass beads (Pulsinger – Pülz [in preparation] cat. 207. 308. 573. 654). – *930672, 930697, 930984, 931010, 931107* and *931289* were from trench 1020. *930672:* an amber inlay (cat. 532), an ivory knucklebone. *930697:* a cylindrical amber bead of type 4 (cat. 188), a glass bead (Pulsinger – Pülz [in preparation] cat. 593). *930984* from a disturbed context: a conical amber bead of type 5 (cat. 213). *931010* (perhaps a mixed unit): a biconical amber bead of type 6 (cat. 259), 2 glass beads (Pulsinger – Pülz [in preparation] cat. 449. 596) and a roof tile fragment. *931107:* an amber fibula of type 2 (cat. 492). *931289:* a ring-shaped amber bead of type 2 (cat. 63), a bronze fibula (Klebinder-Gauß 2007, cat. 190) and 3 glass beads (Pulsinger – Pülz [in preparation] cat. 388. 597. 670).

228 Bammer 1988b, 17 assumes that the rectangular basis (»Rechteckbasis«) was part of his »Naos B«, although he is not sure about it. This means that »Naos B« has to be equated with Naos 1. On the other hand, Bammer's »Naos B« contains elements of Naos 2, e.g. the collateral wall (»Flankenmauer«). Since Bammer recognised only one floor – that of Naos 1 – his Naos B has only one phase (in the interior). Thus, his term »Naos B« can be applied roughly to both Naos 1 and Naos 2. Bammer's »Naos B« even comprises elements of Sekos 1, the sheathing wall which is the eastern part of the inner enclosure within the hypaethral courtyard of Sekos 1.

	1. Peripteros	Bammer 2005
	Naos 1	Weißl 2002; Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015; Kerschner 2017
Naos 1, Rectangular Basis	foot/stem of the T-foundation	Hogarth and Henderson 1908a
	rectangular basis	Bammer 1990
	Rechteckbasis	Bammer 1988b[229]; Bammer 1990[230]; Bammer 1993; Weißl 2002, Bammer 2005; Kerschner 2005; Bammer 2008a; Kerschner – Prochaska 2011, Kerschner 2015; Kerschner 2017
	Baldachin	Bammer 1993[231]

Naos 1a

Name used in this text	Names used in earlier publications	Bibliography
Naos 1a	erhöhter Peripteros[232]	Bammer 2001b[233]; Bammer 2008a[234]
	2. Peripteros[235]	Bammer 2001a[236]; Bammer 2005[237]; Bammer 2008a[238]; Bammer 2008b[239]
clay floor [Lehmboden]	Lehmboden	Bammer 2005[240]
	Lehmschicht	Kerschner 2005[241]

Naos 2

Name used in this text	Names used in earlier publications	Bibliography
Naos 2	Naos B[242]	Bammer 1988b
	Tempel B und Grünschieferbasis	Weißl 2002; Weißl 2005
	Naos 2	Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015; Kerschner 2017

229 Bammer 1988b, 13–17; on the plan fig. 16 the rectangular basis is called »Rechteckbau«.
230 Bammer 1990, fig. 7.
231 Bammer 1993, fig. 6.
232 Bammer 2001b, 73 fig. 5. Bammer later called this building phase »2. Peripteros«, see below.
233 Bammer 2001b, 73 combines the elevation of the column bases (here Naos 1a) with the construction of the »Flankenmauer« (= collateral wall, here Naos 2).
234 Bammer 2008a, 86 figs. 5. 6.
235 Bammer 2005, 219 fig. 17. This hypothetical building phase consists of the cella of Naos 1 combined with the collateral wall of Naos 2 and the raised column bases of the *peristasis* of Naos 1. Since obviously not all the column bases had been raised, it seems likely that the original plan of a raised *peristasis* was rejected during the construction process, cf. Weißl 2002, 326; Kerschner – Prochaska 2011, 83. The proposed reconstruction drawing – Bammer 2005, fig. 17; Bammer 2008b, fig. 207 – reminds one of Roman Imperial rather than of early Greek architecture.
236 Bammer 2001a, 12 assigns both the »erhöhte Ringhalle« – here Naos 1a – and the »Flankenmauer« (= Collateral wall) – here Naos 2 – to his »2. Peripteros« which is therefore a mixing of both building phases.
237 Bammer 2005, 182–186. 219 figs. 11–12. 17.
238 Bammer 2008a, 90 fig. 5 (right): combines both terms in »zweiten erhöhten Peripteros«.
239 Bammer 2008b, 244 fig. 207.
240 Bammer 2005, 212.
241 Kerschner 2005, 136 fig. 9.
242 Bammer 1988b, 9–12. 14. 17–19 figs. 15. 20, did not recognise the floor of Naos 2, only that of Naos 1. Therefore, his term »Naos B« has only one phase (in the interior) and can be applied roughly to both Naos 1 and Naos 2.

Name used in this text	Names used in earlier publications	Bibliography
Naos 2, cella	B cella	Head 1908; Hogarth – Henderson 1908a
	girdle-wall of the B platform	Head 1908; Hogarth 1908c; Hogarth – Henderson 1908a
Naos 2, north and south walls of the cella	Basis extension walls[243]; extension walls of the basis[244]; new north and south walls of the basis[245]; prolongation[246]	Hogarth 1908c; Smith 1908; Hogarth – Henderson 1908a
	revetting walls	Gjerstadt 1937
Naos 2, western wall of the cella	cross wall [of temple B][247]	Hogarth – Henderson 1908a
Naos 2, Collateral Wall	thickened Basis extension wall	Hogarth 1908c[248]
	[lower part of the] C extension wall	Hogarth – Henderson 1908a[249]
	Traufenpflaster[250]	Bammer 1988b
	Flankenmauer	Bammer 1988b; Bammer 1990[251]; Weißl 2002; Bammer 2005; Bammer 2008a; Bammer 2008b; Kerschner – Prochaska 2011; Kerschner 2015; Kerschner 2017
	flanking wall	Bammer 1990[252]
	2. Ummantelung	Bammer 1990[253]
Foundation Deposit (in the Green Schist Basis)	foundation deposit	Head 1908; Hogarth 1908d; Weißl 2005; Bammer 2008a
	basis treasure	Hogarth 1908d
	basis deposit	Price 1983
Green Schist Basis	green schist basis	Hogarth – Henderson 1908a
	earlier basis	Hogarth – Henderson 1908a
	Fundament N	Weickert 1929
	Central Basis[254]	Gjerstad 1937
	Basis	Gjerstad 1937; Jacobsthal 1951
	Schiefermauer A[255]	Bammer 1988b

243 Hogarth 1908c, 42: »westward prolongation of the north extension-wall of the Basis« means the western part of the northern cella wall of Naos 2.

244 Hogarth 1908c, 42.

245 Hogarth – Henderson 1908a, 61.

246 Hogarth – Henderson 1908a, 61.

247 Hogarth – Henderson 1908a, 61.

248 Hogarth 1908c, 38. 40.

249 Hogarth – Henderson 1908a, 59 fig. 18. Hogarth's and Henderson's »C extension wall« combines two distinct, superposed walls of two consecutive and separate buildings phases and ascribe it to their »Temple C« (= Sekos 1/2). Bammer 1990, 142 fig. 15; 21 pl. 16 a–b; Bammer 2005, 193 fig. 4, however, observed a »thin layer of sand« between these two walls which furthermore differ in width. Thus, actually there are two walls belonging to two different buildings: the lower part – called »collateral wall« – is a buttressing of the foundations of Naos 2, whereas the upper part – called »sheathing wall« – is an inner enclosure within the hypaethral courtyard of Sekos 1.

250 Bammer 1988b, 15 f. fig. 16. This name is only used as a label in the plan, but not in the text.

251 Bammer 1990, figs. 3–4. 7. 10.

252 Bammer 1990, 142.

253 Bammer 1990, fig. 21: this name appears only as labelling in the section drawing, but not in the text.

254 Unlike Hogarth – Henderson 1908a, Gjerstad 1937, 16 used the term ›Central Basis‹ in a reduced form and applied it to the Green Schist Basis only.

255 Bammer 1988b, 7–10 figs. 8–11. This term denotes the remains of the Green Schist Basis extant in 1987: its western wall and the north-western angle.

Name used in this text	Names used in earlier publications	Bibliography
	Grünschieferbasis	Weißl 2002
	präsum[p]tiv gedachter Grünschieferkubus[256]	Bammer 2004
	Kubus[257]	Bammer 2005; Bammer 2008a; Bammer 2008b; Bammer 2016
Naos 2, Small Western Basis	[western part]/head of the T-foundation	Hogarth 1908c, Hogarth – Henderson 1908a; Weickert 1929[258]; Gjerstad 1937[259]
	schräge Ebene	Bammer 1990[260]
	Altar des Naiskos [östlicher Teil]	Bammer 2005[261]
	Zwischenfundament	Bammer 2008b
	kleine, querrechteckige Basis	Kerschner – Prochaska 2011
Naos 2, infill under the floor	rammed earth layer[262]	Head 1908; Hogarth 1908c; Smith 1908
	Schwemmschicht/Überschwemmungsschicht[263]	Bammer 1988b; Stingl 2000/2001; Weißl 2002; Bammer 2004; Bammer 2005; Bammer 2008a; Bammer 2008b
	flood stratum[264]	Bammer 1990
	Anschüttung	Weißl 2002
	Lehmschicht[265]	Kerschner 2005; Kerschner – Prochaska 2011
	Planierschicht	Weißl 2005
	große Sandschicht[266]	Bammer 2008a

Sekos 1 and Sekos 2

Name used in this text	Names used in earlier publications	Bibliography
Sekos 1	temple C/Tempel C	Hogarth 1908c; Hogarth – Henderson 1908a; Robinson 1951; Bammer 1993; Weißl 2002; Bammer 2005; Bammer 2008a; Ohnesorg 2007a
	Pythagorastempel	Schaber 1982
	Tempel C1[267]	Weißl 2002

256 Bammer 2004, 71. He distinguishes this »präsum[p]tiv gedachten Kubus« from the »Kubus« (p. 72), which corresponds to Hogarth's »smaller rectangle«. This use of the name »Kubus« is not identical with »Kubus« in Bammer 2005, 203. 205–212 figs. 4–5. 13; Bammer 2008a, 84 fig. 1; Bammer 2008b, 247 fig. 205.

257 Bammer 2005, 203. 205–212 figs. 4–5. 13; Bammer 2008a, 84 fig. 1; Bammer 2008b, 247 fig. 205, regarded the Green Schist Basis as an unfinished structure and called it »Kubus« (cube). He assigned it to the last phase of his »Rechteckbau«. Bammer 2016, 47.

258 Weickert 1929, 17.

259 Gjerstad 1937, 16: »T-shaped platform«.

260 Bammer 1990, fig. 7 (»schräge Ebene« abutting on the east face of the »Naiskosaltarfundament«).

261 Bammer 2005, 203–205 fig. 15.

262 Head 1908, 74 f.; Hogarth 1908c, 42. 45; Smith 1908, 169.

263 Bammer 1988b, 22; Bammer 2004, 70–72; Bammer 2005, 219; Bammer 2008a, 83; Bammer 2008b, 243–244.

264 Bammer 1990, 141.

265 Kerschner 2005, 136 with n. 67; Kerschner – Prochaska 2011, 83 f.

266 Bammer 2008a, 84 figs. 1. 3.

267 Weißl 2002, 329 fig. 10.

Name used in this text	Names used in earlier publications	Bibliography
	Sekos 1	Weißl 2002; Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015; Kerschner 2017
Sekos 1, sheathing wall [= eastern part of the Inner Sekos Enclosure of Sekos 1]	[upper part of the] C extension wall	Hogarth – Henderson 1908a[268]
	äußere Mauer [der Ummauerung von Naos B]	Bammer 1988b[269]
	Zusatzmauer von Naos B[270]	Bammer 1988
	(later) girdle wall	Bammer 1990[271]
	später angefügte Mauer/spätere Verstärkung	Bammer 2005[272]; Bammer 2008a; Bammer 2008b[273]
	Ummantelung	Weißl 2002
	Ummantelungsmauer/Schalenmauer	Bammer 2005[274]
Large Western Basis	western platform, western basis, western rectangle, rectangular platform[275]	Head 1908; Hogarth 1908c; Hogarth 1908d; Hogarth – Henderson 1908a; Gjerstad 1937; Robinson 1951
	altar of the Croesus naiskos[276]	Bammer 1990
	Naiskosaltar[277]	Bammer 1990; Weißl 2002; Weißl 2005
	Altar der Kroisoszeit[278]	Bammer 1993
	Altar des Naiskos [westlicher Teil][279]	Bammer 2005
	trapezförmiges Fundament[280]	Bammer 2008a; Bammer 2008b
	provisorischer Altar [vor dem Naiskos des Kroisostempels]	Bammer 2008b
extended western wall of the Green Schist Basis[281]	transverse wall of the enlarged basis	Gjerstad 1937
	Westmauer[282]	Bammer 1988b
	western wall/schist wall	Bammer 1990
	Transversalmauer[283]	Bammer 2001b; Bammer 2004; Bammer 2005; Bammer 2008a; Bammer 2008b

268 Hogarth – Henderson 1908a, 59 fig. 18.
269 Bammer 1988b, 17 figs. 16. 20.
270 Bammer 1988b, 20 fig. 23, calls the sheathing wall of Sekos 2 »Zusatzmauer« in the caption of the figure, yet without any further comment on its function. Bammer 1988b, 19 states that this wall encapsulates (»ummantelt«) his »Naos B«.
271 Bammer 1990, 142 pl. 16 c.
272 Bammer 2005, 190. 193 fig. 4.
273 Bammer 2008b, fig. 205.
274 Bammer 2005, 191 photo 3.
275 Head 1908, 74 f.; Hogarth 1908d, 235. 238; Hogarth – Henderson 1908a, 57 f. 61; Gjerstad 1937, 17.
276 Bammer 1990, 148 fig. 14.
277 Bammer 1990, figs. 7. 14; Weißl 2005, 365 fig. 1; Weißl 2006, 365 fig. 1.
278 Bammer 1993, 149.
279 Bammer 2005, 203–205 fig. 15.
280 Bammer 2008b, 244 fig. 205.
281 This composite structure consists of three parts belonging to two different building phases: the western wall of the Green Schist Basis of Naos 2, and its extensions both to the north and south, made of limestone slabs and closing the narrow corridor between the Green Schist Basis and the cella walls of Naos 2. These extensions were probably made for Sekos 1, where the whole structure served as part of the foundations of the shrine for the cult image.
282 Bammer 1988b, 8 f. 17.
283 Bammer 2004, 70 f.; Bammer 2005, 190. 199. 202 f. 205–212 figs. 4. 18. 19 photos 8. 9. 11–13; Bammer 2008a, 84 fig. 1.

Name used in this text	Names used in earlier publications	Bibliography
Inner Sekos Enclosure of Sekos 1	später angefügte Mauer	Bammer 2005; Bammer 2008a[284]
	Ummantelung	Weißl 2002
Sekos 1, Basis F	fragment of B Western girdle wall[285]	Hogarth – Henderson 1908a
Sekos 2	temple C/Tempel C	Hogarth 1908
	Pythagorastempel	Schaber 1982
	Tempel C2[286]	Weißl 2002
	Sekos 2	Weißl 2002; Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015; Kerschner 2017
Sekos 2, Inner Sekos Enclosure	first parallel wall[287]	Hogarth 1908c
	Enclosing wall[288]	Hogarth – Henderson 1908a
	B enclosure, B girdle wall[289]	Hogarth – Henderson 1908a
	B enclosure wall[290]	Smith 1908
	parallel walls[291]	Gjerstad 1937
	1. Stützmauer[292]	Bammer 1990

Dipteros 1

Name used in this text	Names used in earlier publications	Bibliography
Dipteros 1	the last temple but two	Wood 1877
	Croesus temple/structure; Temple D	Hogarth – Henderson 1908b; Robinson 1951;
	Kroisos-Tempel	Bammer 1986/1987; Bammer 1993; Bammer 2005; Ohnesorg 2007a
	Dipteros 1	Weißl 2002; Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015
	1. Dipteros	Ohnesorg 2012
Inner Sekos Enclosure of Dipteros 1	Croesus inner foundations; Enclosing walls[293]	Hogarth – Henderson 1908b
	inner enclosure[294]	Hogarth – Henderson 1908a
	belt of Croesus foundations[295]	Hogarth 1908c
	parallel walls[296]	Gjerstad 1937
	intrusive D foundations[297]	Hogarth 1908f; Hogarth – Henderson 1908a

284 Bammer 2005, 193 fig. 4.
285 Hogarth – Henderson 1908a, 62 fig. 20.
286 Weißl 2002, 329 fig. 10.
287 Hogarth 1908c, 45.
288 Hogarth – Henderson 1908a, 64 fig. 22.
289 Hogarth – Henderson 1908a, 59 fig. 18; 62 fig. 20.
290 Smith 1908, 167.
291 Gjerstad 1937, 19.
292 Bammer 1990, fig. 7.
293 Hogarth – Henderson 1908a, 64 figs. 20. 22; Hogarth – Henderson 1908b, 254 fig. 64.
294 Hogarth – Henderson 1908a, 68.
295 Hogarth 1908c, 45.
296 Gjerstad 1937, 19.
297 Hogarth – Henderson 1908a, 62 fig. 21 (»D intrusive Foundations«); Hogarth 1908f, 120 (»intrusive D foundations«).

Name used in this text	Names used in earlier publications	Bibliography
	temenos wall (peribolos wall)[298]	Bammer 1990
	2. Stützmauer[299]	Bammer 1990
	Peribolosmauer[300]	Bammer 1991
	Jüngeres Fundament[301]	Bammer 1993
	sog. Stützmauer[302]	Bammer 1993
	Einfassungsmauer des 6. Jhs. v. Chr.[303]	Bammer – Muss 1996
sekos/large courtyard of Dipteros 1	(Croesus) cella	Hogarth 1908c; Hogarth – Henderson 1908b
naiskos of Dipteros 1	Great Altar	Wood 1877
	Steinsetzung H/Cultbildbasis[304]	Wilberg 1906
	sog. Kroisos-Naiskos	Ohnesorg 2007a
	Naiskos des Kroisostempels	Bammer 1988b; Bammer 1993; Weißl 2002; Bammer 2005; Bammer 2008a; Bammer 2008b
filling under the naiskos of Dipteros 1	addition, extension[305]	Hogarth 1908c, Hogarth – Henderson 1908a

Dipteros 2

Name used in this text	Names used in earlier publications	Bibliography
Dipteros 2	Temple (of Diana)	Wood 1877
	last temple	Wood 1877
	Hellenistic temple	Hogarth 1908a
	Weltwunderbau	Bammer 2008b
	Dipteros 2	Weißl 2002; Weißl 2006; Kerschner – Prochaska 2011; Kerschner 2015
	2. Dipteros	Ohnesorg 2012

298 Bammer 1990, 144. 148 figs. 16–18 pl. 18 c–d.
299 Bammer 1990, fig. 7.
300 Bammer 1991, 80 fig. 25 (»Peribolosmauer«).
301 Bammer 1993, fig. 6: labelling of the southern part of the »Inner sekos enclosure of Dipteros 1« on the map. There is no reference to it in the text.
302 Bammer 1993, fig. 5: labelling of the south-western part of the »Inner sekos enclosure of Dipteros 1« on the map. There is no reference to it in the text.
303 Bammer – Muss 1996, 35 fig. 34 (»Einfassungsmauer des 6. Jhs. v. Chr.« atop Basis A).
304 Wilberg 1906, 229 f. figs. 181. 197. 198.
305 Hogarth 1908c, 36; Hogarth – Henderson 1908a, 55. 58. 60 f., used the terms »addition« or »extension« for the narrow space between the Green Schist Basis and the northern, eastern and southern cella wall of Naos 2, interpreting them – erroneously – as a later »extension« attributed to their »Temple B«.

Terms used in previous publications, but not used in this contribution

Name not used in this text	Names used in earlier publications	Bibliography
	addition [of the basis][306]	Hogarth – Henderson 1908a
	altar for the Croesus naiskos	Bammer 1990[307]
	B platform	Hogarth 1908c; Hogarth – Henderson 1908a
	Baldachin/baldachin[308]	Bammer 1990; Bammer 1993; Tölle-Kastenbein 1994; Bammer 2005; Bammer 2008a; Bammer 2008b, Bammer 2016
	bottom sand, original sand[309], virgin sand[310]	Hogarth 1908c; Hogarth – Henderson 1908a; Gjerstad 1937
	Croesus platform = Croesus stratum[311]	Hogarth 1908c; Hogarth – Henderson 1908a
	enlarged basis[312]	Hogarth 1908c; Hogarth – Henderson 1908a; Gjerstad 1937; cf. Weickart 1929 (Phase 3)
	extension of the basis[313]	Hogarth 1908c; Hogarth – Henderson 1908a
	further enlarged basis, third basis[314]	Gjerstad 1937

306 This term is used interchangeably for »extension of the basis«, e.g. Hogarth – Henderson 1908a, 55. 60.

307 Bammer 1990, 144 fig. 14 (»4. Periode«) interprets Hogarth's and Henderson's »T-foundation« as »an open altar for the Croesus naiskos«.

308 Bammer 1990, 156 fig. 30; Bammer 1993, 139–142; Tölle-Kastenbein 1994, 47; Bammer 2005, 218 f. figs. 11. 13; Bammer 2008a, 86 f. figs. 4–6; Bammer 2008b, 244 figs. 204. 207; Bammer 2016, 47 assumed a baldachin covering the rectangular basis in Naos 1, supported by wooden columns resting on the six excavated round bases of green schist at both sides of the rectangular basis.

309 Hogarth believed that the layers he designated »Primitive stratum« were situated in a natural layer of »clean river sand« which he labelled »bottom sand« (Hogarth 1908c, 35; cf. Gjerstad 1937, 16) or »original sand« (Hogarth – Henderson 1908a, 53). As it was completely submerged under the groundwater, he was not able to excavate this layer properly, but rather dredged small parts of it and tried to determine its extent in depth by driving a »5 ft. bar« into it (Hogarth 1908c, 35). The resumed excavations by A. Bammer have shown that the bottom sand is in fact a sequence of occupation layers dating from the Late Bronze Age to the mid 7th cent. BC.

310 Robinson 1951, 156.

311 Hogarth 1908c, 21–30; Hogarth – Henderson 1908a, 53 f. These terms comprise the extant parts of Dipteros 1, consisting of its foundations, stylobat, pavement and the lower parts of the sekos walls.

312 Hogarth 1908c, 40. This term describes the eastern part of the cella of Naos 2 after it had been walled off by the extended western wall of the Green Schist Basis at its western side and filled in to be reused as foundations of the cult shrine of Dipteros 1, but possibly already by its predecessors, Sekos 1 and 2. The Green Schist Basis is in the centre of the »enlarged basis«, yet shifted to the west of it, so that its western wall forms part of the perimeter of the enlarged basis, while the remainder is outlined by the north, east and south cella walls of Naos 2. Hogarth – Henderson 1908a, 60 (cf. Gjerstad 1937, 17 f.) considered the enlarged basis to be part of »Temple B«. The re-excavation of the ›Central Basis‹ by A. Bammer down to its full depth has however shown that the cella walls of Naos 2 reach down deeper and belong to an earlier phase than the extensions of the western wall of the Green Schist Basis; those are actually the latest parts of the structure and assign the enlarged basis to Sekos 1 or 2 or, at the latest, to Dipteros 1.

313 The »extension of the Basis« (Hogarth 1908c, 36) comprises the narrow, corridor-like rectangular spaces to the north, east, and south of the Green Schist Basis. Its outer limits are defined by the extended western wall of the Green Schist Basis to the west and by the cella walls of Naos 2 on the other sides.

314 Gjerstad 1937, 19 f., assumed »a revetment of the basis of B, and its north and south walls are continued to the W. of the western end of that basis, enclosing a new and further enlarged basis«, which »attained a length of 15.10 m«. These walls are in fact the cella walls of Naos 2 and therefore older than the extended western wall of the Green Schist Basis. They belong to an earlier phase and were no longer visible at the time, but were rather reused as foundations of the cult shrine. Hence, a »third, further enlarged basis« never existed.

Name not used in this text	Names used in earlier publications	Bibliography
	large rectangle, later rectangle[315]	Hogarth 1908c; Hogarth – Henderson 1908a
	Primitive N. wall[316]	Hogarth 1908c
	Primitive Structures/Shrines/Foundations[317]	Head 1908; Hogarth 1908c; Hogarth – Henderson 1908a; Smith 1908
	Primitive western wall[318]	Hogarth 1908c
	Primitive stratum, lower stratum[319]	Hogarth 1908c; Hogarth – Henderson 1908
	Rechteck B[320]	Weickert 1929
	Rechteckbau[321]	Bammer 2005
	rechteckiger Naos ohne Peristasis[322]	Bammer 2008b
	smaller rectangle/earlier rectangle[323]	Hogarth 1908c; Hogarth – Henderson 1908a
	Temple A[324]	Hogarth 1908c; Hogarth – Henderson 1908a
	Temple B[325]	Hogarth 1908c; Hogarth – Henderson 1908a

315 Hogarth – Henderson 1908a, 55 f. The extension of Hogarth's »larger rectangle« corresponds to the area surrounded by the cella walls of Naos 1 and 2. It comprises several structures in its interior: the Green Schist Basis and a contemporaneous small western basis, both belonging to Naos 2, as well as the Large Western Basis belonging to Sekos 1 and 2.

316 Hogarth 1908c, 40: »the Primitive N. wall« in this context is the northern wall of the outer enclosure of Sekos 1/2.

317 This collective term comprises all early Archaic structures preceding Dipteros 1. They form part of Naos 1 and 2 and Sekos 1 and 2.

318 Hogarth 1908c, 41: »the Primitive western wall« is the western wall of the outer enclosure of Sekos 1/2, situated just east of the – later – western sekos wall of Dipteros 1.

319 With this term, Hogarth designated all layers preceding Dipteros 1 which he investigated beneath the pavement of the sekos of Dipteros 1 and above what he regarded as »bottom sand«. According to the current state of knowledge, this »Primitive stratum« in fact comprise several different layers contemporary with Naos 2 and the Sekoi 1 and 2. Due to the unfavourable conditions of the excavations at this deep level, which was submerged by groundwater, Hogarth was not able to differentiate further layers within his »Primitive stratum«.

320 Weickert 1929, 17 was the first to notice that this basis is later than the lateral basis of the ›T-foundation‹.

321 Bammer 2005, 219 fig. 13. This hypothetical temple combines elements of Naos 1 (Rectangular Basis), of Naos 2 (cella walls, collateral wall) and of Sekos 1 (sheathing wall).

322 Bammer 2008b, 244. This phase corresponds to the »Rechteckbau« (see above).

323 Hogarth 1908c, 35; Hogarth – Henderson 1908a, 55. This »smaller rectangle« comprises the eastern parts of Naos 1, Naos 2, Dipteros 1 and presumably also of Sekos 1/2 (fig. 22). It corresponds to the »Kubus« of Bammer 2004, 72, which he distinguished from a »präsum[p]tiv gedachten Kubus« [i.e. the Green Schist Basis].

324 Hogarth – Henderson 1908a, 52–58.

325 Hogarth's »Temple B« cannot simply be equated with one of the temples as they are comprehensible now, after their complete uncovering by A. Bammer 1987–1991. Temple B rather comprises elements of the Naos 1, Naos 2 and Dipteros 1, perhaps even of Sekos 1/2.

Name not used in this text	Names used in earlier publications	Bibliography
	T-foundation[326], T-förmiges Fundament	Hogarth 1908c, Hogarth – Henderson 1908a; Weickert 1929[327]; Gjerstad 1937[328]
	Vorperipteros/Protoperipteros[329]	Bammer 2001b; Weißl 2002; Bammer 2005; Bammer 2008b
	West area/W. area	Hogarth 1908c[330]

APPENDIX 2: LOCATIONS OF THE AMBER OBJECTS

Colour code

Rammed Earth Layer – under the floor of Naos 2: 870232, 870233
Hoard – under the floor of Naos 1a: 870245. 870246. 870249. 870272. 870281. 870324. 870341. 870348. 870349. 870352. 850353
Probably part of the hoard – under the floor of Naos 1: 870362. 870374

Naos covering 1/Naos 2 – eastern cella

Human heads (cat. 2. 3)
Bird-shaped protome (cat. 5)
Beads, type 1 – globular (cat. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30)
Beads, type 2 – ring-shaped (cat. 33. 34. 35. 36. 37. 40. 41. 42. 43. 44. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60)
Beads, type 3 – disc-shaped (cat. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104)
Beads, type 4 – cylindrical (cat. 105. 106. 107. 108. 109. 110. 111. 112. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 180. 181. 182. 183. 184. 185. 189. 190. 191. 192. 193. 194. 196. 197. 198. 200. 201. 202. 203. 204. 205. 206. 207. 208. 210. 211. 209. 214. 215)
Beads, type 5 – conical (cat. 216)
Beads, type 6 – biconical (cat. 217. 218. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274)
Beads, type 7 – square (cat. 277. 278. 279. 280. 281. 282. 283. 285. 286. 287. 288. 289. 290. 291)
Beads – indefinable (cat. 294. 295)

[326] Hogarth – Henderson 1908a, 57 f., dubbed the T-shaped structure extending to the west of the Green Schist Basis »T-foundation«. They thought that it 1. had been constructed in one piece, and 2. was contemporaneous with the Green Schist Basis (cf. Gjerstad 1937, 16 f.), neither of which, however, was the case, as was revealed when A. Bammer re-excavated the longitudinal part of the ›T-foundation‹ and discovered that it reached down deeper than the foundations of both the Green Schist Basis and the lateral part of the ›T-foundation‹. The ›T-foundation‹ actually consists of two separate parts which differ in their building date: 1. the lateral basis belonging to Naos 2 and presumably used as an altar for placing offerings in front of the cult image which probably stood on the Green Schist Basis, and 2. the upper surface of the older ›Rectangular Basis‹ which had been built for Naos 1, and the surface of which was reused in Naos 2 to connect the lateral basis and the Green Schist Basis. Bammer 1990, 144 fig. 14 (»4. Periode«) interprets Hogarth's and Henderson's T-foundation as »an open altar for the Croesus naiskos«.

[327] Weickert 1929, 17.

[328] Gjerstad 1937, 16: »T-shaped platform«.

[329] Archaeological evidence for this hypothetical first sacred building proposed by Bammer 1990, 144. 148 f. fig. 22; Bammer 2005, 214. 216. 218 fig. 7; Bammer 2008b, 244 is inconclusive. Bammer assigned both the interior and the exterior column bases of Naos 1 to a preceding phase. Traces of its assumed cella walls are, however, completely lacking.

[330] Hogarth 1908c, 19: western half of the courtyard (*sekos*) of Dipteros 1.

Pendants, type 1 – drop-shaped (cat. 297)
Pendants, type 3 – bulla-shaped (cat. 300. 301. 302. 303. 304. 305. 306. 307. 312. 313. 314)
Pendants, type 4 – bottle-shaped (cat. 318)
Pendants, type 5 – fruit-shaped (cat. 320. 321. 322. 323. 324. 325. 326. 327. 328. 330. 331. 332. 333. 334. 335. 336. 337. 338. 340. 342. 344. 345)
Pendants – fragments (cat. 315. 316. 317. 346. 347. 348)
Spacers, type 1 – triangular end plates (cat. 350. 351)
Spacers, type 2 – rectangular (cat. 352. 353)
Spacers, type 3 – individual (cat. 354. 355. 356)
Spacers, type 4–6 – bird-shaped (cat. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417)
Spacers, type 7 – triangular (cat. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472)
Spacers, type 8 – round (cat. 473. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488)
Fibulae, type 1 (cat. 489)
Fibulae, type 2 (cat. 491. 494. 497. 498. 499. 500. 501. 502)
Fibulae, type 3 (cat. 503. 504. 506. 507. 508. 509. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523)
Inlay (cat. 527)
Indefinable fragment (cat. 538)

Naos 1/Naos 2 – western cella (so-called Hogarth-trench)

Trench 583

Beads, type 2 – ring-shaped (cat. 31. 32)
Beads, type 3 – disc-shaped (cat. 83)
Beads, type 5 – conical (cat. 212)
Beads, type 6 – biconical (cat. 219. 220. 239. 240)
Pendants, type 3 – bulla-shaped (cat. 308. 309)
Pendants, type 4 – bottle-shaped (cat. 319)
Pendants, type 5 – fruit-shaped (cat. 329)
Fibulae, type 2 (cat. 495)
Fibulae, type 3 (cat. 505. 510)
Inlay (cat. 525)
Raw material (cat. 535)

Area of the southern temple forecourt

Trench 352

Female bust (cat. 1)

Area of the eastern temple forecourt

Trench 591

Beads, type 4 – cylindrical (cat. 186)

Trench 620

Pendants, type 5 – fruit-shaped (cat. 341. 343)

Area of the western *peristasis* of Dipteros 1

Trench 370

Inlay (cat. 524. 528)
Needle head (cat. 534)

Trench 430

Inlay (cat. 531)

Trench 701

Beads, type 4 – cylindrical (cat. 187)
Fibulae, type 2 (cat. 496)

Area western Sekos

Trench 771

Beads, type 2 – ring-shaped (cat. 61. 62)
Beads, type 4 – cylindrical (cat. 179)
Pendants, type 2 – elongated (cat. 299)
Pendants, type 3 – bulla-shaped (cat. 310)
Fibulae, type 2 (cat. 493)
Indefinable fragments (cat. 536. 537)

Trench 772

Beads, type 4 – cylindrical (cat. 113)
Beads, type 7 – square (cat. 292. 293)

Beads – indefinable (cat. 296)
Pendants, type 1 – drop-shaped (cat. 298)
Pendants – fragment (cat. 349)
Spacers, type 4–6 – bird-shaped (cat. 357)
Indefinable fragments (cat. 539)

Trench 900

Beads, type 3 – disc-shaped (cat. 81)
Beads, type 4 – cylindrical (cat. 199)

Trench 940

Inlay (cat. 530)

Area eastern Sekos

Trench 913

Beads, type 3 – disc-shaped (cat. 82)

Trench 1020

Beads, type 2 – ring-shaped (cat. 63)
Beads, type 4 – cylindrical (cat. 188)
Beads, type 5 – conical (cat. 213)
Beads, type 6 – biconical (cat. 259)
Fibulae, type 2 (cat. 492)
Inlay (cat. 532)

Area of the Limestone Basis B

Trench 1022

Beads, type 6 – biconical (cat. 260)
Pendants, type 5 – fruit-shaped (cat. 339)

Trench 1023

Beads, type 2 – ring-shaped (cat. 64)
Inlay (cat. 533)

Trench 1032

Pendants, type 3 – bulla-shaped (cat. 311)

Trench 1036

Spacers, type 8 – round (cat. 474)

Trench 1038

Beads, type 3 – disc-shaped (cat. 84)

Area of the Limestone Basis D

Trench 406

Beads, type 6 – biconical (cat. 256. 257)

Trench 420

Beads, type 6 – biconical (cat. 258)
Inlay (cat. 529)

Trench 421

Scarab (cat. 4)

Trench 560

Inlay (cat. 526)

Trench 560

Inlay (cat. 526)

Trench 570

Beads, type 2 – ring-shaped (cat. 45)

Trench 562

Beads, type 2 – ring-shaped (cat. 38. 39)
Beads, type 4 – cylindrical (cat. 195)
Beads, type 7 – square (cat. 284)

Stray finds

Beads, type 1 – globular (cat. 6)
Beads, type 6 – biconical (cat. 275. 276)

Michael Kerschner, Andrea M. Pülz

2 TYPOLOGY OF THE AMBER FINDS FROM THE ARTEMISION

2.1 FIGURED FINDS (CAT. 1–5. 540)

Female bust (cat. 1) **pls. 7, 1; 38**

Excavation inv. ART 760238; AMS inv. 5/29/76
This bust bears close stylistic comparison with clay statuettes of the middle-Daedalic phase from Crete, representing a standing woman with both arms hanging parallel to the body; examples have been found at Ephesos and elsewhere in the Greek world, including Western Greece[331], as attested by finds from the Achaean colonies of Siris and Metapontum[332] and from Sicily[333]. The echo of this type of sculpture also reached the ›minor‹ arts, i.e. jewellery: the impressive series of gold plaques and jewels from Rhodes reproducing Artemis shows a similar treatment of the hair, the so-called Etagenperücke[334].

Female heads and busts with a similar rendering of hair arrangements, in bone, ivory and wood, were carved by Greek crafts workers in several regions: a Cretan origin has been suggested[335]. A small Daedalic ivory head was found in the sanctuary of Hera Limenia at Perachora and was dated to the third quarter of the 7th century BC because of its close stylistic link to a group of Corinthian heads[336]. The primary role played by Spartan workshops in carving ivories and bone is attested by finds at Sparta, such as a trapezoid seal[337] and some bone busts from the sanctuary of Artemis Orthia[338] and elsewhere, and by a female figure carved in bone, from Perachora, representing Hera[339]. The particular shape of the rounded breasts allows the amber bust to be compared with a gold statuette from the Artemision at Ephesos, dated to the mid 7th century BC[340], and to wooden statuettes from the Heraion at Samos, belonging to the second half of the 7th century BC[341]. The wide distribution of wooden sculptures in the Mediterranean is also attested by three statuettes from Palma di Montechiaro near Akragas in Sicily, which are also comparable to the bust[342].

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331 See, for example, Böhm 1990, 150 T 14 pl. 11; 168 f. TK 70. TK 72 pl. 28 (from Crete); 176 TK 141 pl. 31 d (from Ephesos). See also Böhm 1990, 100 pl. 38 b for other statuettes from Ephesos, having a different position, but a comparable style. New finds from Miletos have been published by von Graeve 2017.

332 Rolley 1996, 382.

333 Rizza 1996, 400.

334 Marshall 1911, 85–100 nos. 1103–1211 pls. 11–13; Laffineur 1978; Coulié – Filimonos-Tsopotou 2014, 265–269 nos. 109–113.

335 Some wooden statuettes found in the Heraion at Samos have been assigned to Cretan workers (Kyrieleis 1998, 281–283). In the debate following that symposium N. Stampolidis suggested that a Cretan artist, active around 620–580 BC, might have carved an ivory head from the Artemision, which has very close stylistic comparisons with finds from Eleutherna (Stampolidis 1998: see below, n. 346).

336 Stubbings 1962, 405–406, A 5 pl. 172.

337 Burr Carter 1985, 145 fig. 41, dated to the 3rd quarter of the 7th cent. BC See also an ivory head from Sparta: Burr Carter 1985, fig. 42.

338 Dawkins 1929, 218 f. CXVII–CXIX; Marangou 1969, 131 no. 74 fig. 97 a–b.

339 Stubbings 1962, 406, A 6, pl. 172.

340 Pülz 2009, 215 cat. 5 pl. 3 and colour pl. 3.

341 For the wooden statuettes from the Heraion at Samos (Ohly 1967; Kyrieleis 1983) see the references quoted by Morris 1992, 201; Papadopoulos 1997; Kyrieleis 1998.

342 Morris 1992, 200 f., with previous literature.

Among amber finds, the bust from Ephesos has some comparisons with objects from Southern Italy, where amber carving was well established. The hairstyle is similar to the one shown in a sub-Daedalic pendant from Rutigliano in modern-day Puglia, depicting a male (?) crouching figure: several through-borings of the pendant testify that it was reused[343]. Another comparison can be established with a sub-Daedalic amber head from tomb 96 of the Oenotrian cemetery of Chiaromonte in modern-day Basilicata, belonging to a necklace and dated to the early 6th century BC[344].

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As often documented in the case of amber objects, several borings show that the bust was used more than once. It is difficult to determine whether the bust was really used as part of an artefact before it was assigned to a new role, or if the change of purpose occurred while it was still in the workshop because of a change of plan occurring during the carving phase.

The arrangement of the borings, all running in different directions, helps clarify the original purpose of the bust, which was assigned at least two different positions, probably at different times.

The three pairs of borings drilled at the base are irregular and have a sinuous course similar to a meander: although it is hard to interpret them, they seem to suggest they were not meant for suspension purposes, but rather to fix the bust onto a base with corresponding through-holes. Dowel pins, of perishable materials, flexible enough to be fashioned into sinuous shapes, i.e. straw or vegetable fibres, were probably used to connect the bust to a base[345]. Apart from the taste for polymateric (i.e. multi-material) objects in antiquity, one can invoke several reasons to explain why the statuette was conceived in two parts (bust and base). The size of the naturally available raw lumps of amber, a material which was exotic and rare at Ephesos, surely provides a quite convincing reason. The figurine's base could have been made of ivory. This material is often combined with amber in polymateric objects, as attested by small finds from the Artemision[346]. Alternatively, the figurine's base could have been sculpted of another material, such as bone or wood. If so, the first function of the bust could be that of a standing polymateric statuette.

The upper horizontal boring is wider than the lower ones, enough for a thread or a wire to pass through, so it might be used for the suspension of the bust along with a string necklace or a belt, probably as the highlight element associated with beads and pendants of various non-figurative shapes. Female depositions in tombs in the Oenotrian cemeteries of Latronico and Chiaromonte in Basilicata yielded some belts, as is illustrated by the Artemision girdle (below, chap. 2.4); the sub-Daedalic amber head from tomb 96 at Chiaromonte mentioned earlier formed part of a necklace[347]. Later finds document a widespread use of female heads of amber inserted as pendants in

343 Montanaro 2012, 72 no. B.II.5; 135 fig. 68 pls. 21–22. The pendant was found in grave 122/1977 of the Purgatorio cemetery. The grave was sealed in the 2nd half of the 6th–early 5th cent. BC, but also contained earlier finds such as this pendant (late 7th–early 6th cent. BC [?]). This evidence was noted by Riccardi 2010, 348 f., followed by Montanaro 2012, 134 f. 204 and Montanaro 2015, 182, who mentions another reused amber object from grave 122/1977. The pendant discussed in the text has through-borings running in different directions and showing that the pendant changed both function and position.

344 M. L. Nava in: Lacrime d'ambra 2002, 15 fig. 7; 56 no. 152; A. Mastrocinque in: Magie 2005, fig. at 45, on the left, 46; Bianco 2005, 99; S. Bianco in: Ambre 2007, 241 no. III.262; Riccardi 2010, 348 f.; Montanaro 2012, 204 fig. 110; Rocco 2020, 5 fig. 7.

345 The use of straw and other unidentified organic materials to connect amber discs to one another is documented in fibulae at Verucchio dated to the 8th and 7th cent. BC (von Eles 2015, 75 type 74; 76 type 75).

346 Ivory figured elements originally belonging to polymateric statuettes have been found at Perachora, Samos and Delphi (Stubbings 1962, 406 f. no. A 9), Ephesos (Bammer 1992a, 186 pl. 6 a–b) and Eleutherna on Crete (Stampolidis 1992, with a particular focus on composite figures in ivory and wood from the Geometric and Archaic periods). Fibulae (see below, **cat. 489**–**490**) and *astragali* (see below, **cat. 532**) can be mentioned as polymateric objects in amber and ivory from the Artemision at Ephesos. See also below, **cat. 659**. See below, **cat. 2**–**3** for bone or ivory pins with amber heads.

347 S. Bianco in: Ambre 2007, 238 no. III; 247 (belt, grave Latronico 83, early 7th cent. BC); 242 no. III; 264 (belt, grave Chiaromonte 156, dated to the late 8th cent. BC in: Bianco 2020, 111 fig. 14).

necklaces in Southern Italy[348]. In this case, the second purpose of the bust could be as a pendant as part of a necklace. As a votive offering, the bust could portray Artemis herself or her devotee[349]. The question remains unanswered.

The bust can be ascribed to the mid-Daedalic style and dated to the second half of the 7th century BC, probably within the third quarter of the century.

Alessandro Naso

Human head (cat. 2) **pls. 7, 2; 38, 2**

Excavation inv. ART 870352.1; AMS inv. 141/61/87 (T 12)

Human head (cat. 3) **pls. 7, 3; 38, 3**

Excavation inv. ART 870352.2; AMS inv. 142/61/87

The heads **cat. 2** and **3** form a pair and are examined together[350]. Despite the small size, from a stylistic point of view, one can appreciate the general characteristics of the face, such as the circular eyes and the pointed nose, which occur in the sculptures of the Geometric period, grouped by several scholars around the bronze *sphyrelata* from Dreros (Crete) and which are dated to the late 8th/early 7th century BC[351]. Gold and silver statuettes from the Artemision[352] and bone plaques from the sanctuary of Artemis Orthia at Sparta show that in small-scale sculpture these features survived in female figurines until the end of the 7th century BC[353].

Amber human (female [?]) heads with polos are inserted in the bows of two bronze fibulae found in the female tomb 26 of Piazza Azzarita in Bologna in Northern Italy, closed in the first half of the 6th century BC[354]. Amber figures representing two ducks and a couchant lion, respectively, are exceptionally inserted in the bows of two bronze fibulae from Verucchio[355] and Bologna, respectively[356]. Small amber animal-shaped pendants are documented in several sites in Northern and Central Italy and are dated to the 8th and 7th centuries BC[357].

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In the case of the two heads, no traces indicate their original position, except for the borings. This absence suggests that either the two items were accurately disassembled from their context to be offered to Artemis, or else that the organic contexts have perished. In either case, it is hard to determine the type and shape of the objects to which they originally belonged.

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348 Montanaro 2012, 72–99 pls. 23–51 fig. 47.

349 Denti 2019 reviews Daedalic heads from Greece and Southern Italy.

350 The two heads are very similar, and in the literature their inventory numbers have often been mixed up.

351 Blome 1982, 13–15 pl. 4, 1–2; Coldstream 2004, 284 fig. 91; Boardman 2006, 2–4. 8 fig. 1 (with important observations on technique and chronology).

352 Pülz 2009, 214 f. cat. 1–3 pls. 1–3, colour pls. 1–3. 41–43 for the chronology.

353 Dawkins 1929, 216 CXII, 2–3, pl. 112; Marangou 1969, 169 f. nos. 114–115 figs. 140–141 (last quarter of the 7th cent. BC); Burr Carter 1985, 169 f. fig. 66.

354 Malnati 2007, 150 nos. III 76–77; Locatelli – Malnati 2007, 62 fig. 13 n. 32 (the fibula III.77 is said to come from grave 28 of Piazza Azzarita in Bologna). Female bronze heads on fibulas are documented in the 1st half of the 7th cent. BC in cemeteries at Bologna (Arsenale Militare, unpublished) and at Pontecchio Marconi (von Eles 1987, 112 nos. 58–59 fig. 74). Dr. Anna Dore (Museo Civico Archeologico, Bologna) kindly informed me that the fibulae were found in Bologna in the Arsenale Militare and not in the Arnoaldi cemetery, as reported in the literature.

355 Verucchio, grave Lippi 27/1972, inv. 11392: Verucchio 1994, 161 no. 533 pl. 61, fig. 81; Boiardi – von Eles 2003, 110 f. fig. 10; 119 pl. 4, 20; Gentili 2003, 211 no. 30 pl. 191; Orsini 2010, 192 f. no. 58 fig. 58; von Eles 2015, 84 type 80.

356 Bologna, grave 131 Arnoaldi: Negroni Catacchio 1993, 195 f. fig. 4 C; Macellari 2002, 314 f. no. 12 pl. 35; Dore 2010, 95 no. 17 fig. 17.

357 Useful reviews are available in Negroni Catacchio 1978, 176–192; D'Ercole 2013, 31–35.

As in the case of the amber bust **cat. 1**, both heads show several borings, which probably reflect different functions and purposes. Probably the borings were drilled at different times, to give both objects different functions and new positions; as both heads show similar borings, the same destination for both pieces can be assumed. As for the bust **cat. 1**, it is difficult to determine whether the heads were actually used as parts of an artefact before being reused or if the change of purpose occurred in the workshop, as a rethinking during the carving phase.

The evidence shows that the first holes to be drilled were the vertical blind ones on the top of the heads, because in the head **cat. 2** this boring is filled with a tiny amber plug. Stopped bores filled with amber occur on human amber heads, and »it is not apparent why the holes were bored and then plugged«[358]. If the vertical boring had reached all the way to the base, the heads could be inserted as an item in an ornament, probably using a gold wire. The blind boring is wider than the through-holes on the heads, but not wide enough to allow the passage of a bronze wire[359]. Can one presume that in both cases, the fragility of the heads forced the artist to interrupt the boring process and to find another destination for both heads? It is quite likely. The vertical through-boring was a risky operation; it was presumably the last stage in the working process of an amber bead, as documented by the unfinished beads of the Tyrins type found in the amber workshop at Campestrin near Frattesina (commune of Grignano Polesine, province of Rovigo), dated to the 12th century BC[360]. The presence of the same unfinished borings in both heads forces us to assume the simultaneous presence of at least two amber cutters in the workshop at Ephesos, because only one hole has been filled. In our opinion the detail proves the activity of more than one skilled worker – otherwise, the same worker would have meted out the same treatment to both heads. It seems improbable that only one head (**cat. 2**) could be destined for a new purpose and that the blind hole of the other head (**cat. 3**) would really be filled with perishable material.

Still conceived as a pair, the heads' new purpose was to serve as female ornaments. During the 7th century BC pins in gold, silver, bronze, bone and amber were remarkably popular in the Artemision at Ephesos: P. Jacobsthal noted that the Artemision »yielded more pins than any Greek sanctuary except the Argive Heraeum«[361]. Ephesian pinheads are known outside Ephesos at least in Chios, Samos and perhaps Miletos[362]. Pinheads of gold, bronze, crystal, bone, and amber in the shape of flowers and fruits commonly occur in the broad range of pins documented in the Artemision at Ephesos. Figured pinheads are a Near Eastern feature and they are rare at Ephesos and other Greek sites[363]. Particularly noteworthy are two gold specimens from the Artemision at Ephesos, the first from the British and the second from the Austrian excavations: a tiny square gold finial with a female face on each side referencing the Phoenician schema of the »woman at the window«[364], and a gold pin with two addorsed female heads in Daedalic style[365], both dated to the second half of the 7th century BC. Figured amber pinheads are not common: in central Sicily, in the sanctuary of Polizzello (commune of Mussomeli, province of Caltanissetta), a rich votive deposit including several amber beads came to light, as well as a tiny fragment of amber, with a Janus-like human face roughly reproduced, assigned to a pinhead[366].

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358 Causey 2011, 122 f.

359 The Artemision finds offer useful comparisons regarding the beads for the fibulae: the borings of the beads inserted in the bows of fibulae have a minimum diameter of 0.35 mm (see below, **cat. 489**–**523**).

360 Bellintani et al. 2015, 422–426. In Frattesina two amber pinheads from the Final Bronze Age have been found (Negroni Catacchio et al. 2006, 1450 fig. 4).

361 Jacobstahl 1956, 33. 37. 88 (amber), recently confirmed by Pülz 2009, 89. Brøns 2017, 427 mentions the pins from the Artemision in Ephesos. See below, chap. 2.7.

362 Jacobstahl 1956, 34.

363 Jacobstahl 1956, 52–86. 63–65 for Ephesos. A Janus-shaped female ivory pinhead from the Idaean Cave at Crete has been classified as a Near Eastern import from the 8th cent. BC (Galanaki 2003).

364 Hogarth 1908a, 102 pl. 3, 8; Marshall 1911, 74 no. 963 pl. 10; Jacobstahl 1956, 64 fig. 268, with further literature; Pülz 2009, 45 f.

365 Pülz 2009, 217 cat. 10 pl. 4 and colour pl. 4, 45–47.

366 Tanasi 2009, 95. 101 no. 45 fig. 45; Stanco – Tanasi – Privitera 2012, 26. The amber deposit from Polizzello has

The two through-borings of the amber heads, one being oblique and the other horizontal, must have been used to anchor each amber head to its support, but it is hard to imagine both sets of borings in the same object being used simultaneously. All the borings are too small to allow the passage of a bronze pin[367]. We must therefore either suggest a pin of organic material (ivory, bone, wood) or a gold wire[368]. The comparisons mentioned above, from the votive offerings in the Artemision, would suggest at least one possible context for the reused heads. According to this hypothesis, each head could be fitted on the top of a pin with the face bent forward, as the oblique holes would indicate[369]. It seems unlikely that both heads decorated the same (gold) pin as addorsed masks. However, the oblique course of the two through-borings could suggest such a purpose and position: Janus-like pinheads are relatively rare in continental Greece and Ionia, with some notable exceptions, such as the ivory pinhead from Crete mentioned earlier and various gold pins from the Artemision. The two heads were likely mounted on two different pins; P. Jacobsthal noted that several pins seem to constitute pairs and are mostly votive offerings, coming from sanctuaries[370].

Could a gold wire pass through the oblique borings, as part of a circular object, such as an earring or a necklace? Would this allow the two heads to decorate the ends of this object, always as a pair? This hypothesis is still only a theoretical possibility, to our knowledge as yet unsupported by any comparisons.

The horizontal through-borings are perhaps the last step in the working process of the two heads. The horizontal through-holes are in the lower part of both objects: the presence of the vertical blind hole in the upper part of each head forced the worker to drill the new one in the lower part, which was still free. The new holes damaged the faces' general appearance, and they are not suitable for suspension as single pendants, because if suspended, the heads would pivot under their own weight and turn upside down. From this perspective, it is preferable to think of a string necklace, in which the heads could be suspended together with other pendants, which would keep them in place, facing the right way up. The diameter of the through-borings is compatible with the passage of a textile yarn or a thread.

According to the comparisons listed, the two heads can be assigned to the Late Geometric–Early Orientalising period and can be dated around 700 BC.

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Scarab (cat. 4) **pls. 8, 1**

Excavation inv. ART 860344; AMS inv. 65/41/86 (A 10)

The use of amber in the field of glyptic is quite rare, due to the natural characteristics of fossil resin[371], and in this case highlights the function of scarabs as amulets, because in antiquity healing properties were attributed to the resin[372].Two amber scarabs from the tomb of Tutankhamen, dated to the second half of the 14th century BC, are among the earliest evidence for the use of amber to

been mentioned by Cultraro 2010, 389. 391 fig. 4. I owe this quotation to L. Ambrosini.

367 The Artemision finds offer useful comparisons: the borings of the beads inserted in the bows of fibulae have a minimum diameter of 0.35 mm (see below, chap. 2.5). In Central Italy amber finials on bronze pins and wands are known. In the rich warrior grave AA1 in Veii dated to around 750 BC, a thin bronze wand has also been found, not belonging to a fibula, with an amber insert in the shape of a truncated cone (Boitani 2004, 142 II.d.15). A bronze pin with a compressed sphere of amber on the top has been found at Longola in Campania (Cicirelli 2012, 157 fig. 274. G1).

368 Several gold pins, now fragmented, originally bearing an inlay or sustaining a head, have been found in the Artemision: for a selection see Pülz 2009, 270–272 nos. 245. 251–253 colour pls. 13–14.

369 The head of a bronze pin from Denmark, dated to the 7th cent. BC, reproduces a human face with an oblique neck and the face bent forward: in the final position of the pin, the poise would have changed (Jacobstahl 1956, 85 fig. 317).

370 Jacobsthal 1956, 96 f.

371 Boardman 1967, 128. 152 (133–135 for Greek scarabs and scaraboids); Devoto – Molayem 1990, 162; Boardman 2001, 377.

372 Causey 2011, 70–88.

carve scarabs[373]. Amber scaraboids have been found in Greek sanctuaries at Delos[374], in the Artemision at Ephesos[375], at Perachora[376], at Lindos on Rhodes[377] and at Eretria[378]; from the middle of the 8th century BC onwards, amber scarabs and scaraboids are documented in Etruria[379].

Scarabs may have played a particular role in the Artemision at Ephesos – one of the architects of the Artemision, Theodoros of Samos, was also a highly appreciated gem carver: according to Herodotus, he created a precious emerald ring for the tyrant Polycrates of Samos[380].

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J. Boardman assigned the scarab to a Syrian workshop[381]. The find context in area E of the Limestone Basis D, related to the destruction layer of Dipteros 1, yielded pottery belonging to the late 7th and the first third of the 6th century BC and suggests a chronology around 600 BC[382].

Alessandro Naso

Bird-shaped protome (cat. 5) **pls. 8, 2; 38, 5**

Excavation inv. ART 870352.3; AMS inv. 143/61/87 (T 12)
Amber pendants in the shape of a bird's head are rare. In the Artemision at Ephesos, three ivory duck heads have been discovered, all differing in size, quality and style, as well as gold and silver statuettes and brooches reproducing small birds[383]. An amber bird comes from a tomb of the Kerameikos cemetery in Athens, dated to the third quarter of the 8th century BC[384].

Very stylised, tiny amber ducks were inserted as spacers in multi-string necklaces and belts in Oenotrian female burials of the 8th century BC at Francavilla Marittima, in modern-day Calabria, in several necropolises of the 7th century BC in modern-day Basilicata, and at Sala Consilina in southern Campania. Amber birds of several shapes dating to the 6th and the 5th century BC were found in Serbia at Novi Pazar, Atenica and other sites, and in the Artemision at Ephesos. Amber pendants shaped as double protomes of bird heads have been discovered in Early Iron Age tombs at Torano Castello and Crichi in modern-day Calabria. Similar finds have come to light on the Eastern Adriatic coast in burials explored at Nin in Croatia and Osovo in Bosnia[385].

The carved ambers representing ducks or swans discovered in sanctuaries dedicated to the cult of Artemis have been connected to the Greek myth concerning the origins of the fossil resin[386]. According to one version of the myth, when the Greek hero Meleager died, his sisters were changed into birds by Artemis, and migrated from Greece to the lands beyond India, where

373 von Bissing 1931, 63; Cultraro 2007, 57; Causey 2011, 90, with references.
374 One scaraboid: Deonna 1938, 309 no. 161, A 2882 (not reproduced).
375 Smith 1908, 165 pl. 48, 3 found two scaraboids west of the basis. They were not identified in the recent research.
376 Three scaraboids: Dunbabin 1962, 524 nos. H 24–H26 pl. 195.
377 Some scaraboids: Blinkenberg 1931, 112 no. 250 pl. 11.
378 One scarab, one scaraboid: Huber 2003, 93 nos. O 193–194.
379 Walters 1926, 102 no. 852 (Clusium); Massaro 1943, 41 nos. 11–11a (Veii and Vetulonia); Hölbl 1979, 224–226; E. Mangani in: Ambre 2007, 168 (Sasso di Furbara near Cerveteri); Giovanelli 2012. A bronze scaraboid with two prancing horses has been found at Populonia in a grave used in the 7th cent. BC (Minto 1922, 49. 153 fig. 27).
380 Hdt. 3, 40–41: A. Mastrocinque in: Magie 2005, 48. According to Herodotus, Polycrates cast his precious ring into the sea and later found it again in a great fish presented to him by a fisherman (Kaplan 2016).
381 Boardman 1990, 4. 6 n. 13.
382 Kerschner – Konuk 2020, 168–170 for the scarab context; 179 for the mention of the scarab.
383 Gold brooches and pendants: Hogarth 1908a, 97. 106 = Pülz 2009, 50–54 nos. 25–33; silver figurines and brooche: Hogarth 1908a, 116 f.; three ivory duck heads: Hogarth 1908, 165 f. nos. 30–32 pls. 25, 7a. b; 10a.b; 11a. b (= Atakan 2008, 174 no. 128) .
384 Dunbabin 1962, 521 with literature.
385 All mentioned finds are discussed below, chap 2.4.
386 Causey 2011, 58.

they wept tears of amber for their dead brother. Birds and waterbirds are often reproduced on bone and ivory votive offerings at the sanctuary of Artemis Orthia at Sparta[387], and in isolated Laconian finds, such as a bronze *thymiaterion* from Tarentum showing Artemis dancing with a bird on her head[388], as well as on the bronze hydria from Grächwil[389].

According to the comparisons and its style, the amber protome can be dated from the second half of the 8th to the mid 7th century BC.

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The duck protome was probably the head of a pin made of either metal, ivory or bone. The fixing system was meant to keep the protome in place.

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Female statuette (cat. 540) **pls. 8, 3; 58, 540**

AMI inv. 2912

This statuette, despite its size, finds some stylistic comparisons in the small votive Greek and eastern Greek sculpture, mostly made in clay and ivory, inspired by Near Eastern models[390]. One common characteristic is the lack of arms and hands and the absence of any definition of the legs in the frontal view. Instead breasts and glutes emphasise its female gender. The lack of visible limbs could mean the body is represented as shrouded by a long and heavy cloth, covering arms, hands and legs. The lack of genital organs may support this hypothesis, since their accentuation can be a peculiarity of nude female images, »so as to emphasise the sexual potency«[391]. Several female figures, in gold and ivory, are documented at the Artemision at Ephesos, and mostly represent dressed figures[392]. The veil covering the head is a distinctive feature of several statuettes from the Artemision at Ephesos, such as two gold ones, and some ivory figures found both in this sanctuary and in a tomb at Bayındır near Elmalı in Southwest Türkiye[393]. Compared to the smaller amber figure, the remarkable size of these female figurines allowed the artist the chance to include more details, such as the veil worn over a polos and tucked into a sizeable belt. T. Şare convincingly considered the pieces from Ephesos and Bayındır as belonging to the same stylistic group and dated them to the late 7th century BC. She suggested the group should be classified as a West Anatolian production, strictly connected to the cult of Artemis Ephesia[394]. The arrangement of the hair, which aims to reproduce a veil covering, is also attested on an ivory statuette from the Heraion of Samos, dated to the late 8th/early 7th century BC[395] and on faience finds from various sites, dated to the second half of the 7th century BC[396]. The same style of the amber figure also characterises a small basalt head from the votive deposit of Kamiros on Rhodes[397].

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387 Dawkins 1929, 216 f. pl. 113 (carved on bone plaques); 235 pls. 156. 158 (incised on the lower surfaces of ivory animals carved in the round); Burr Carter 1985, 172 f. 245–248.

388 Fischer-Hansen 2009, 233 f. fig. 13.

389 Guggisberg 2004.

390 Pülz 2009, 33–39, with references; see also Şare 2010.

391 Böhm 1990, *passim*; quotation from Webb 2016, 122 with references.

392 For the gold statuettes see Pülz 2009, 39, with references; the ivories, which are of exceptionally high quality, are not entirely published (Hogarth 1908a; Seipel 2008, 161–166 nos. 109–111. 114).

393 Pülz 2009, 214 cat. 1 pls. 1–2 colour pls. 1–2; 216 cat. 6 pl. 3 and colour pl. 3 for the gold figures; Şare 2010 for the ivories from Bayındır.

394 Şare 2010.

395 Böhm 1990, 159 no. E15–I pl. 15 b.

396 Webb 1978, 149 f. nos. C 25– C 28 pl. 16; Webb 2016, 122 discusses this group of figurines.

397 Jacopi 1932, 287 no. 3; 289 fig. 13.

Amber statuettes are very rare in the 8th and 7th centuries BC[398] and become more numerous only later. In Etruria the workshops at Veii and Vetulonia played a special role, and in the 7th century BC several types of geometric and figured artefacts appear, including also female figures: the Circolo dei Monili and Circolo di Bes at Vetulonia, both dated to the early 7th century BC, constitute remarkable contexts, requiring further research[399].

An exceptional context is tomb VI at Satricum in Latium, dated between 650 and 640 BC, which yielded over 500 amber pendants; stylistically, these are actual statuettes, carved in the round. The Satricum figurines portray women with their arms arranged in either the *pudica* pose or placed on the abdomen, reflecting the iconography of Astarte, as developed in the Near East: some pendants are similar to the Ephesos exemplar, and are characterised by stocky forms and claw-like feet[400]. Other amber pendants, reproducing a female figure in the *pudica* pose have been found in Central Italy, mostly in Etruria and Latium vetus, both as interments in burials dated to the first half of the 7th century BC and as votive offerings in sanctuaries from the end of the 7th century BC[401]. The rich occurrence of amber finds in Italy, both as statuettes and pendants, allowed several scholars to suggest that carved amber may have followed the route from Italy to Greece[402].

The absence of hands and the lack of a separation between the legs in frontal view are both features which survive in later finds, such as in a now lost amber statuette found in 1743 at Adria in Northern Italy, and luckily known through a drawing (pl. 8, 4)[403]. The work can probably be considered as a votive offering dedicated to a female deity in a local sanctuary. The chronology of the Etruscan presence at Adria and the work's style both support the dating of this statuette to sometime around the middle of the 6th century BC[404].

According to its style and the comparisons listed, the amber statuette from Ephesos can be dated to the second half of the 7th century BC.

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398 In the 2nd half of the 8th cent. BC, two amber female statuettes were deposed in southern Etruria in the rich female grave Laghetto 2161 at Caere (Rizzo 2018, 70–72 fig. 41). Closely related to these statuettes are some pendants, such as those reproducing a man from Veii, grave QF HH 11–12 (Berardinetti Insam 2001, 102 f. no. I.G.5.33.3) or some reproducing women from Narce (Russo Tagliente 2016, 397–399, with previous bibliography).

399 For the two graves see still Falchi 1891, 96–102 (Circolo dei Monili) and 104–109 (Circolo di Bes); Randall McIver 1924, 107 fig. 25: von Hase 1989, 1054 fig. 20; Colombi 2018, 173 pl. 79, 2–3 (female statuettes from Circolo dei Monili). Good photographs of some amber finds from Vetulonia are in Cygielman – Palmieri – Rafanelli 2005 and Cygielman –Spaziani – Rafanelli 2009. The carved ambers from Vetulonia have mainly been reviewed by Massaro 1943 and Pagnini 2006. An amber pendant reproducing a woman seated on a throne with a baby's head between her legs from the rich grave of the Monili in Vetulonia, early 7th cent. BC (Falchi 1891, 101 pl. 7, no. 4; Colombi 2018, 173 pl. 79, 1) finds a comparison in a similar amber statuette (or a pendant [?]) reproducing a woman seated on a throne, probably imported from Etruria, found in modern-day Basilicata, grave Alianello 546, early 6th cent. BC (the statuette dates to the 7th cent. BC): S. Bianco in: Magie 2005, 101 f.; Bianco – Preite 2014, 422; by contrast Rocco 2020, 6 fig. 14 interpreted the image as the reproduction of a Greek female deity. A review of amber female statuettes dating to the late 6th–5th cent. BC is given in: Palavestra – Krstić 2006, 134–137.

400 Waarsenburg 1995, 404–455 for the amber pendants and 427–429 for the Astarte figurines, which have also been produced in faience (Webb 2016, 122). The female pendants (Waarsenburg 1995, 416–418. 468 f. nos. 6, 1–9) have been reproduced with good photographs in: Arancio – Massimi 2012, 77–79.

401 Pagnini 2006, 146; for Etruria and Latium vetus see L. M. Michetti in: Ambre 2007, 161 f. A pendant representing a woman from Praeneste, grave Galeassi also belongs to the group (Ambrosini 2015, 41 no. 8).

402 Waarsenburg 1995, 428 with previous literature.

403 Robino 2009, 78 f. pl. 19. I owe the particular information on this statuette to L. Ambrosini.

404 Recently the presence of a cult to Hera Argiva at Adria has been suggested (Rossignoli 2004, 210 f. 214 f.; Robino 2009, 79).

2.2 BEADS (CAT. 6–296. 541–591)

2.2.1 Introduction

The amber beads of the Artemision of Ephesos are the largest group of amber findings, a total of 412 amber beads having been found in the sanctuary[405]. The beads occur in all kinds of different shapes, so the introduction to the typology, the comparison with other amber typologies and the definition of individual types have to be dealt with first.

The Ephesian amber beads were part of votive offerings to Artemis, and their original shapes are reconstructable through comparisons with better-preserved finds. Amber ornaments created as grave goods or votive offerings are common in Mediterranean sites, and they were found all over Greece, the Balkans and mostly Italy. Because of their widespread diffusion, the Mediterranean is investigated as a study area. Some shapes are found over the entire study area while other shapes are not so widely diffuse.

2.2.2 Amber beads from the Artemision of Ephesos: typology and distribution

H. C. Beck was one of the first scientists who proposed a typology of beads made of different materials[406]. In 1928 he drew up a general typology of prehistoric beads, which forms the basis for later typologies. Based on Beck's classification, in 1981, E. Sprincz and C. W. Beck created a typology for Late Bronze Age amber beads in Hungary[407]. This classification also fits the Early Iron Age beads from the Artemision. The methodology set up by Sprincz and Beck is especially useful here. Besides their general appearance, the scholars classed the Hungarian amber beads based on the ratio between their height and diameter. Another element is the design of the edges. The present work follows this classification scheme, but the edge design is not considered a criterion. Some forms described by Sprincz and Beck also appear in the types of Ephesian amber beads. In particular, the groups are classified as follows: globular, circular, disc-shaped, conical and biconical beads (tab. 4)[408].

N. Negroni Catacchio, A. Massari and B. Raposso suggested a typology for Italian amber beads dating to the Bronze Age. A total of 13 types are described by the authors, including beads of the types Tiryns and Allumiere[409]. Some types can be connected to the bead types from Ephesos. This highlights that there is an overlap in the types 1–3 and 8. The classification suggested in 2006 by L. Benedetti and M. Cardosa for the Early Iron Age amber beads from Calabria is also used for the creation of the typology[410]. However, some changes and adjustments are needed.

Amber beads are often associated with glass beads, as part of a single thread. Among general classifications for beads of different materials, typologies of Iron Age glass beads are especially well established. Based on this connection, typologies of glass beads were also taken into consideration in this paper[411]. Our typology of amber beads is described and compared to the previous ones (tab. 4).

In 1966 D. E. Strong published the amber finds of the Artemision of Ephesos preserved in the British Museum, but he did not develop a typology[412]. Development of the types started deductively, by dividing the objects into broad categories, and on the other hand inductively, by introducing other subtypes.

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405 The total amount includes some beads for which the typology was not recorded.

406 Beck 1928.

407 Sprincz – Beck 1981.

408 Sprincz – Beck 1981, 477.

409 Negroni Catacchio – Massari – Raposso 2006. Regarding the beads of the Tiryns and Allumiere types, see Bellintani 2016, 282–299 fig. 2 and Naso 2019, fig. 1 (general distribution map).

410 Benedetti – Cardosa 2006.

411 Early Iron Age glass beads from Central Italy have been studied by L. Koch (Koch 2011).

412 Strong 1966.

Table 4 Types of amber heads

Type	Description	Height/ Diameter (cm)	Beck 1928	Sprincz – Beck 1981	Negroni Catacchio et al. 2006	Benedetti – Cardosa 2006	Koch 2011
1	globular	1/1	I.C.1.a	VI	–	II	a
2	ring-shaped	1/2	I.B.1.a	II; III; IV	–	–	b; c
3a	round disc-shaped	1/4	I.A.2.B; I.B.2.B; I.A.4.f.b; I.B.4.f.b	I A; I B	1	I.1–3	d; e
3b	angular disc-shaped	1/4	–	–	–	–	–
3c	disc-shaped, with a horizontal hole	1/4	–	–	2	I.5	–
4a	simple cylindrical	5/1, 3/1, 1/1	–	–	3	III	f; g; h
4b	cylindrical, with faceted surface	5/1, 3/1, 1/1	–	–	–	–	–
4c	spiral	5/1, 3/1, 1/1	–	–	5 (?)	–	–
4d	cylindrical with spiral ends	5/1, 3/1, 1/1	–	–	–	–	–
5	conical	2/1, 1/1	I.B.2.d	X	6	–	–
6a	simple biconical	2/1, 1/1, 1/2	–	–	–	VI.1	k
6b	compressed biconical	2/1, 1/1, 1/2	I.B.2.f	IXB; IXC	8, var. c–d	VI.2	–
6c	long biconical	1–1/2	I.C.2.f	IXD; IXE	8, var. a–b	VI.3; VI.4	–
6d	rosette-shaped	1–1/2	–	–	–	–	m
7	square	–	–	–	–	III; IX–XI	–

In this paper, a bead is defined as a small object, often but not necessarily round. A perforation runs through the entire object. Furthermore, the bead is assumed to have had an ornamental function (below, chap. 2.2.3).

To ensure the documentation and the catalogue are easier to understand, it was recorded at which points of a bead the measurements have been taken. Bead diameter, diameter of the bore-hole and height of the object are included. For square beads, the indication of the diameter can be replaced by length and width. Firstly the diameter, secondly the height and finally the diameter of the bore-hole are recorded. The order of diameter and height can change for cylindrical and long biconical beads. For these two types, the relevance of height and diameter increases. A different scheme is suggested for square beads. For these, the diameter of the hole can be specified in addition to the length and width.

The rough division into types is based on the general shape and uses geometric shapes. Another refinement of some major categories was carried out, based on specific characteristics. So seven primary groups with associated subgroups were created. An eighth category (other beads) was created for non-classifiable forms. This category includes 74 pieces (pl. 9).

The beads discussed here were found during the excavations by the British Museum (118 beads) and by the OeAI (294 beads). Any differences between the two groups will be discussed when describing the different types.

As for all amber finds from Ephesos, the beads also constitute the largest amber context to be found so far in the Aegean. In sanctuaries on the Greek mainland, the Aegean islands and in Ionia, amber beads represented a popular votive offering for deities. Beads have been found in

Aegean sanctuaries such as in Rhodes (Lindos, Athenaion)[413], Ithaca (Aetos)[414], Perachora (Hera Limenia)[415], Eretria (Apollonion)[416], Chios (Kato Phana)[417], Kythnos[418], Miletos (Aphrodision) and Claros (Apollonion)[419]. Lindos on Rhodes represents one of the most extensive amber contexts found in a Greek sanctuary, with over 200 known amber objects. Forty-six amber objects have been found in the temple of Aetos at Ithaca, dated to the sub-Geometric and Orientalising phases[420]. At Cyprus amber beads are known from burials in the necropolis at Enkomi[421].

Unlike the Greek mainland, Aegean islands and Ionia, the Central Mediterranean region played a primary role in the spread of amber beads. In the Early Iron Age, a significant centre of amber processing can be identified on the Adriatic coast of Italy at Verucchio[422]. In the second half of the 7th century BC, the area of Picenum took over the role of main amber centre in Italy's eastern regions[423]. On the opposite shore of the Adriatic Sea, the two sites of Novo mesto (Slovenia) and Novi Pazar (Serbia) constitute important centres of amber processing, both closely connected to Italy[424].

From the 8th and 7th centuries BC, graves with amber ensembles containing beads have been identified in Southern Italy, mostly concentrated in Basilicata[425]. These ornamental objects are located primarily, but not exclusively, in rich female burials. Amber beads as grave goods from the Bronze and Early Iron Age were also found in Apulia[426], Calabria[427] and Sicily[428]. In many regions of the Balkans, such as Croatia[429], Bosnia[430], Serbia[431], Kosovo[432], Albania[433] and Bulgaria[434], amber beads have been discovered in several localities. North of the Alps, necklaces with amber beads are found at Hallstatt[435]. Typically, beads of several types are strung together in the same necklace.

413 Blinkenberg 1931, 110 f.; Strong 1966, 22.
414 Heurtley – Robertson 1948.
415 Dunbabin 1962.
416 Huber 2003, I, 83. 86 f.
417 Lamb 1934/1935, 154 fig. 11, 1–6.
418 Amber finds from sanctuaries at Kythnos are mentioned in preliminary reports: Mazarakis Ainian 2010, 35 pl. 20, 4; Koukoulidou et al. 2017, 241 fig. 138 a, upper row; see also Mazarakis Ainian 2019, 106.
419 The amber finds from the excavation in the Aphrodision at Miletos, and the Apollonion at Claros are both unpublished. Courtesy of V. von Graeve and G. Günay von Graeve, it was possible to view the amber finds from the Aphrodision at Miletos, including also several amber beads. S. Verger kindly reported the existence of a few amber beads among the finds from Claros.
420 The only two beads reproduced probably belong to fibulae: Heurtley – Robertson 1948, 117 D3–4 pl. 48.
421 Murray et al. 1900.
422 Verucchio 1994; Boiardi et al. 2006; Malnati 2007; von Eles 2010; Bentini et al. 2020.
423 Naso 2011, 121–128.
424 Palavestra 1993; Križ –Turk 2003; Palavestra – Krstić 2006; Palavestra 2009; Križ 2017.
425 Magie 2005 and Zürich 2010; A. Bottini in: Ambre 2007, 232–237.
426 For amber objects in Apulia see P. Bellintani in: Agamennone 2010, 141–146 (Bronze Age) and Montanaro 2012, 31–58 (Iron Age, 7th–4th cent. BC).
427 L. Benedetti and M. Cardosa briefly mentioned some important amber sites in Calabria, such as Torre del Mordillo, Francavilla Marittima, Corigliano, Raggiano, Torano Castello, Bisignano, Castiglione di Paludi, Murge di Strongoli, Tiriolo, Crichi Simeri, Torre Galli, Castellace di Oppido Mamertina, Calanna, Onofrio di Roccella, Pirettina, Canale-Janchina-Patarriti-Scorciabove, but they did not name the types of the individual beads, so it is not possible to identify the shapes (Benedetti – Cardosa 2006).
428 Cultraro 2007, 389 f.
429 Hiller 1991.
430 Benac – Čović 1957.
431 Palavestra 1993; Palavestra – Krstić 2006; Balkani 2007.
432 These finds have been published by Palavestra 1997 (line drawings) and Palavestra – Krstić 2006 (photographs).
433 Kurti 2012.
434 Gergova 2009; Ivanova – Kuleff 2009.
435 Hoernes 1921; Kromer 1959; Hodson 1990.

Type 1: Globular beads (cat. 6–30. 541–543) pls. 10, 1; 39; 58

The group of globular beads includes 28 objects. The beads are approximately spherical, and the surface is well rounded. This shape is usually described as a pearl and is common all over the Mediterranean over an extended period. A common feature in globular beads is a narrow borehole with a size of 0.1–0.15 cm, in some cases to 0.2 cm and only in one case to 0.3 cm (**cat. 21**). The objects' surface treatment varies: some pearls are entirely smooth, like **cat. 23**, while others are faceted, like **cat. 7** or **cat. 15**.

As this is a basic shape, globular beads are widely distributed. Globular amber beads have been found in all sanctuaries in which amber items are detectable in Ionia[436], the Aegean[437] and the Greek mainland[438].

In the Early Iron Age, globular beads were popular ornaments among members of the elite in several regions in Italy. In Northern Italy, at Este[439], Bologna[440] and Verucchio[441], globular beads were found mainly as part of single-row sequences. In Etruria, in Central Italy, globular beads occur in burials from the Early Iron Age onwards at Vetulonia[442], Vulci, Cerveteri and Veii[443]. In Middle-Adriatic Italy, globular beads are well known in the 8th and 7th centuries BC at Fossa[444] and Campovalano[445]. Globular beads have also been documented in northern Campania, at Nola[446], Maddaloni[447] and Cumae[448]. In Southern Italy, amber beads occur in several localities in modern-day Basilicata. In Braida di Vaglio a young woman was buried with an amber sceptre and a parure of several amber necklaces, composed of beads of different types, including a gold diadem (pl. 15)[449]. Chiaromonte provides a large variety of well-preserved sequences, including globular beads[450]. Globular beads occur in necklaces, girdles and other rich amber ornaments from Alianello[451] and Latronico[452]; they are also documented at Serra d'Aiello in Calabria[453] and occur already in the Late Bronze Age sites in Calabria[454] and Sicily[455]. In Slovenia globular beads

436 Among the amber finds from the Aphrodision at Miletos there are also globular beads (see n. 419).

437 Kato Phana-Chios (Lamb 1934/1935, 154 fig. 11, 6); Lindos (Blinkenberg 1931, 109–113); Ithaca (Heurtley – Robertson 1948, 117); Enkomi (Murray et al. 1900, grave 66, 43 no. 301 pl. 9).

438 Perachora: Dunbabin 1962, 524 pl. 195, H 8–9); Eretria (Huber 2003, II, 56 f. nos. O 148–150 pl. 47).

439 Many globular beads were found at Este: these are often together with disc-shaped beads and in single rows composed of amber, glass, coral and other materials: Villa Benvenuti, graves 78 and 91 (Capuis – Chieco Bianchi 2006, 122 no. 15 pl. 49; 164 no. 8 pl. 77).

440 Bologna: tomba degli Ori (Morigi Govi 1971, 228 f.), Savena grave 123 (Malnati 2007, 147 no. III.65); Benacci grave 251 (Malnati 2007, 147 no. III.66).

441 Verucchio 1994; Gentili 2003; Tamburini Müller 2006; von Eles 2010.

442 Vetulonia, Circolo dei Monili, early 7th cent. BC: L. Pagnini in: Principi 2000, 294 f. no 391.

443 Vulci, 8th cent. BC: T. Trocchi in: Arancio – Massimi 2012, 71 no. II.18. Caere: both in 8th (Sasso di Furbara, tomb 40: E. Mangani in: Ambre 2007, 169 no. III.100) and 7th cent. BC (tumulo di Montetosto, room II: F. Sciacca in: Principi 2000, 295 no. 392). Veii: A. Piergrossi et al. in: Arancio – Massimi 2012, 63 nos. II.1–6.

444 Fossa, grave 57: A. Martellone in: Ambre 2007, 183 no. III.148.

445 Campovalano, grave 245: A. Martellone in: Ambre 2007, 183 no. III.147.

446 Nola, Torricelle, grave 112: F. Grasso in: Ambre 2007, 192 no. III.159.

447 Calatia, grave 201: M. R. Borriello in: Ambre 2007, 199. 201 no. III.169.

448 Cumae, sporadic find: M. R. Borriello in: Ambre 2007, 211 no. III.188.

449 Braida di Vaglio, grave 102, late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini in: Ambre 2007, 232–236.

450 Chiaromonte, graves 147 (Magie 2005, 42), 325 (late 8th–early 7th cent. BC: Magie 2005, 43. 76; Zürich 2010, 30–33; Bianco 2020, 111 f. figs. 17–20), 75 (Magie 2005, 64), 140 (late 8th cent. BC: Magie 2005, 92 f.; Bianco 2020, 111 fig. 21), 129 (late 8th cent. BC: Magie 2005, 95; Bianco 2020, 110 fig. 13), 96 (early 6th cent. BC: Magie 2005, 100; Bianco 2020, 122 fig. 22), 152 (late 8th cent. BC: Magie 2005, 96; S. Bianco in: Ambre 2007, 239 f. nos. 251–252; Bianco 2020, 111 figs. 15–16) and 91 (early 6th cent. BC: S. Bianco in: Ambre 2007, 241 no. III.258).

451 Alianello, graves 316 (Magie 2005, 68. 77), 356 (Magie 2005, 90) and 299 (Magie 2005, 93).

452 Latronico, grave 83 (early 7th cent. BC: Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.242–244).

453 Serra d'Aiello, grave 6 (early 8th cent. BC): L. La Rocca in: Ambre 2007, 251 no. III.295.

454 Benedetti – Cardosa 2006.

455 Beck – Hartnett 1993; Angelini – Bellintani 2017.

are represented at Most na Soči on a pectoral[456] and at Novo mesto[457]. Outside Slovenia, globular beads were found throughout the Central Balkans at Novi Pazar[458] and in graves dated from the 7th to 4th centuries BC in Serbia[459], Bosnia[460], Kosovo[461], Albania[462] and Bulgaria[463]. Several globular beads have been found in the burials at Hallstatt (Austria)[464].

Globular beads are an enduring amber bead type and are not typical of one particular period. In the 7th to the 6th century BC they were common in the whole Mediterranean area, especially in Southern Italy.

Type 2: Ring-shaped beads (cat. 31–64. 544–546) pls. 10, 2; 39; 40; 58

A regular shape and a D-shaped cross-section are typical for ring-shaped beads, which constitute 37 items. Type 2 beads are similar to biconical beads, but there are small differences in shape. In contrast to biconical beads, ring-shaped beads have no pointed ends at the widest point, and their cross-section is round. Hence, compared to disc-shaped beads, ring-shaped beads are thicker. These beads' diameter measures between 0.5 and 1.5 cm, the height is between 0.2 and 1 cm and the bore-hole diameters measure between 0.2 and 0.5 cm. An exception is bead **cat. 544**: the diameter is 3.25 cm, the height is 1.4 cm, and the diameter of the drilling is 0.3 cm. In contrast to the other types, the ring-shaped beads are a very heterogeneous group. Beads **cat. 36**, **37** and **38** are especially good examples of the pearl-shaped beads. The majority of ring-shaped beads come from the Austrian excavations.

Besides globular beads, circular beads were the most widely used shape of beads all over the Mediterranean. Circular beads can be found in Greek sanctuaries at Eretria[465], Perachora[466], Chios[467] and Cyprus[468]. Circular beads also occur in several regions of Italy, as in the funerary interments at Vetulonia[469] and Cerveteri[470]. Further north, circular beads are common in Bologna[471], Este[472],

456 Most na Soči, tomb 2827: A. Crismani in: Ambre 2007, 121 no. III.9.

457 Križ – Turk 2003; Križ 2017.

458 V. Krstić in: Balkani 2007, 91 no. 42. A. Palavestra defined a bead type from Novi Pazar as »spherical and flattened globular beads« and united globular beads and disc-shaped beads. All in all, 5197 complete and 833 fragmented beads of this type are known from Novi Pazar (Palavestra – Krstić 2006, 278 f.).

459 Glogovik, mound I, grave 38, necklace (750–650 BC: Palavestra – Krstić 2006, 312 no. 480); Atenica, Umke, two graves (late 6th–early 5th cent. BC: Palavestra – Krstić 2006, 332 nos. 521–523); Romaja, Sakra (late 6th–early 5th cent. BC: Palavestra – Krstić 2006, 347 no. 561); Vranište, mound V, grave 1, necklace (6th cent. BC: Palavestra – Krstić 2006, 317 no. 489).

460 Glasinac: Benac – Čović 1957, 69 pl. 14, 3 (Ilijak, tumulus III, grave 23); 70 pl. 19, 3 (Ilijak, tumulus II, grave 1); 75 pl. 30, 4 (Čitluci, tumulus I, grave 2); 84 without fig. (Rudine-Rusanovići, tumulus I, grave 5).

461 Palavestra 1997, 21 f. pl. 3, 14 (Pećka Banja).

462 Kurti 2012, 108 pl. 4, no. 42.

463 Katrishte, tombs 16–17 (Gergova 2009, 180 figs. 5–6); Gradec (7th cent. BC: Gergova 2009, 179 fig. 1).

464 Hallstatt: Kromer 1959, 92 pl. 58, no. 9 (grave 343); 102 pl. 67, no. 9 (grave 413); 122 pl. 78, no. 14 (grave 527); 143 pl. 156, no. 5 (grave 676).

465 Huber 2003, II, 56 f. pl. 47, nos. O 147. O 152–153.

466 Eight globular amber beads from Perachora have been compared with beads from Vetulonia, Lindos and Chios: Dunbabin 1962, 524 p. 195, H 10–17.

467 Lamb 1934/1935, 154 fig. 11, 2.

468 Enkomi, grave 66: Murray et al. 1900, 43 no. 304 pl. 9.

469 Vetulonia, Circolo degli Acquastrini (L. Pagnini in: Etrusker 1988, 199 no. 129) and Circolo dei Monili (L. Pagnini in: Principi 2000, 294 f. no. 391).

470 Caere, tumulo di Montetosto, room II (F. Sciacca in: Principi 2000, 295 no. 392).

471 Bologna: irregular globular beads from Savena, grave 123 (A. Dore in: Ambre 2007, 147 no. III.65), Benacci, grave 251 (A. Dore in: Ambre 2007, 147 no. III.66), Giardini Margherita, grave 20/1986 (F. Guidi in: Ambre 2007, 156 f. no. III.96), Certosa grave 350 (5th cent. BC: M. Miari in: Ambre 2007, 158 no. III.97).

472 Este, Villa Benvenuti, graves 78 and 91 (Capuis – Chieco Bianchi 2006, 122 no. 15 pl. 49; 164 no. 8 pl. 77); Este, Capodaglio, sporadic find (E. Mangani in: Ambre 2007, 130 f. no. III.21).

and in the 5th century BC in Genoa[473]. Ring-shaped beads also occur in Picenum and its surrounding area. At Novilara[474], Alfedena[475], Campli[476] and Fossa[477], several ring-shaped amber beads are found in necklaces. Three ornamental pendants were found in fibulae at Numana[478], consisting of several rows of amber beads. Type 2 beads have a wide distribution in Southern Italy, especially in northern and southern Campania[479], Basilicata[480], Apulia and Calabria[481].

On the opposite shore of the Adriatic, a large number of type 2 beads has been found, especially in Novo mesto[482], but also at San Canziano del Carso/Škocjan[483] and Most na Soči[484]. Several circular beads were identified in Croatia at Nin[485]. Together with globular beads, circular beads represent the largest bead type at Novi Pazar and also occur in Early Iron Age sites in Serbia[486], Macedonia[487], Bulgaria[488], Bosnia and in several sites at Glasinac[489], as well as in Kosovo, in graves dated to the 6th to 5th centuries BC[490] and Albania[491]. Many ring-shaped beads belonging to

473 Genoa, grave 30 (450–400 BC: P. Melli in: Ambre 2007, 159 no III.98).

474 Novilara, grave Molaroni 7, nos. 43–44: Beinhauer 1985, 691 no.1 pl. 3, nos. 43–44.

475 Alfedena, Campo Consolino, graves 27 and 30: M. Ruggeri in: Ambre 2007, 180 f. nos. III.139–140.

476 Campovalano, graves 176 and 245: A. Martellone in: Ambre 2007, 182 no. III.144; 183 no. III.147.

477 Fossa, grave 57: A. Martellone in: Ambre 2007, 183 no. III.148.

478 Globular beads belonging to a pendant: Tomba della Regina, Fossa A (M. Landolfi in: Ambre 2007, 174 f. no. III.124; 177 nos. 130–131).

479 Globular beads in a suspended ornament: Nola, Torricelle, graves 112 and 308 (L. Grasso in: Ambre 2007, 192 no. III.159; 194 no. III.161); Calatia, grave 201 (M. R. Borriello in: Ambre 2007, 199. 201 no. III.169); Santa Maria Capua Vetere, grave 1582a (V. Sampaolo in: Ambre 2007, 205 nos. III.174–176) and Cumae, sporadic find (M. R. Borriello in: Ambre 2007, 211 f. no. III.189). Ring-shaped beads together with bulla-shaped pendants: Campania, unknown provenance (M. R. Borriello in: Ambre 2007, 212 f. no. III.192); Sala Consilina, graves 360, 367 and 3 (M. Romito in: Ambre 2007, 224 f. no. III.231; 227 no. III.235 and 230 f. no. III.240).

480 Chiaromonte, graves 75 (Magie 2005, 64), 152 (late 8th cent. BC: see above, n. 450), 91 (early 6th cent. BC: S. Bianco in: Ambre 2007, 240 f. nos. III.250–254), 156 (early 6th cent. BC: Magie 2005, 45; S. Bianco in: Ambre 2007, 242 no. III.264), 325 (late 8th–early 7th cent. BC: see above, n. 450), 732 (early 6th cent. BC: S. Bianco in: Ambre 2007, 242 nos. III.265–269); Alianello, grave 316 (Magie 2005, 68); Banzi, grave Piano Carbone 426 (around 550 BC: Montanaro 2012, 37 fig. 32); Braida di Vaglio, grave 102 (late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini: in Ambre 2007, 232–236). Small globular beads: Guardia Perticara, grave 532 (750–700 BC: Zürich 2010, 34; A. Bottini in: Ambre 2007, 234 fig. 1; Bianco 2011, 56). Globular beads in a suspended ornament and a girdle in Latronico, grave 83 (early 7th cent. BC: Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.242–246).

481 Apulia: Globular beads of different sizes occur in a suspended ornament from Rutigliano, grave 122/1977 (Montanaro 2012, 45 fig. 45). Calabria: Serra d'Aiello, grave 6 (early 8th cent. BC: L. La Rocca in: Ambre 2007, 251 no. III.295).

482 Križ – Turk 2003, 74. 102 no. 111 (7th–6th cent. BC).

483 San Canziano del Carso/Škocjan, hoard, 6th–4th cent. BC: R. Merlatti in: Ambre 2007, 116 f. no. III.1.

484 Most na Soči, grave 2827 (A. Crismani in: Ambre 2007, 121 no. III.9). In a pendant from Most na Soči grave 3070 (625–575 BC) globular beads occur together with beads and spacers of various shapes (A. Crismani in: Ambre 2007, 120 no. III.8).

485 Nin: Hiller 1991, 237 fig. 72C, graves 3 (Hiller 1991, 356 pl. 4, 39), 4 (Hiller 1991, 356 f. pl. 5, 54), 10 (Hiller 1991, 359 pl. 10, 106) and 53 (Hiller 1991, 363 f. pl. 17, 174).

486 V. Krstić in: Balkani 2007, 91 no. 42. Among the finds from Novi Pazar A. Palavestra defined globular and disc-shaped beads as a bead type »spherical and flattened globular beads«. All in all, 5,197 complete and 833 fragmented beads of this type are known from Novi Pazar (Palavestra – Krstić 2006, 278 f.). Further find sites: Palavestra – Krstić 2006, 312 f. nos. 480–482 (Glogovik, mound I, grave 38, necklace, 750–650 BC); 316 nos. 486–487 (Mojsinje, Lugovi-Bent); 317 no. 489 (Vranište, Ražana, mound V, grave 1, 6th cent. BC); 319 no. 491 (Trnjaci, Pilatovići, necklace, 6th cent. BC); 332 nos. 521–523 (Atenica, Umke, late 6th–early 5th cent. BC); 347 no. 561 (Romaja, Sakra, late 6th–early 5th cent. BC).

487 Radolište: Palavestra – Krstić 2006, 280 nos. 456–457.

488 Katrishte, tombs 16–17 (Gergova 2009, 180 figs. 5–6).

489 Glasinac: Benac – Čović 1957, 69 pl. 14, 3 (Ilijak, Tumulus III, grave 2); 70 pl. 19, 3 (Ilijak, tumulus II, grave 1); 75 pl. 30, 4 (Čitluci, tumulus I, grave 4); 75 pl. 31, 10 (Čitluci, tumulus I, grave 5); 79 pl. 39, 4 (Potpećine, tumulus II, grave 1).

490 Palavestra 1997, 27 f. pl. 6, 19 (Rogovo-Fuše) and 31–33 pl. 8 b, 1–2 (Prčevo-Boka, together with glass beads).

491 Kurti 2012, 105 pl. 1, nos. 23–28.

necklaces were found in the graves at Hallstatt[492]. Like globular beads, ring-shaped beads have a long lifespan.

Type 3: Disc-shaped beads (cat. 65–104. 547–551) pls. 10, 4; 39–41; 58

Disc-shaped beads have a cross-section or length at least 1.5 times larger in proportion to the height. The edges of the disc-shaped beads can be both clearly defined or rounded. The bore-hole may extend both horizontally and vertically through the object. The course of the bore-hole is a criterion for distinguishing between subtypes of the disc-shaped bead. Globular beads may also have slightly flat areas, but these beads are significantly thicker. This bead type includes a total of 45 pieces.

As to size, disc-shaped beads register a diameter between 0.5 and 1.4 cm; the height varies between 0.1 and 0.5 cm; and the diameter of the bore-hole ranges between 0.1 and 0.4 cm. Bead **cat. 85** exceeds these measurements: 2.3 cm (diameter), 1 cm (height) and 0.2 cm (diameter hole).

Due to the diversity of disc-shaped beads, the following subgroups were formed among the finds from the Artemision:

19 round disc-shaped beads (type 3a), **cat. 65**–**82**. **547**

5 angular disc-shaped beads (type 3b), **cat. 83**–**84**. **548**–**550**

21 disc-shaped beads with a horizontal bore-hole (type 3c), **cat. 85**–**104**. **551**

Disc-shaped beads were a popular shape all over the Mediterranean in the Early Iron Age and were spread over a wide area. Nevertheless, not all subtypes prove equally frequent. In the Late Bronze Age and the Early Iron Age round, disc-shaped beads (type 3a) are more common than angular, disc-shaped beads (type 3b). The third type, disc-shaped beads with a horizontal bore-hole (type 3c), is prevalent in the 6th to the 5th century BC.

Type 3a: Round disc-shaped beads (cat. 65–82. 547) pls. 10, 4; 39–41; 58

Flat and round shapes with a central, vertical bore-hole are a feature of round, disc-shaped beads.

This type includes 19 pieces, and the diameter varies from 0.5 to 1.4 cm. The height measures between 0.2 and 0.5 cm, and the diameter of the bore-hole measures between 0.1 and 0.4 cm. Both beads with rounded edges and beads with defined, angular edges can be found in this subtype. As a general rule, ambers with a lenticular cross-section have rounded edges, and the ones with a square cross-section tend to have angular edges. Beads **cat. 65** and **68** of the type 3a are particularly good examples of this type.

Disc-shaped beads are documented in sanctuaries on the Aegean islands and mainland Greece, at Kato Phana on Chios[493] and at Perachora[494], respectively.

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[492] Hallstatt: Kromer 1959, 56 pl. 13, no.18 (grave 118); Hodson 1990, 142 pl. 3, no. 2 (grave 121); Hodson 1990, 142 pl. 5, no. 4 (grave 136); Kromer 1959, 64 f. pl. 21, no. 9 (grave 174); Hodson 1990, 143 pl. 8, no. 12 (grave 196); Hodson 1990, 143 pl. 8, no. 15 (grave 200); Kromer 1959, 69 pl. 23, no. 11 (grave 208): Kromer 1959, 70 pl. 26, no. 14 and Hodson 1990, 143 pl. 9, no. 4 (grave 210); Kromer 1959, 71 pl. 29, no. 16 (grave 220); Kromer 1959, 81 pl. 45, no.11 (grave 281); Kromer 1959, 85 pl. 52, no. 5 (grave 300); Kromer 1959, 76 pl. 31, no. 14 (grave 234); Kromer 1959, 85 f. pl. 49, no. 7 (grave 302); Kromer 1959, 92 pl. 58, no. 9 (grave 343); Kromer 1959, 92 pl. 54, no. 7 (grave 347); Kromer 1959, 100 pl. 66, no. 17 (grave 404); Kromer 1959, 102 pl. 67, no. 18 (grave 413); Kromer 1959, 104 f. pl. 72, no. 7 (grave 434); Kromer 1959, 114 pl. 91, no. 5 (grave 495); Hodson 1990, 149 pl. 35, no. 3 (grave 505); Hodson 1990, 149 pl. 40, no. 4 (grave 521); Kromer 1959, 121 f. pl. 78, no. 14 (grave 527); Kromer 1959, 123 pl. 91, no. 21 (grave 542); Kromer 1959, 127 pl. 107, no. 9 (grave 569); Kromer 1959, 133 pl. 116, no. 6 (grave 603); Kromer 1959, 142 pl. 130, no. 9 (grave 671); Kromer 1959, 142 pl. 138, no. 9 (grave 672); Kromer 1959, 143 pl. 156, no. 5 (grave 676); Kromer 1959, 143 pl. 139, no. 19 (grave 678); Kromer 1959, 145 pl. 123, no. 7 (grave 694); Kromer 1959, 146 pl. 124, no. 2 (grave 696); Kromer 1959, 148 pl. 148, no. 5 (grave 710); Kromer 1959, 149 pl. 150, no. 6 (grave 717); Kromer 1959, 163 pl. 168, no. 16 (grave 834); Hodson 1990, 156 pl. 51, no. 7 (grave 929a).

[493] Lamb 1934/1935, 154 fig. 11, 1–2.

[494] T. J. Dunbabin mentioned comparisons from Syracuse, Lindos, Ephesos and Delos: Dunbabin 1962, 524 pl. 195, H 20–23.

Beads of type 3a are widely distributed in Italy. Specimens have been used as elements of necklaces in graves at Este[495] and Genoa[496], Verucchio[497] and Vetulonia[498]. At Bologna six round disc-shaped amber beads were located on a spindle and 13 formed a sequence[499]. In Central-Eastern Italy sequences with round disc-shaped beads occur in Novilara[500], Campli[501] and Fossa[502]. In a rich grave at Numana, they are inserted in pendants of various shapes[503]. Further south, type 3a beads are widespread in Basilicata at Guardia Perticara (8th–7th cent. BC)[504], Alianello (7th cent. BC)[505], Chiaromonte (7th–6th cent. BC)[506] and Banzi (6th cent. BC)[507]. This type of bead is also attested in Campania[508] and Calabria[509].

Both very small and larger round disc-shaped amber beads were found in large numbers in the Early Iron Age at Stična, Novo mesto, San Canziano del Carso/Škocjan and Kompolje in Slovenia[510]. Among other items, this bead type was used here as part of a bronze pendant[511]. Already in the 8th century BC, round disc-shaped beads existed in the graves of Nin (Croatia)[512]. Round disc-shaped amber beads have come to light in some localities in Serbia: Glogovik (Lantisko groblje), Vranište (Ražana), Atenica (Umke) and Trnjaci (Pilatovići)[513].

Beads of type 3a appear in Bosnia at Glasinac[514], in Albania[515] and in Kosovo[516] in graves belonging to the 6th to 5th centuries BC. Furthermore, round disc-shaped beads are found in Hallstatt[517].

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495 Este, Villa Benvenuti, graves 78 and 91: Capuis – Chieco Bianchi 2006, 122 no. 15 pl. 49; 164 no. 8 pl. 77.

496 Genoa, grave 30: P. Melli in: Ambre 2007, 159 no. III.98.

497 Verucchio, tomb Lippi 31/1972: P. Poli in: Ambre 2007, 142 no. III.50.

498 Circolo dei Monili: L. Pagnini in: Principi 2000, 294 f. no. 391.

499 For the spindles: De Luca, tomb 15 (L. Minarini in: Principi 2000, 278 f. no. 349); Giardini Margherita, grave 20/1986 (500–475 BC: F. Guidi in: Ambre 2007, 156 no. III.96).

500 Novilara, Molaroni grave 2: Beinhauer 1985, 690 no. 13 pl. 2, nos. 22–23.

501 Campovalano, grave 245: A. Martellone in: Ambre 2007, 183 no. III.147.

502 Fossa, grave 57: A. Martellone in: Ambre 2007, 183 no. III.148.

503 Disc-shaped beads belonging to pendants of various shapes: Tomba della Regina, Fossa A (M. Landolfi in: Ambre 2007, 174 f. no. III.124; 177 nos. III.130–131).

504 Guardia Perticara, grave 532 (750–700 BC: Zürich 2010, 34; A. Bottini in: Ambre 2007, 234 fig. 1; Bianco 2011, 56).

505 The grave Alianello 315 dates to the 7th cent. BC and also yielded a diadem of disc-shaped amber, ivory, glass and bone beads (Magie 2005, 61).

506 Simple disc-shaped amber beads on necklaces and girdles from Chiaromonte, graves 152, 91, 156 and 732 (S. Bianco in: Ambre 2007, 239 f. nos. III.251–252 and 254; 241 no. III.258; 242 no. III.264; 242 nos. III.265–269).

507 Banzi, grave Piano Carbone 426, around 550 BC: Montanaro 2012, 37 fig. 32.

508 Two disc-shaped beads in a sequence with bronze spacers from Nola, grave 112 (F. Grasso in: Ambre 2007, 192 no. III.159); Calatia, grave 201 (M. R. Borriello in: Ambre 2007, 199. 201 no. III.169); Santa Maria Capua Vetere, tomb 1582a (V. Sampaolo in: Ambre 2007, 205 nos. III.174–175); Cumae, sporadic find, disc-shaped bead with clearly defined edges (M. R. Borriello in: Ambre 2007, 208. 211 nos. III.186–187).

509 Serra d'Aiello, grave 6 (early 8th cent. BC): L. La Rocca in: Ambre 2007, 251 no III.295.

510 Stična: Tumulus VI, grave 16 (Wells 1984, 206 fig. 147 c = Wells 1985, 272 fig. 2); other finds from Stična are in Gabrovec et al. 2006; Gabrovec – Teržan 2010. Novo mesto: Križ – Turk 2003, 74. 102 no. 111 (7th–6th cent. BC). San Canziano del Carso/Škocjan, hoard (6th–4th cent. BC): R. Merlatti in: Ambre 2007, 116–119 nos. III.1–III.5. Kompolje: Hiller 1991, 246 fig. 77, I.

511 San Canziano del Carso/Škocjan, hoard, 6th–4th cent. BC: R. Merlatti in: Ambre 2007, 119 no. III.6.

512 Nin, graves 1 and 53: Hiller 1991, 355 pl. 3, 22; 363 f. pls. 16–17.

513 Palavestra – Krstić 2006, 313 nos. 482–483 (Glogovik); 317 no. 489 (Ražana, mound V, grave 1); 319 no. 491 (6th cent. BC: Pilatovići); 332 nos. 521–523 (late 6th–early 5th cent. BC: Atenica, Umke).

514 Glasinac: Benac – Čović 1957, 66 pl. 7, 6 (Ilijak, tumulus IV, grave 2); 69 pl. 14, 3 (Ilijak, tumulus III, grave 2); 70 pl. 19, 3 (Ilijak, tumulus II, grave 1); 66 pl. 8, 6 (Gosinja Planina, tumulus XXXVII, grave 1); 75 pl. 30, 4 (Čitluci, tumulus I, grave 4); 81 pl. 46, 9 (Potpećine, tumulus IV, grave 1).

515 Kurti 2012, 106 pl. 2, nos. 9–37. 41–42; 108 pl. 4, nos. 1–6.

516 Palavestra 1997, 29 f. pl. 7 b, 1–3 (Romaja); 31. 33 f. pl. 8 c, 2–3 (Karagač) = Palavestra – Krstić 2006, 347 no. 561 (necklace).

517 Hallstatt: Kromer 1959, 56 pl. 13, no. 18 (grave 118); Hodson 1990, 142 pl. 3, no. 2 (grave 121); Hodson 1990, 136 pl. 5, no. 4 (grave 136); Kromer 1959, 64 f. pl. 21, no. 9 (grave 174); Hodson 1990, 143 pl. 8, no. 12 (grave 196); Hodson 1990, pl. 8, no. 15 (grave 200); Kromer 1959, 69 pl. 23, no. 11 (grave 208), 70 pl. 26, no. 14 (grave 210);

Type 3b: Angular disc-shaped beads (cat. 83–84. 548–550) *pls. 41. 58*

Angular disc-shaped beads can roughly be described as pentagonal and hexagonal. With a total of five pieces, this subgroup represents a small type but should be considered separately from the round disc-shaped beads due to its uniqueness. The diameters and lengths of the angular disc-shaped beads vary from 0.6–1 cm, the height between 0.4 and 0.5 cm, and the diameters of the holes measure between 0.15 and 0.2 cm. Differences appear in diameter and length, not in height. Looking at the beads individually, it is striking that beads **cat. 83** and **84** have a regular tilting and thus assume the shape of a pentagon or hexagon. The beads **cat. 548**–**550**, however, reveal an irregularly shaped base.

Angular disc-shaped beads represent a rare form: similar but not identical to the square, biconical amber beads from Marsiliana d'Albegna in Etruria[518]. The angular disc-shaped beads from Albania provide a better comparison[519].

Type 3c: Disc-shaped beads with a horizontal bore-hole (cat. 85–104. 551) *pls. 41. 58*

Flat beads with a horizontal perforation are quite different from the items described so far. These 21 beads have a flat, oval basic shape and a horizontal bore-hole runs through the whole object. The diameter of the bead is at least twice as large as the height and ranges from 0.6–2.3 cm. The height ranges from 0.1–0.3 cm and the diameter of the holes from 0.1–0.2 cm. Particularly small holes are typical for this subgroup. Edges are consistently clearly defined. Almost all beads of this type are well preserved and hardly deviate from standard. Bead **cat. 98** is a typical example of these beads.

Disc-shaped amber beads with a horizontal bore-hole are less widespread than other bead types. In the Aegean, beads of type 3c occur only in the sanctuary on the island of Kythnos[520] and at Lindos, where they show a horizontal bore-hole[521].

The magnificent female burial of the Tomba degli Ori (Bologna), dating to the end of the 7th century BC also contained a sequence comprising disc-shaped beads with a horizontal bore-hole[522]. A sequence with six beads of this type occurred in a burial of the 6th century BC in Serbia at Trnjaci (Pilatovići)[523]. Disc-shaped beads with a horizontal bore-hole are assembled with other bead types in a necklace from Bosnia[524]. An isolated disc-shaped bead with a horizontal bore-hole occurs in grave 300 at Hallstatt[525].

Type 4: Cylindrical beads (cat. 105–211. 552–566) pls. 10, 5–7; 41–43; 58

Cylindrical beads constitute the largest type among the amber beads of the Artemision, totalling 122 specimens in all. Cylindrical beads can be described as long beads with a longitudinal

Kromer 1959, 71 pl. 29, no. 16 (grave 220); Kromer 1959, 76 pl. 31, no. 14 and Hodson 1990, 144 pl. 11, no. 9 (grave 234): Kromer 1959, 81 pl. 45, no. 11 (grave 281); Kromer 1959, 85 f. pl. 49, no. 7 (grave 302); Kromer 1959, 92 pl. 54, no. 7 (grave 347); Hodson 1990, 147 pl. 25, no. 6 (grave 404); Kromer 1959, 104 f. pl. 72, no. 7 (grave 434); Kromer 1959, 114 pl. 91, no. 5 (grave 495); Hodson 1990, 149 pl. 35, no. 3 (grave 505), Hodson 1990, pl. 40, no. 4 (grave 521); Kromer 1959, 121 f. pl. 78, no. 14 (grave 527); Kromer 1959, 123 pl. 91, no. 21 (grave 542); Kromer 1959, 133 pl. 117, no. 6 (grave 603); Kromer 1959, 142 pl. 130, no. 9 (grave 671); Kromer 1959, 142 pl. 138, no. 9 (grave 672); Kromer 1959, 145 pl. 123, no. 7 (grave 694); Kromer 1959, 169 pl. 172, no. 5 (grave 874); Hodson 1990, 156 pl. 51, no. 7 (grave 929a).

518 Marsiliana, Banditella, grave II (G. C. Cianferoni in: Etrusker 1988, 94 no. 30, inv. 33797).

519 Kurti 2012, 106 pl. 2, nos. 38–40.

520 Amber beads are mentioned in preliminary reports: Mazarakis Ainian 2010, 35 pl. 20, 4; Koukoulidou et al. 2017, 241 fig. 138 a, higher row; see also Mazarakis Ainian 2019, 106.

521 Blinkenberg 1931, 112 no. 250 pl. 11.

522 Morigi Govi 1971, 228 f.

523 Pilatovići, grave 2, 6th cent. BC: Palavestra – Krstić 2006, 319 no. 491.

524 Glasinac: Benac – Čović 1957, 75 pl. 31, 10 (Čitluci, tumulus I, grave 5).

525 Hallstatt, grave 300: Kromer 1959, 85 pl. 52, no. 5.

bore-hole. Differences in surface design constitute a distinguishing feature among the subgroups of this type:

Simple cylindrical beads, 14 specimens (type 4a), **cat. 105**–**113**. **552**–**556**.

Cylindrical beads with faceted surface, 66 specimens (type 4b), **cat. 114**–**179**.

Spiral beads, 30 specimens (type 4c), **cat. 180**–**199**. **557**–**566**.

Cylindrical beads with spiral ends, 12 specimens (type 4d), **cat. 200**–**211**.

Type 4 occurs all over the Mediterranean, but some shapes are more widespread than others. Thus, simple cylindrical beads (type 4a) are a popular type and are found in most of the sites with amber objects. Cylindrical beads with a faceted surface (type 4b), spiral beads (type 4c) and cylindrical beads with spiral ends (type 4d) are rare and occur only in a few sites.

Type 4a: Simple cylindrical beads (cat. 105–113. 552–556) *pls. 41. 58*

The basic form of cylindrical beads totals 14 pieces. The height is between 0.6 and 2 cm; the diameter varies from 0.3–0.8 cm and the diameter of the bore-hole between 0.1 and 0.2 cm. This group is somewhat varied, for example beads **cat. 105** and **108**. In this subtype, beads can show bore-holes with rounded edges, as in bead **cat. 105**, and beads with a sharp edge and flat area around the bore-hole, like bead **cat. 108**. They were mostly found during the British excavations. Simple cylindrical beads occur only in two Aegean sanctuaries, each with one specimen, i.e. on Chios with an amber bead[526] and at Kythnos with a rock crystal[527]. Smaller examples of simple cylindrical beads are found in sequences at Este[528] and Verucchio[529], where they also occur on a spindle, as in Bologna[530]. They are known in Cerveteri[531]. In Central-Eastern Italy simple cylindrical amber beads have been found in necklaces from Alfedena[532], Campli[533] and Fossa[534]. In Basilicata simple, cylindrical amber beads occur in Banzi[535], Braida di Vaglio[536], Alianello[537], Chiaromonte[538] and Latronico[539]. Simple cylindrical beads are also found in northern and southern Campania (Calatia and Cumae, Sala Consilina, respectively)[540] and in Calabria (Serra d'Aiello)[541]. In Slovenia, simple cylindrical beads can be found at Stična[542], but sequences with simple cylindrical beads also occur in Novo mesto[543] and San Canziano del Carso/Škocjan[544].

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526 Lamb 1934/1935, 154 fig. 11, 13 (perhaps belonging to a fibula).

527 Mazarakis Ainian 2010, 35; Mazarakis Ainian 2019, 237 fig. 129.

528 Examples from Villa Benvenuti, tombs 78, 91 and 92 (Capuis – Chieco Bianchi 2006, pls. 49, 77. 80) and Capodaglio, sporadic find (Mangani 2007, 130 f. no. III.21).

529 Necklace: Verucchio, grave Moroni 22 (Verucchio 1994, 168. 206, no. 605 fig. 90). Spindle: Verucchio, grave Lippi 13/1972 (P. Poli in: Ambre 2007, 138 f. no. III.45).

530 Three cylindrical beads were found together with a sizeable biconical bead and six disc-shaped beads on a spindle in the grave De Luca 15: L. Minarini in: Principi 2000, 278 f. no. 349.

531 Caere, tumulo di Montetosto, room II: F. Sciacca in: Principi 2000, 295 no. 392.

532 Alfedena, grave 27: M. Ruggeri in: Ambre 2007, 180 f. no. III.139 (Type 4a).

533 Campovalano, grave 245: A. Martellone in: Ambre 2007, 183 no. III.147.

534 Fossa, grave 57: A. Martellone in: Ambre 2007, 183 no. III.148.

535 Banzi, grave Piano Carbone 426 (around 550 BC: Montanaro 2012, 37 fig. 32).

536 Braida di Vaglio, grave 102, late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini in: Ambre 2007, 232–236.

537 Alianello, grave 316: Magie 2005, 68.

538 Chiaromonte, graves 325 (late 8th–early 7th cent. BC: see above, n. 450) and 91 (early 6th cent. BC: S. Bianco in: Ambre 2007, 239 f. nos. III. 250–254).

539 Latronico, grave 83, early 7th cent. BC: Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.242–246.

540 Calatia, grave 201: M. R. Borriello in: Ambre 2007, 199. 201 no. III.169. Cumae, sporadic finds: M. R. Borriello in: Ambre 2007, 208. 211 nos. III.186–187. Sala Consilina, grave 3: M. Romito in: Ambre 2007, 230 f. no. III.240.

541 Serra d'Aiello, grave 6 (early 8th cent. BC): L. La Rocca in: Ambre 2007, 251 no. III.296.

542 Tumulus VI, grave 16 (Wells 1984, 206 fig. 147 c = Wells 1985, 272 fig. 2). Other finds from Stična have been published in Gabrovec et al. 2006 and Gabrovec – Teržan 2010.

543 Novo mesto, grave VI.12: Križ – Turk 2003, 99 no. 86 (4th cent. BC).

544 San Canziano del Carso/Škocjan, hoard, 6th–4th cent. BC: R. Merlatti in: Ambre 2007, 116 nos. III.1.

Cylindrical, quite long beads that are slightly oval in cross-section are also documented at Novi Pazar and in other localities in Serbia[545]. Cylindrical beads of different heights are known in graves dated from the 7th to the 5th century BC in Kosovo[546]. A few simple cylindrical bead shapes are also common in Albania[547]. They also occur in the Early Iron Age graves at Hallstatt[548].

Type 4b: Cylindrical beads with faceted surfaces (cat. 114–179) *pls. 10, 5; 42*

The cylindrical beads with faceted surfaces constitute a large and homogeneous subgroup totalling 66 specimens. The surface is faceted. The size of the beads (height: 0.2–1 cm; diameter: 0.3–0.4 cm; diameter hole: 0.1–0.2 cm) indicates a high degree of homogeneity and unity within the subtype. The bead's diameter and the diameter of the bore-hole hardly vary, but the overall height does; this is because some are in fragmentary condition. A typical example is represented by the bead **cat. 122**. Type 4b is only documented in the Austrian excavations.

Cylindrical beads with a faceted surface are far less common than simple cylindrical beads, appearing widely only in the Balkans. Five cylindrical beads with a faceted surface occur in Serbia at Novi Pazar[549]. Cylindrical beads with an irregular faceted surface can also be identified in Kosovo[550] and Albania[551]. The beads from Albania usually have a cross-section ranging from a square to a pentagonal shape. The large number of specimens found at the Artemision proves that this shape was especially popular at Ephesos.

Type 4c: Spiral beads (cat. 180–199. 557–566) *pls. 10, 6; 43; 58*

Spiral amber beads have a cylindrical shape and are decorated with circular, spiral carvings. The basic form is similar to the simple, cylindrical bead, except for the surface decoration. Many spiral-shaped pearls are broken, surviving only as fragments. All in all, 30 beads show a height from 0.35–2.3 cm, a diameter of 0.25–0.7 cm and a cross-section of the bore-hole between 0.1 and 0.2 cm. The beads **cat. 196** and **198** are particularly representative for the subtype.

Spiral amber beads occurred in the Late Bronze Age with the Allumiere type (below chap. 5.4 and pl. 27), but in the Early Iron Age they are rarely carved in amber. Spiral-shaped beads can be found in Italy, at Satricum in the 7th century BC[552], and in modern-day Basilicata in the 6th century BC[553]; another shape variety was found at Este[554]. Spiral-shaped beads are more often made

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545 Palavestra – Krstić 2006, 270 nos. 411–412 (Novi Pazar), Glogovik mound I, grave 38, necklace (750–650 BC: Palavestra – Krstić 2006, 313 no. 481) and Pilatovići, necklace (6th cent. BC: Palavestra – Krstić 2006, 319 no. 491).

546 Palavestra 1997, 29 f. pl. 7 b, 6; 31 f. pl. 8 a, 28 (Romaja); 31–33 pl. 8 b, 4 (Prčevo-Boka); 31. 33 f. pl. 8 c, 4 (Karagač).

547 Kurti 2012, 106 pl. 2, nos. 53–54.

548 Hallstatt: Kromer 1959, 56 pl. 13, no. 18 (grave 118); Hodson 1990, 142 pl. 3, no. 2 (grave 121); Hodson 1990, 142 pl. 5, no. 4 (grave 136); Kromer 1959, 64 f. pl. 21, no. 9 (grave 174); Kromer 1959, 70 pl. 26, no. 14 and Hodson 1990, 143 pl. 9, no. 4 (grave 210); Kromer 1959, 76 pl. 31, no. 14 and Hodson 1990, 144 pl. 11, no. 9 (grave 234): Kromer 1959, 81 pl. 45, no. 11 (grave 281); Kromer 1959, 85 pl. 52, no. 5 (grave 300): Kromer 1959, 85 f. pl. 49, no. 7 (grave 302): Kromer 1959, 92 pl. 58, no. 9 and Hodson 1990, 146 pl. 21, no. 8 (grave 343); Kromer 1959, 127 pl. 107, no. 9 (grave 569): Kromer 1959, 143 pl. 156, no. 5 (grave 676); Kromer 1959, 149 pl. 150, no. 6 (grave 717); Kromer 1959, 163 pl. 168, no. 16 (grave 834); Kromer 1959, 169 pl. 172, no. 5 (grave 874); Hodson 1990, 156 pl. 51, no. 7 (grave 929a).

549 V. Krstić in: Balkani 2007, 93 no. 45.

550 Pećka Banja, late 6th–early 5th cent. BC: Palavestra 1997, 21 f. pl. 3, 26–27; Palavestra – Krstić 2006, 351 no. 573.

551 Kurti 2012, 106 pl. 2, nos. 48–52.

552 Satricum, tomb VI, 650–640 BC: Waarsenburg 1995, 408. 471 no. 6.34 pl. 83 (77 pieces).

553 Banzi, grave Piano Carbone 426 (around 550 BC: Montanaro 2012, 37 fig. 32); Braida di Vaglio, grave 102 (late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini in: Ambre 2007, 232–236).

554 Este, Capodaglio, sporadic find: E. Mangani in: Ambre 2007, 130 f. no. III.21. The spiral beads of Este are, in contrast to the beads from the Artemision, only scratched on the surface and do not show the characteristic grooved profile.

in bronze or gold. Therefore, it is likely that amber spiral beads imitated metal models made of twined bronze or gold wire[555].

An almost identical spiral-shaped bead comes from Albania[556]. The beads forming a sequence from Trnjaci (Pilatovići) in Serbia are very similar to the spirals from the Artemision[557]. These represent the best comparison to type 4c beads with fine circumferential grooves. Further north, in the Alps, a spiral-shaped pearl was found in a burial at Hallstatt[558].

Type 4d: Cylindrical beads with spiral ends (cat. 200–211) *pls. 10, 7; 43*

The cylindrical beads with spiral ends, totalling 12 pieces, are similar to the cylindrical beads with a faceted surface, but their ends are decorated with delicate spiral carvings. In intact beads, the spiral groove runs around the bead three times. In some examples, the carvings occur at the ends of the bead in the form of deeply incised concentric rings, as is the case with bead **cat. 202**. The height of the beads ranges from 0.65–1.4 cm, the diameter from 0.25–0.4 cm and the diameter of the boring from 0.08–0.2 cm. Bead **cat. 200** represents a typical example of the spiral-ended type of bead. Cylindrical beads with spiral ends have been found only in the Austrian excavations.

This particular subtype is rare. Only the cylindrical beads from Most na Soči (Slovenia) are roughly comparable[559]. Nevertheless, while these beads, which are part of an amber pectoral, have the same type of carvings that run three times around the object, in this case, the spiral carvings also cover the centre of the object. These additional scorings are not to be found on the beads of the type 4d. Another comparable bead comes from grave 678 of the necropolis of Hallstatt[560].

As is the case for the beads of type 4b, beads of type 4d have few comparisons in other places and seem to be unique to the Artemision.

Type 5: Conical beads (cat. 212–216. 567–571) pls. 10, 8; 43; 58

Beads of type 5 take the shape of a cone. How far the beads narrow varies but each bead shows a lengthwise perforation. The group of conical beads includes a total of ten examples and thereby represents a smaller type group. Five out of ten beads are from the Austrian and five from the British excavations.

The design of the narrow sides can vary. Thus, the longer sides can taper towards the bore-hole, or there can be a flattened, narrow area around the bore-hole. The edge of the base of the cone can be either rounded, as in beads **cat. 212** and **214**, or more defined and angular, as in bead **cat. 571**.

Conical beads are a less common shape of amber beads. However, they occur in Perachora[561], Cumae[562] and Serra d'Aiello[563]. Conical beads of different sizes occur in Kosovo at Iglarevo (14th–13th cent. BC), Pećka Banja and Rogovo-Fuše in necklaces dated from the 6th to 5th centuries

555 Gold spirals from Ephesos (London, BM 994–1011: Marshall 1911, 77 f. pl. 9) and from Enkomi: Murray et al. 1900, 43 pl. 8 (tomb 19); 43 pl. 9, no. 283 (tomb 66). Similar beads have also been found in the »Hortfund« in Naos 1a (Pülz 2009, 261 no. 207).

556 Kurti 2012, 107 pl. 3, no. 78; 108 pl. 4, no. 32.

557 Palavestra – Krstić 2006, 319 no. 491.

558 Hallstatt, grave 300: Kromer 1959, 85 pl. 52, no. 5.

559 In Most na Soči, grave 3070 (625–575 BC), a pendant shows amber beads and spacers of various forms: A. Crismani in: Ambre 2007, 120 no. III.8. In Serbia, at Pilatovići, some beads are entirely ribbed (6th cent. BC: Palavestra – Krstić 2006, 319 no. 491).

560 Hallstatt, grave 678: Kromer 1959, 143 pl. 139 no. 19.

561 Dunbabin 1962, 524, H 27–28, pl. 195.

562 Cumae, sporadic find: M. R. Borriello in: Ambre 2007, 211 no. III.189.

563 Serra d'Aiello, grave 6 (early 8th cent. BC): L. La Rocca in: Ambre 2007, 251 no. III. 295.

BC[564]. Beads of type 5 are also largely represented in Serbia[565] and Albania[566]. A small conical bead was found in Croatia in grave 85 of Nin-Ždrijac[567]. They occur in Hallstatt, too[568]. Outside of Greece, conical beads were found only in Southern Italy and the Balkans, particularly in Kosovo, Serbia and Albania[569].

Type 6: Biconical beads (cat. 217–276. 572–582) pls. 10, 9–10; 44–46; 59

The group of biconical beads comprises 71 objects, so this is one of the most numerous types of amber beads. This bead type can be divided into the following subgroups:

23 simple biconical beads (type 6a), **cat. 217**–**234**. **572**–**576**.
28 compressed biconical beads (type 6b), **cat. 235**–**260**. **577**–**578**.
16 long biconical beads (type 6c), **cat. 261**–**274**. **579**–**580**.
4 rosette-shaped beads (type 6d), **cat. 275**–**276**. **581**–**582**.

The subdivision is due to small differences regarding the bead's shape and appearance. If the edge is rounded or flat, then it is not considered a biconical bead, but rather a ring-shaped bead (type 2). The distribution area of biconical beads extends over the whole of the Mediterranean. Long, biconical forms seem just as popular as type 6a beads in the Early Iron Age. By contrast, compressed biconical beads and rosette-shaped biconical beads are not nearly as common as the two types just mentioned.

Type 6a: Simple biconical beads (cat. 217–234. 572–576) pls. 44. 59

The simple biconical beads amount to 23 pieces. The maximum width is usually towards the centre and tapers relatively steeply towards the bore-holes. The maximum diameter of these beads is always greater than the maximum height; the result is a relatively flat and compact bead shape. Depending on the condition, the edges are more (**cat. 223**) or less defined (**cat. 231** and **232**). Because of the steep sides, the cross-section of these beads often appears lenticular, as in bead **cat. 223**.

The simple biconical bead is a widespread bead shape in the area being considered. These beads are found in Greece, where they occur at Kato Phana on Chios[570] and at Perachora in the sanctuary of Hera Limenia[571], in the Aegean and Ionia, as well as in the Balkans and the Italian Apennine area. The use as spindle-whorls of larger examples of simple biconical beads will be discussed in a separate chapter (below, chap. 2.2.3). Simple biconical beads as part of sequences occur in Bologna[572] and Genoa[573]. In the eastern regions of Central Italy, simple biconical beads on necklaces were documented in burials at Novilara[574], Campli[575] and Alfedena[576]. In northern

564 Palavestra 1997, 16–18 pl. 1, 15 = Palavestra – Krstić 2006, 308 no. 473 (Iglarevo); Palavestra 1997, 21 f. pl. 3, 29 (Pećka Banja); 27 f. pl. 6, 12. 16 (Rogovo-Fuše).
565 Palavestra – Krstić 2006, 263 f. nos. 406–407 (Novi Pazar); 319 no. 491 (Pilatovići, burial 2); 335 no. 527 (Atenica, Umke, mound I, central grave, late 6th–early 5th cent. BC).
566 Kurti 2012, 107 pl. 3, nos. 63–70; 108 pl. 4, nos. 24–28.
567 Nin Ždrijac, grave 85: Hiller 1991, 368 f. pl. 24, 259.
568 Hallstatt: Kromer 1959, 76 pl. 31, no. 14 (grave 234); 163 pl. 168, no. 16 (grave 834).
569 The relationship between Kosovo, Bosnia and Serbia in the 7th cent. BC has been described by Kurti 2012, 101–104.
570 Lamb 1934/1935, 154 fig. 11, 3. 5.
571 Dunbabin 1962, 524, H 18–19, pl. 195, mentioned comparisons from Delphi and Chios.
572 Benacci Caprara, grave 32: A. Dore in: Ambre 2007, 148 no. III.66.
573 A large, simple, biconical bead, part of a single row from grave 30: P. Melli in: Ambre 2007, 159 no. III.98.
574 Novilara, Molaroni, graves 7, 8 and 11 (Beinhauer 1985, 691 no. 1 pl. 3 nos. 43–44; 691 f. no. 2 pl. 4, no. 47; 692 f. no. 1 pl. 6, no. 71).
575 Campovalano, grave 245: A. Martellone in: Ambre 2007, 183 no. III.147.
576 Alfedena, grave 27: M. Ruggeri in: Ambre 2007, 180 no. III.140.

Etruria simple biconical beads are quite often represented at Vetulonia[577]; type 6a beads are also found in South Italy, especially in Basilicata[578] and Campania[579].

Beads of the type 6a also come from modern-day Croatia. According to Hiller, they occur in the graves of Nin from the 9th to the 6th century BC[580]. Simple biconical beads also occur in Bosnia[581], Serbia[582] and Bulgaria[583]. In the area north of the Alps, simple biconical beads were found at Hallstatt[584].

Type 6b: Compressed biconical beads (cat. 235–260. 577–578) *pls. 44. 45. 59*

This type can be described as having the same basic shape as the simple biconical bead, but, in this case, the area around the bore-holes is flattened, showing clearly defined edges. The cross-sections of these beads may vary, as lenticular and angular shapes occur. Even in the simple biconical bead type, flattening is sometimes minimal. However, as this type does not show clearly defined edges, it is not included in the subgroup of biconical beads with a flat area.

Totalling 28 items, this is the largest subgroup of biconical beads. As in bead type 6a, the diameter of these beads is greater than the height. Beads **cat. 236**, **252**, **254**, **256** and **577** are good examples of this group. The most significant number was found during the Austrian excavations.

The distribution area of type 6b beads is not as wide as the circulation area of simple biconical beads (type 6a). Comparable beads mainly occur in Southern Italy[585], in the eastern regions[586], at Verucchio[587] and Novilara[588]. Outside Italy, they turn up in Croatia[589], Kosovo[590] and north of the Alps[591].

577 Vetulonia, Circolo degli Acquastrini: L. Pagnini in: Etrusker 1988, 199 no. 129.

578 A large biconical bead on the needle of a »Doppelkahnfibel« from Rutigliano, tomb 9/1976 (Montanaro 2012, 48 fig. 48). A large biconical bead is inserted in an earring together with disc-shaped glass beads in Guardia Perticara, grave 514 (Zürich 2010, 20). A small biconical bead is inserted in a pectoral and a bracelet, respectively, from Chiaromonte, grave 325 (late 8th–early 7th cent. BC: see above, n. 450).

579 Nola, grave 308 (L. Grasso in: Ambre 2007, 194 no. III.161); Capua, grave 1582a (late 7th–early 6th cent. BC: V. Sampaolo in: Ambre 2007, 205 nos. III.174–17); Sala Consilina, graves 360, 367 and 3: M. Romito in: Ambre 2007, 224 f. no. III.231; 227 no. III.235; 230 f. no. III.240.

580 Hiller 1991, 237 fig. 72, G: Nin, graves 1 (Hiller 1991, 355 pl. 2, 15) and 53 (Hiller 1991, 363 f. pl. 17, 184).

581 Glasinac: Benac – Čović 1957, 66 pl. 8, 6 (Gosinja Planina, tumulus XXXVII, grave 1); 75 pl. 31, 10 (Rusanovići, tumulus I, tomb 5); 76 pl. 34, 29 (Ilijak, tumulus XXII, grave 1).

582 Palavestra – Krstić 2006, 264 nos. 408–410 (Novi Pazar); 313 no. 481 (Glogovik, mound I, grave 38, necklace, 750–650 BC); 315 f. nos. 484–487 (Mojsinje, Lugovi-Bent); 319 no. 491 (Pilatovići, burial 2, necklace); 335 no. 527 (Atenica, Umke, mound I, central grave, necklace, late 6th–early 5th cent. BC); 358 no. 588 (Lisijevo Polje, Donje Luge).

583 Katrishte, tombs 16–17 (Gergova 2009, 180 figs. 5–6).

584 Hallstatt: Kromer 1959, 56 pl. 13, no. 18 (grave 118); Hodson 1990, 143 pl. 8, no. 12 (grave 196); Hodson 1990, 143 pl. 8, no. 15 (grave 200); Hodson 1990, 147 pl. 25, no. 6 (grave 404); Kromer 1959, 104 f. pl. 72, no. 7 (grave 434); Kromer 1959, 114 pl. 91, no. 5 (grave 495); Hodson 1990, 149 pl. 35, no. 3 (grave 505); Kromer 1959, 121 f. pl. 78, no. 14 (grave 527); Kromer 1959, 123 pl. 91, no. 21 (grave 542); Kromer 1959, 148 pl. 148, no. 5 (grave 710); Kromer 1959, 169 pl. 172, no. 5 (grave 874); Hodson 1990, 156 pl. 51, no. 7 (grave 929a).

585 Guardia Perticara, graves 514 and 199: large, compressed biconical amber beads as a part of an earring together with small disc-shaped glass beads (Zürich 2010, 20; Magie 2005, 96); Sala Consilina, graves 367 and 3 (M. Romito in: Ambre 2007, 227 no. III.235; 231 no. III.240).

586 Alfedena, grave 30: M. Ruggeri in: Ambre 2007, 180 no. III.140.

587 Verucchio, grave Lippi 47/1972: Gentili 2003, no. 87 pl. 115.

588 Compressed biconical beads are common in female burials from the necropolis of Molaroni and Servici (Beinhauer 1985).

589 Hiller 1991, 371 f. pl. 28, 314 (Nin-kod crkve svetog Jurja, grave 88); 387 f. pl. 47, 478. 482 (Zaton, grave 3).

590 Prčevo-Boka, Tumulus X: Palavestra 1997, 31–33 pl. 8 b, 3.

591 Hallstatt, grave 404: Hodson 1990, 147 pl. 25, no. 6.

Type 6c: Long biconical beads (cat. 261–274. 579–580) *pls. 10, 9; 45; 59*

Long biconical beads have a similar form to type 6b. However, in contrast to the other biconical beads, this type's height is greater than the diameter. So the shape of this bead type is long and less compressed. Excepting only one bead (**cat. 579**), all the other 15 items show a flattened area on the narrow sides. Long biconical beads were mainly found in Italy. Several type 6c beads were documented at Bologna[592], Verucchio[593], Marsiliana d'Albegna[594] in Etruria and in Abruzzo at Campovalano and Fossa[595]. The richest parures of amber ornaments with long biconical beads are found in Southern Italy, in Basilicata (Guardia Perticara, Chiaromonte and Latronico)[596] and in Campania at Calatia[597].

Long biconical beads also appear in the Balkans. This bead type was used as a part of a pectoral at Most na Soči (Slovenia)[598]. About 86 pieces of type 6c beads of various shapes were found at Novi Pazar, dated to the 6th to 5th centuries BC[599]. Long biconical beads are rare in Albania[600]. Their distribution includes Hallstatt[601].

Type 6d: Rosette-shaped beads (cat. 275–276. 581–582) *pls. 10, 10, 11; 46. 59*

With only four beads, the subgroup of rosette-shaped biconical beads constitutes a tiny group. In their basic shape, they resemble the simple biconical beads. However, the rosette-shaped biconical beads show extensive groove marks extending vertically over the entire object, which gives the object a rosette-like appearance. All four beads are very well preserved and consist of dark, red amber.

Compared to the other rosette-shaped forms, biconical amber beads are rare. They appear already in the Bronze Age in Sicily and Sardinia as well as in the Early Iron Age and were often made out of glass or faïence[602]. It is difficult to find exact comparisons for beads of the type 6d. A bead from Italy at Braida di Vaglio is similar but not identical[603]. A suitable comparison comes from Cumae in Campania[604]. Specimens from Novi Pazar have the same basic shape, but the design of the rosette-shaped beads (trefoil and quatrefoil rosettes) is not as regular as in the amber finds from Ephesos[605]. A. Palavestra described another bead type at Novi Pazar as a »ribbed bead«, but this type is longer, almost cylindrical[606], as are other specimens from

592 Bologna, Giardini Margherita, grave 20/1986 (F. Guidi in: Ambre 2007, 156 no. III.96).

593 Verucchio, graves Lippi 20/1972 and Moroni 19/1969: T. Trocchi in: Ambre 2007, 140 no. III.46; 144 no. III.54, both belonging to the late 8th–early 7th cent. BC.

594 Marsiliana d'Albegna, Banditella, grave II, early 7th cent. BC (G. C. Cianferoni in: Etrusker 1988, 94 no. 30, inv. 33796).

595 Campovalano, grave 245 (A. Martellone in: Ambre 2007, 183 no. III.147) and Fossa, grave 57 (A. Martellone in: Ambre 2007, 183 no. III.148).

596 Guardia Perticara, grave 532 (750–700 BC: A. Bottini in: Ambre 2007, 234 fig. 1; Zürich 2010, 34; Bianco 2011, 56). Chiaromonte, graves 152 (late 8th cent. BC: see above, n. 450), 325 (late 8th–early 7th cent. BC: see above, n. 450), and 91 (early 6th cent. BC: S. Bianco in: Ambre 2007, 239–241 nos. III.254 and III.258). Latronico, grave 83, long biconical beads of different sizes (early 7th cent. BC: Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.242–246).

597 Calatia, grave 201: M. R. Borriello in: Ambre 2007, 201 no. III.169.

598 Most na Soči, grave 3070 (625–575 BC): A. Crismani in: Ambre 2007, 120 no. III.8.

599 Palavestra – Krstić 2006, 269 nos. 408–410; V. Krstić in: Balkani 2007, 93 no. 46.

600 Kurti 2012, 106 pl. 2, no. 47.

601 Hallstatt: Kromer 1959, 121 f. pl. 78, no. 14 (grave 527).

602 For amber, glass and faience beads from the Bronze Age: Bellintani et al. 2006.

603 Braida di Vaglio, grave 102, late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini in: Ambre 2007, 232–236.

604 Cumae, sporadic finds: M. R. Borriello in: Ambre 2007, 211 no. III.189.

605 A. Palavestra noted a possibly related bead shape described as »trefoil and quatrefoil rosettes‹: Palavestra – Krstić 2006, 240–243 nos. 320–334.

606 According to A. Palavestra, this type is widespread in the Central Balkan area, where glass and metal beads also occur (Pilatovići, Kremna, Romaja, Kruševica, Trebenište, Karčanji, Golibić, Ribić, Jezerine, Prozor, Lički Ribnik, Vače). The amber beads from Novi Pazar belong to the late 6th–early 5th cent. BC (Palavestra – Krstić 2006, 253–

Serbia[607] and Slovenia[608]. Rosette-shaped beads are also found in Kosovo at Pećka Banja in graves dated to the late 6th to the early 5th century BC, while glass beads of this shape have been found at Prčevo-Boka[609]. Similar rosette-shaped amber beads with carvings have been found in 7th century BC graves in Albania[610].

In Greece, no rosette-shaped amber beads have come to light so far. One glass bead from Eretria is comparable with the amber beads type 6d of Ephesos[611]. At Enkomi gold rosette-shaped beads were found[612]. The specimens from the Artemision might originally belong to a spinning tool such as a wooden distaff.

Type 7: Square beads (cat. 277–293. 583–590) pls. 10, 12; 46; 59

This group, with a total of 25 objects, includes beads which have a basically square shape. The sides are often rectangular, but the beads may have the form of a lozenge or a parallelogram. The bore-hole runs along the longitudinal side and the cross-section of the beads may have a square or triangular shape. Square beads' sizes also vary: the lengths measure from 0.8–2.9 cm, the width varies between 0.7–2.7 cm, the height ranges from 0.25–1.7 cm, and the diameter of the bore-hole between 0.1 and 0.45 cm.

Square beads, as they appear in the sanctuary of Artemis at Ephesos, are rare in the Early Iron Age and they occur in different areas in small numbers. They have been found in the sanctuary of Kato Phana on the island of Chios[613] and at Enkomi on Cyprus[614]. Some slightly irregular square beads of a necklace appear at Serra d'Aiello (Calabria)[615]. Small square amber beads occur in Italy in Basilicata, at Guardia Perticara, Chiaromonte and Latronico[616] – but unlike the square beads from the Artemision, these are drilled on the narrow side. Other comparable examples appear in Campania at Sala Consilina[617], in Marche at Novilara[618] and in Abruzzo at Alfedena[619].

Rectangular, almost square, amber beads are documented at Novi Pazar, Mojsinje (Lugovi-Bent) and Mrčajevci (Guševac) in Serbia[620], dating from the 6th century BC. Square beads with different cross-sections appear in Kosovo[621] and Bosnia[622].

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259 nos. 372–403; V. Krstić in: Balkani 2007, 90 no. 40).

607 Palavestra – Krstić 2006, 314 no. 483 (Glogovik, mound I, grave 38, necklace, 750–650 BC); 356 nos. 583–584 (Lisijevo Polje, 6th–5th cent. BC); 333 no. 524 (Atenica, Umke, late 6th–early 5th cent. BC).

608 Stična: tumulus VI, grave 16 (Wells 1984, 206 fig. 147 c = Wells 1985, 272 fig. 2). Other finds from Stična are in Gabrovec et al. 2006 and Gabrovec – Teržan 2010. Ribbed amber beads similar to the Ephesian pieces are used as a coating on the bronze pin (a sceptre [?]) found in the Tripod grave at Novo mesto, dated to the 2nd half of the 7th cent. BC (Križ 2017, 44. 129 no.1).

609 Palavestra 1997, 16–18 pls. 2, 10; 3, 11 and Palavestra – Krstić 2006, 350 nos. 569–570 (Pećka Banja); Palavestra 1997, 31–33 pl. 8 b, 9 (Prčevo-Boka, tumulus X).

610 Kurti 2012, 107 pl. 3, nos. 74–76.

611 Huber 2003, 56 no. O 137 pl. 47.

612 Grave 19: Murray et al. 1900, 43 pl. 8.

613 Lamb 1934/1935, 154 figs. 11–12 (8th cent. BC).

614 Enkomi, grave 66: Murray et al. 1900, 43 pl. 9 (6th cent. BC).

615 Serra d'Aiello, grave 6 (early 8th cent. BC): L. La Rocca in: Ambre 2007, 250 no. III.295.

616 Guardia Perticara, grave 532 (750–700 BC): Zürich 2010, 34; A. Bottini in: Ambre 2007, 234 fig. 1; Bianco 2011, 56. Chiaromonte, grave 325 (late 8th–early 7th cent. BC: see above, n. 450). Latronico, grave 83 (early 7th cent. BC): Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.243–244.

617 Sala Consilina, graves 360, 367 and 3: M. Romito in: Ambre 2007, 224 f. no. III.231; 227 no. III.235 and 230 f. no. III.240.

618 Novilara, Molaroni, grave 2: Beinhauer 1985, 690 no. 7 pl. 2, no. 17.

619 Alfedena, graves 27 and 30: M. Ruggeri in: Ambre 2007, 180 f. nos. III.139–III.140.

620 Palavestra – Krstić 2006, 266 no. 404 (Novi Pazar, late 6th–early 5th cent. BC); 316 no. 488 (Mojsinje, mound I, grave 3, trapezoidal bead, 6th cent. BC); 342 f. nos. 544–546 (Mrčajevci, mound I, 6th cent. BC).

621 Palavestra 1997, 16–18, pl. 1, 15–24 and Palavestra – Krstić 2006, 350 no. 568 (Pećka Banja); Palavestra 1997, 31–33 pl. 8, 1–2 (Karagač).

622 Glasinac: Benac – Čović 1957, 66 pl. 8, 6 (Rusanovići, tumulus XXII, grave 1); 78 pl. 39, 4 (Potpećine, tumulus II, grave 1).

Type 8: Other beads (cat. 294–296. 591)

In this category are included the objects which do not belong to one clearly defined type. **Cat. 294** and **295** include tiny fragments and splinters of amber beads, which are too small to be assigned to a type. The total amount of type 8 beads numbers 74 pieces[623].

2.2.3 Function of amber beads

As part of jewellery, amber beads were once used in ornaments of several kinds. They were worn as necklaces in the Early Iron Age. In several grave finds, mainly from Basilicata[624], amber necklaces were found *in situ*, so we can reconstruct how they were worn. These necklaces can be divided into different types or shapes: single rows – consisting mostly of beads; single rows including other types of pendants – beads in association with other shapes; and multi-row necklaces (colliers).

Single-row sequences are quite common and may constitute threads of different lengths, as in Northern Italy at Este[625], and in Southern Italy in Basilicata[626] and north of the Alps at Hallstatt[627]. It was common to string together on necklaces glass and bone beads as well as amber beads. The range of shapes extends indifferently to all materials employed. These necklaces include beads of roughly equal size or beads whose size increases towards the middle of the sequence. Single-row arrangements, including beads and pendants of different materials, occur in Southern Italy in Basilicata at Vaglio[628] and Chiaromonte[629]. The varieties of shapes of amber pendants, often in combination with amber beads, vary widely. However, teardrop-shaped pendants, triangular and square pendants and carved figures are quite common shapes.

Several rows are decisive for the identification of a necklace as a collier. Multi-row amber necklaces were added to female burials and placed on the chest of the deceased, supposedly according to the same customs followed during her lifetime. Particularly noteworthy are the multi-row necklaces from Basilicata[630]. Some parures are exceptionally well preserved and display a variety of shapes: round, ring-shaped, disc-shaped and cylindrical amber pendants often belong to the same necklace. Additional pendants in a variety of shapes can hang from the lower row. In Southern Italy amber necklaces have been found in female burials, while in Northern Italy single-row chains occur mostly in male burials, as in Este[631]. One may conclude that amber necklaces belong to male and female contexts, but multi-row colliers occur exclusively in female contexts.

Several bronze girdles show that these ornaments were common votive offerings for Artemis in the 7th century BC[632]. Amber as a material for girdles has been mainly found *in situ* in several female burials from Basilicata, dating throughout the 7th century BC[633]; based on a comparison with the burials from Basilicata, A. Palavestra suggested the hypothetical reconstruction of an amber composite jewellery set from Novi Pazar[634]. The amber girdles in Basilicata and Serbia include

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623 76 amber beads are preserved in the Archaeological Museum of Istanbul under the same inv. (no. 591), because they all hang on the same modern string and they could not be separated. A detailed analysis of each bead was not possible, and only some beads were recorded typologically.

624 Magie 2005; Zürich 2010.

625 Chieco Bianchi – Calzavara Capuis 1985; Capuis – Chieco Bianchi 2006.

626 Alianello, grave 316: Magie 2005, 68.

627 Kromer 1959; Hodson 1990.

628 Braida di Vaglio, grave 102, late 6th cent. BC: Magie 2005, 47. 74–76. 118. 120; A. Bottini in: Ambre 2007, 232–236.

629 Chiaromonte, grave 75: Magie 2005, 64.

630 Latronico, grave 83 (early 7th cent. BC: S. Bianco in: Ambre 2007, 238 nos. III.242–244); Chiaromonte, graves 325 (late 8th– early 7th cent. BC: see above, n. 450), 152 (late 8th cent. BC: see above, n. 450) and 140 (Magie 2005, 92 f.).

631 Chieco Bianchi – Calzavara Capuis 1985; Capuis – Chieco Bianchi 2006.

632 Klebinder 2001; Klebinder-Gauß 2007, 93–108.

633 Chiaromonte, graves 152 (late 8th cent. BC: S. Bianco in: Ambre 2007, 239 f. nos. 251–252; see above, n. 450); 325 (late 8th–early 7th cent. BC: see above, n. 450). Latronico, grave 83 (early 7th cent. BC: Magie 2005, 84. 98 f.; S. Bianco in: Ambre 2007, 238 nos. III.247).

634 Palavestra 2003, 221 fig. 9; Palavestra 2009, 168 fig. 3.

rows of beads of various types, including flat triangle-shaped beads, duck-shaped spacers and pendants of many other shapes, i.e. the same shapes also documented at the Artemision. This element points to the original presence of amber girdles as votive offerings for Artemis (below, chap. 2.4).

In addition to the interpretation of amber beads in necklaces, colliers and girdles, the presence of other ornaments such as diadems can be suggested. Similar ornaments are documented in the female burials of Basilicata. The diadem from grave 315 at Alianello, belonging to the 7th century BC, consists of six rows made up of hundreds of small, round, flat beads, made of amber, bone, ivory or glass. On the front of the diadem, carved scarabs were also attached as pendants[635]. A diadem from the late 6th century BC has been found in grave 102 at Braida di Vaglio (below, pl. 15)[636]. Another suspension ornament of unknown destination (diadem [?], pectoral [?], girdle [?]) can be reconstructed from a female burial dating to the first half of the 5th century BC near the abbey of San Clemente at Casauria in southern Abruzzo[637].

Large, compressed biconical beads can be used as earrings, like the beads from the rich female burial 514 at Guardia Perticara dated to the early 7th century BC, which were found *in situ*[638]. Amber earrings in bronze wire have been found in rich graves at Chiaromonte, belonging to the 7th century BC[639]. Amber earrings with biconical or ring-shaped beads are typical for the Iron Age in Emilia-Romagna and the Etruscan mainland. At Verucchio, more than 200 pairs of specimens show the remarkable popularity of this type of ornament from the phase Verucchio III (770–730 BC) to the phase Verucchio V (680–650 BC)[640]. At Verucchio and in the surrounding territory[641], biconical amber beads were associated with gold or bronze wires, which are twisted once, or several times; such earrings of gold wires occur at least at Bologna, Fermo, Tarquinii, Veii and Ardea[642]. The bead shapes which are identified as belonging to earrings occur in the Artemision.

Amber beads are also a decorative element on fibulae. On the one hand, ring-shaped or disc-shaped amber beads or amber rings can be mounted on the needle or the bow. On the other hand, amber beads were used as a part of a separate element attached to the fibula (below, chap. 2.5). Thin disc-shaped beads threaded with bronze wires as earrings are exceptionally employed at Verucchio as a decorative element in the bow of two fibulae[643].

The identifications discussed so far regarding the possible uses of amber beads were based on the idea of beads as jewellery. However, the shapes of some conical and biconical beads from the Artemision may indicate that they were meant for a different purpose. Some of the very large conical and biconical beads are strikingly similar to Early Iron Age spindle-whorls. In particular, the size appears to be an indication of their use – some amber beads are simply too large and impractical to be used as ornamental components. Normally, spindle-whorls were made out of clay. In cemeteries in Central Italy spindle-whorls are often deposited in female graves and have a large conical or biconical shape. They might originally form part of a spinning tool, such as a wooden distaff, as documented for clay spindle-whorls[644], which appear in Early Iron Age cemeteries of Central Italy. In Emilia-Romagna amber spindle-whorls are also known, as documented by rich graves at Verucchio from the late 8th to the early 7th century BC[645] (pls. 37, 2–4) and at Bologna in

635 Magie 2005, 61; Zürich 2010, 20.
636 Magie 2005, 47. 74 f.
637 Papi 1979, 80–83 fig. 22 pl. 15, 7. For this find, see below, chap. 2.4.
638 Zürich 2010, 20; Bianco 2011, 50 f. 57 (early 7th cent. BC).
639 Chiaromonte, graves 142 (Zürich 2010, 17) and 129 (see above, n. 450).
640 von Eles 2015, 30 fig. 2 no. 32; Manzoli 2018, 112–115 (seven types); von Eles – Pacciarelli 2018, 239–244 describe the peculiarities of the mentioned Verucchio phases.
641 A pair of earrings has been found in a burial at Furano di Gorolo (commune Borghi) in the Uso valley: Gentili 1987, 32.
642 L. Drago Troccoli in: Piceni 2001, 199 no. 105 mentions the bibliography for each site.
643 Verucchio, grave Moroni 26/1969: G. Bermond Montanari in: Verucchio 1994, 208 nos. 612–613 figs. 102–103.
644 See the finds in the cemetery of Osteria dell'Osa in Latium, 10th–7th cent. BC: Bietti Sestieri – De Santis 1992, 309–314 types 33a–33g pl. 26, and relevant literature.
645 Verucchio, graves Le Pegge 24/1970 (P. Poli in: Le ore 2007, 178 no. 112), Lippi 47/1972 (G. V. Gentili in: Veruc-

the 7th century BC[646]. Outside Italy, amber spindle-whorls were found at least in Poland, but they could not be dated because they are sporadic finds[647].

2.2.4 Conclusions

The amber beads from the Artemision of Ephesos are unique because of their quantity and their quality.

These beads can have many different shapes. On the one hand, there are common shapes: globular, ring-shaped or cylindrical beads, and on the other hand, there are local shapes, such as cylindrical beads with a faceted surface or cylindrical beads with spiral ends, which are typically Ephesian beads. The typology of these beads is based on published typologies from different periods. Seven types plus one category for unclassifiable beads were formed, based on these typologies. These eight groups could be further divided into three or four subtypes. In the Aegean, amber beads have come to light in female burials or were offered to a deity, mostly female. Amber beads may occur in male graves and exceptionally are votive offerings to a male god, as occurs at the sanctuary of Apollo at Claros. Regarding necklaces, one can conclude that long, single-row chains could belong to male and female contexts, but multi-row colliers occur exclusively in female contexts.

Amber beads generally occur in nearly every Early Iron Age site which has yielded amber finds. The commonest bead shapes are globular, ring-shaped, disc-shaped, simple biconical and long biconical. Other types, such as disc-shaped with horizontal bore-holes, cylindrical with faceted surfaces, cylindrical with spiral ends and rosette-shaped biconical ones are not frequent.

It can be said that in the case of amber bead types, widespread distribution is usually matched by a long lifespan. So for instance, globular and ring-shaped beads were common, and occurred during the whole Late Bronze Age and through the Iron Age. On the other hand, comparative finds for subtypes (types 4b and 4d) are rare and date to the 6th and 5th centuries BC.

118 amber beads were found during the British, and 294 during the Austrian excavations. Most of the bead types occur in the same relation to the total number of amber beads. Two shapes, cylindrical beads with faceted surfaces (type 4b) and cylindrical beads with spiral ends (type 4c), have been found only in the Austrian excavations and find few comparisons outside Ephesos, which leads us to conclude that these were particular types, carved for the Artemis of Ephesos. In particular, the 66 cylindrical beads of type 4b are the largest group among the amber beads, supporting the hypothesis of a local production.

Amber beads were part of an ornamental ensemble, and they may belong not only to necklaces and colliers but also to other female ornaments, such as belts, diadems and fibulae.

Large conical and biconical amber beads could be used as components of spindles, and they testify to the use of amber for functional tools such as spindle-whorls. Comparative amber objects are known in female burials in Emilia-Romagna belonging to the 8th to 7th centuries BC and in sporadic finds from Poland. Spindle-whorls made out of clay were a popular type of grave goods for female burials or votive offerings for gods in the Early Iron Age. In conclusion, amber as a votive offering is a unique and exclusive gift, which attests to the social rank of the donor.

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chio 1994, 78 nos. 86–87 fig. 59; Gentili 2003, 243 f. nos. 76–77 pl. 114 and CCXVIII), Lippi 13/1972 (P. Poli in: Ambre 2007, 138 f. no. III.45) and Lippi 23/2005 (P. Poli in: Le ore 2007, 180 nos. 122–123).

646 A spindle from the grave De Luca 15 (7th cent. BC) shows six simple disc-shaped amber beads and three simple cylindrical amber beads: L. Minarini in: Principi 2000, 278 f. no. 349.

647 Stahl 2006, 30. 95. 306 Liste 12.

2.3 PENDANTS (CAT. 297–349. 592–630)

2.3.1 Introduction

Together with beads (**cat. 6**–**296**. **541**–**591**) and spacers (**cat. 350**–**488**. **631**–**634**), pendants constitute one of the largest groups among the amber finds of the Artemision in Ephesos. The variety, range of shapes and appearance means that the works were once part of necklaces and ornaments, gifted as votive offerings to the goddess.

Like the other amber artefacts, the pendants were mostly found in two main votive deposits beneath or within the earlier basis of Naos 2[648]. According to the stratigraphy of the site, both deposits date to the second half of the 7th century BC, no later than 640–620 BC[649]. The first deposit, excavated by D. G. Hogarth and labelled as a foundation deposit of this phase of the temple[650], was found within the Green Schist Basis of Naos 2. In his report of 1908, he stated that the deposit yielded about 60 pendants (or amulets), either whole or fragmented. He differentiated three types:

a) Squat, with a simple ring neck and no base, recalling a flattened aryballos or ›pilgrim bottle‹.
b) Elongated, with a gable top and a pointed base, recalling a form of oinochoe.
c) Elongated, without base, but with round button-top, incised rosette pattern above[651].

The amber finds from the 1905 excavation were divided between the Archaeological Museum in Istanbul and the British Museum in London. About 50 years later, D. E. Strong described 22 bulla-shaped pendants in the collection of the British Museum that he associated with Hogarth's type a, and an elongated variety with a pointed base, comparable to the type b described above. Strong furthermore stated that pendants of type c do not seem to be part of the British Museum collection[652].

In total, 42 amber pendants could be ascribed to the British excavations. It is not clear how many pendants originally formed part of the deposit, as Hogarth only estimated their number and did not give absolute figures[653].

In 1987 the Austrian Archaeological Institute excavations revealed another deposit. North of the former »Rechteckbasis«, it was covered by a layer of clay, under the floor of Naos 2, and belongs to a building phase called Naos 1a[654]. This cache also yielded a remarkable number of amber artefacts. It is thought to be a hoard of intentionally deposited objects (»Hortfund«)[655]. In total, the Austrian excavations included 50 amber pendants.

Within this section, pendants are classified as objects with a peripheral perforation and/or an asymmetric shape, for instance, drop-shaped objects with a recognisable projection on their upper or lower part. This classification was also applied for objects with a central perforation running through the whole artefact. 94 objects were therefore identified as pendants. Three objects were classed as pinheads, since this classification seemed more suitable for the purpose. Our aim is to establish a typology for the different forms of pendants within the ensemble and to reconstruct the distribution of the established types in the Mediterranean area.

As to their dating, it is difficult to assign the pendants of the Artemision to a definite chronological framework purely by their typological appearance, since jewellery types mostly have a very long lifespan, due to their function as personal ornaments. The analysis of the items found in the clay layer on the floor of Naos 1a was conducted by M. Kerschner and provides a useful

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[648] Hogarth 1908a, 54.
[649] Kerschner – Pülz, this volume.
[650] Hogarth 1908a, 238; Kerschner 2020, 206–223; Kerschner – Konuk 2020, 114–123.
[651] Hogarth 1908a, 215.
[652] Strong 1966, 43.
[653] Hogarth 1908a, 215.
[654] Kerschner 2005, 135 f.; Kerschner – Prohaska 2011, 83 f.
[655] Kerschner 2005, 134–140; Kerschner – Konuk 2020, 123–128.

terminus ante quem. Here, a date for the deposition of the layer no later than 650–640 BC has been proposed[656].

2.3.2 Typology

The typology for the various forms of pendants presented within this section should serve as a basis for an adequate comparison with similar pendants in the Mediterranean. No clear distinction was made between the types of objects from the British and the Austrian excavations. The same differentiation was applied to both collections. The main parameters considered were the overall shape of the object, its projections and the nature of its drill holes. As mentioned above, an object needs to feature a peripheral perforation, and often an elongated form, to be classified as a pendant.

Furthermore, artefacts with a central drilling were also classed as pendants, due to their elongated, asymmetric shape, finished off with a round or elaborate extension. It would be more appropriate to identify these as suspension objects. For the sake of clarity, these too were classed as pendants. The sequence of the objects within this typology is based upon their composition and the amount of elaborate craftwork, ranging from the least elaborate up to the more sophisticated examples. In the end, six different types of pendants could be distinguished, numbered from type 1 to type 6.

These types feature other subdivisions, distinguished by letters in small type starting with *a*, based on the section, the shape of their projection (if present) and its level of elaboration (pl. 11). The established types can be described as follows:

Type 1: Drop-shaped pendants (cat. 297–298. 592–593) pls. 12, 1. 2; 47. 60

Elongated, flattened pendant with an oval section, with a horizontal perforation in its upper portion.

Type 2: Elongated pendants (cat. 299. 594–595) pls. 12, 3; 47; 60

Elongated pendant with a circular section and an inserted neck, surmounted by a cylindrical, horizontal, perforated projection with a square section. At its base is a circular, flattened button. This type might correspond to Hogarth's type b: »elongated, with a gable top and a pointed base, recalling the form of an oinochoe«[657].

Type 3: Bulla-shaped pendants (cat. 300–317. 596–624) pls. 12, 4–6; 47; 60–61

Type 3a: Bulla-shaped pendants with a cylindrical projection (cat. 300–311. 596–608)

Flat pendant with an oval to circular body with an oval section and an inserted neck, surmounted by a horizontal, perforated, cylindrical projection. The section of the projection is either round or square, with rounded corners. Some fragments can be assigned to this group, although they are not completely preserved (**cat. 315**–**317**. **611**–**624**).

Type 3b: Bulla-shaped pendants with decorated top (cat. 312–314. 609–610)

Bulla-shaped pendants with a flattened, oval body and an inserted neck, surmounted by a cylindrical, horizontal, perforated projection. The top is variously decorated by three moulded knobs

656 Kerschner – Konuk 2020, 123–128.

657 Hogarth 1908a, 215. **Cat. 299** was included in the typology because of its gable top. If an object of this size features such a projection, it must be included in this group, even though its general body shape does not resemble the elongated shapes of the two upper pendants. **Cat. 595** has an additional decoration on the base and was classified as Hogarth's type b (Strong 1966, 44).

(**cat. 312**), two (**cat. 313**. **609**) or four (**cat. 610**) grooves, or several vertical and curved grooves (**cat. 314**).

Type 4: Bottle-shaped pendants (cat. 318–319) pls. 12, 7; 48

Round pendant with a flattened oval section and a clearly defined neck, surmounted by a circular projection with a diagonal perforation running from its top to its side. An additional boring in the bottom of the object **cat. 318** was aborted.

Type 5: Fruit pendants (cat. 320–345. 625–629) pls. 12, 8–10; 48–49; 62

Type 5a: Pomegranate pendants with a vertical bore-hole (cat. 320–332. 340–342. 345, 625–627)

Elongated pendant with a circular to oval body, a clearly defined neck, followed by a circular button-top with floral decoration on its lower part, resembling the calyx of a pomegranate[658]. Some specimens (**cat. 340**–**342**) show radiating incisions in the lower area, which might call to mind the seed-pods of poppies[659]. A central boring runs along the object's whole length. Some fragments are assigned to this group although they are not completely preserved (**cat. 346**–**347**. **629**).

Type 5b: Pomegranate pendants with a horizontal bore-hole (cat. 333–339. 343–344. 628)

Elongated pendant with a circular to oval body and a clearly defined neck, followed by a circular button-top with floral decoration in its lower area, resembling the calyx of a pomegranate. Two horizontal borings are drilled at the base of the object and are connected to one another, forming a semicircle.

Type 6: Wineskin-shaped pendant (cat. 630) pl. 62

Square pendant, its upper part showing two bulges and a horizontal perforated gable with a row of vertical incisions.

Unclassified fragments

Some fragments are very tiny; as their original shape is unclear, they cannot be classified (**cat**. **348**–**349**. **538**).

2.3.3 Distribution of the pendants

In the following paragraphs we will discuss the frequency of each established pendant type within the Ephesian ensemble and their distribution in the Mediterranean. Five maps with the find distribution of each type were included to visualise the various types' geographic dispersion[660].

In contrast to the comparative abundance of the Bronze Age, during the Iron Age in Greece, amber artefacts seem rather scarce. Although still highly prized as an item of trade and wealth, amber rarely appeared in graves and only a few sanctuaries yielded greater quantities of the substance[661]. Therefore the Ephesian Artemision stands out in Asia Minor with an exceptional 659 amber artefacts. This is an interesting aspect, also because the results of the Fourier infrared

658 Kilian-Dirlmeier 1979, 123.
659 Özgen – Öztürk 1996, 60.
660 The maps include every location, without regard to the chronology or density of finds. They were established to provide a general overview of the distribution of the various types in the Mediterranean.
661 Strong 1966, 22 f. See below, chap. 5.4.

spectroscopy analysis (FTIR) shows that the provenance of the raw material of the objects has been located in the Baltic area[662].

Therefore, the search for comparisons and references for the various object groups of the ensemble is crucial for our understanding of the relations and trade routes which led this material to the different regions of the Mediterranean and Asia Minor and vice versa.

Type 1: Drop-shaped pendants

Elongated, drop-shaped pendants of type 1 appear four times in the ensemble, with two specimens each coming from the British and Austrian excavations, making this one of the smallest pendant groups. Typically these are roughly worked, shaped into an elongated oval, convex or flat on their front and/or back. In 1908 Hogarth himself classed the drop-shaped pendants as pearls; in his publication the only image of one of these objects is on a string with other pearls[663]. The second pendant is not pictured at all[664]. Plain amber pendants of this shape and material seem to have been relatively rare in the eastern region of the Mediterranean during the Iron Age, the best comparisons for this type are found in indigenous burials on the Italian peninsula from the 10th to the 5th century BC (pl. 13, 1).

Until now, the northernmost examples for plain drop-shaped pendants have been found in Croatia, in the necropolis of Kompolje. Here, several female burials from the 7th to the 6th century BC included pendants of the type in question[665]. The wealthy female Tomba degli Ori in Bologna, from the late 7th century BC, yielded valuable objects made from bronze and amber and featured pendants of type 1 as part of a necklace that also included pendants of type 3[666]. In Vetulonia pendants of this type were found in the Tomba del Tridente and other graves of the 7th century BC[667]. Further examples can be found in Latium, for example in the Barberi necropolis at Colonna in a grave dating to the 8th century BC[668]. They also appeared next to other amber artefacts in the Latial cemetery of Osteria dell'Osa, in phase II burials of the necropolis, which dates to the 9th century BC[669]. Two useful comparisons for pendants with a flattened back (**cat. 297**) can be cited. The first, in northern Campania, at Cairano, is in female burial IX. Here, a large amber necklace includes 17 plain drop-shaped pendants of this same type[670]. The second example relates to the indigenous necropolis near Calatia, dating from the late 8th to the early 6th century BC, also in Campania[671]. The settlement of Longola of Poggiomarino in northern Campania also yielded plain, drop-shaped pendants[672]. In southern Campania, plain, drop-shaped pendants appeared in the necropolis of Sala Consilina in considerable quantity, mainly in female graves, dating from the late 8th to the early 6th century BC[673]. Furthermore, numerous pendants of this type were found

662 See below, chap. 3.

663 Hogarth 1908a, 215 pl. 47, 23.

664 Later on, both were defined as pendants, but the one conserved in the British Museum is not mentioned in Strong's publication and the catalogue of the Department of Greek and Roman Antiquities reports »amber pendant« as a description.

665 Nin, graves 1, 8, 16, 27, 36, Nin-kod crvke svetog Jurja grave 15: Hiller 1991, 203 nos. 19–20 fig. 47/M, pl. 37.

666 Morigi Govi 1971, 229 pl. 50, 2.

667 Tomba del Tridente: Cygielman – Pagnini 2006, 120 f. pl. 15, d–e. Further graves in Vetulonia: Massaro 1943, tipo 7a, 41 pl. 2, no. 16.

668 The female burial in grave 3, dated around 800–750 BC, also yielded a necklace with components of glass and amber, including plain drop-shaped pendants: Angle et al. 2002, 59 f. no. 23 fig. 12, 23.

669 Osteria dell'Osa: Bietti Sestieri 1992, graves 214 (770 fig. 3 a, 430.13–15), 217 (768 fig. 3 a, 426.11), 328 (707 fig. 3 a, 311.30–34), 458 (665 f. fig. 3 a, 230.10–11), 519 (683 f. fig. 3 a, 262.12.), 537 (727 fig. 3 a, 354.14) 559 (723 f. fig. 3 a, 345.7), 561 (727 f. fig. 3 a, 352.32–36) and 563 (725 f. fig. 3 a, 349.8e, 8h, 8m).

670 Cairano, grave IX, 2nd half of the 6th cent. BC: Bailo Modesti 1980, 156 no. 33 pls. 77–78.

671 Calatia, grave 201, female burial, 750–700 BC: M. R. Borriello in: Ambre 2007, 198 f. nos. III.164–III.169.

672 Cesarano – Bellintani 2012, 170 f.

673 Sala Consilina: graves 360, 367 and 3 (M. Romito in: Ambre 2007, 224 f. no. III.231; 227 no. III.235; 230 f. no.

in Basilicata, which is famous for its abundance of amber artefacts during the Orientalising period. Plain, drop-shaped pendants also appear at Latronico[674] and Chiaromonte[675]. The southernmost and the oldest examples come from the necropolis of Torre Galli in Calabria, where they form part of necklaces in male and female burials dating from the 10th to the 9th century BC[676].

It seems as if plain forms like these did not spread far in the Mediterranean and the specimens from Ephesos are the only ones in the Aegean.

Type 2: Elongated pendants

The items labelled as type 2 elongated pendants appear twice within the upper deposit of the Green Schist Basis excavated in 1905. One is a relatively simple pendant with a horizontal perforated projection with a square section and an elongated body at the top, and a plain button at the bottom and the other, similar to the first regarding its shape, is more elaborate, showing a rosette button on its base. This kind of pendant seems to correspond with the type b of the pendants described by Hogarth as »elongated, with a gable top and a pointed base, recalling the form of an oinochoe«[677]. Although both objects lack a gable-top projection, they both have a pointed base with a button at its end. Strong also classified at least one of the two pendants as type b after Hogarth[678]. There seem to have been more pendants of this kind. At least two more were pictured by Hogarth[679], but none of these pendants is among the documented pieces. As an additional object in this category, we should mention a fragmented projection of a pendant. It features a horizontal perforation as well as a triangular section. Maybe this object is to be counted among the gable-top pendants mentioned above.

Examples of amber pendants appeared mostly in the Aegean, in the sanctuary of Hera at Perachora[680] and in Ithaca[681]. In both locations pendants were made from bone and date from around the 7th century BC. Further west, comparable examples have been located in Cumae[682], dating to approximately 500 BC[683] (pl. 13, 1).

Type 3: Bulla-shaped pendants

Type 3, the so-called bulla-shaped pendants, are a popular form of jewellery all around the Aegean and Mediterranean from the Late Geometric to the Archaic period. The shape of these pendants varies from round to oval. All objects show an oval section with a pronounced projection on its top, which is usually perforated horizontally. The type is presumed to have originated in the Near East[684]. Here, at Sendschirli in Syria, comparable pendants made of silver and gold were found in the destruction layer of the north-west palace, dating to the turn of the 8th to the 7th century BC[685]. From the Near East, the pendant form itself subsequently spread throughout the entire Mediterranean. Pendants were usually made from precious materials such as gold, silver, electron, ivory

III.240).

674 Latronico, grave 83, female burial, early 7th cent. BC: S. Bianco in: Ambre 2007, 238 no. III.246.

675 Chiaromonte, grave 732, female burial, early 6th cent. BC: S. Bianco in: Ambre 2007, 242 no. III.269.

676 Torre Galli: Pacciarelli 1999, graves 56 (158 nos. 26–28 pl. 49), 153 (177 nos. 30–31 pl. 105, A.26), 181 (182 nos. 21–23 pl. 122, 21–23), 212 (189, no. 28 pl. 143) and 313 (202 nos. 23–26 pl. 177, 23–26).

677 Hogarth 1908a, 215.

678 Strong 1966, 44.

679 Hogarth 1908a, 215 pl. 47, nos. 18. 27.

680 From the deposit of the 7th cent. BC, comparable because its termination was carved in the shape of a button: Dunbabin 1962, 520–523 fig. 195.

681 Heurtley – Robertson 1948, 116 pl. 47, 28.

682 M. R. Borriello in: Ambre 2007, 211 no. III.189.

683 Bottini – Setari 2003, 32 f.

684 Higgins 1961, 139 f.

685 See von Luschan 1943, 97–98 pls. 44 a–k; 46 a–f. h; Wartke 2005, 78 fig. 84.

and amber. These objects formed part of votive deposits and offerings in various sanctuaries both in the Aegean and in Ionia. Pendants also appear among the contents of rich tombs in the Italian peninsula. The variety of amber works enjoyed quite a long lifespan, stretching from the late 8th to the early 4th century BC.

In total, the Ephesian Artemision contained 46 pieces of this type of amber pendant. Twenty-nine were found during the British excavations and seventeen during the Austrian mission. In his 1908 report, Hogarth described three types of amber pendants. One is described as »Squat, with a simple ring neck and no base, recalling a flattened aryballos or pilgrim bottle«. It can most likely be assimilated to the bulla-shaped pendants. He believed pendants of this kind were a sort of amulet, strung together as necklaces that formed part of the parure of the goddess[686]. Regarding the way in which these necklaces were worn, we can cite several references. First of all, some clay and stone statuettes from Lindos dating to the end of the Geometric period[687], as well as two younger examples from Cales in northern Campania[688] and Enkomi on Cyprus[689]. The pendants were probably worn in two ways: in the statue from Cales, several bulla-shaped pendants are strung together in a row on one string, while the necklaces from Lindos and Enkomi show several tubular beads with one rather large bulla-shaped pendant in the centre.

The type 3 pendants made from amber in the Artemision constitute a rare case in Asia Minor and the rest of the Aegean. Pendants of this kind were usually made from bone or ivory[690], gold[691], silver[692] or rock crystal[693]. Type 3 pendants made from silver and bone were also found in the early phases of the Ephesian Artemision[694]. In the region, only a few comparable examples of bulla-shaped amber pendants are known, and these come from Kato Phana on Chios[695] and the sanctuary of Hera at Perachora[696]. Furthermore, we can mention a fragmentary pendant from the sanctuary at Kythnos[697] (pl. 13, 2).

The best comparisons for the bulla-shaped amber pendants from Ephesos are found in the Italian peninsula. The southern regions, i.e. Campania, Basilicata, Calabria and Puglia, offer large quantities of high-quality amber artefacts. In Calabria, comparable pendants were located in two indigenous Early Iron Age necropolises near the Ionian coast. At Francavilla Marittima three female burials from the 8th century BC featured large amber necklaces, also including bulla-shaped amber pendants[698], while at Amendolara near Cosenza, this shape appears from the 7th to the 6th century BC, in rich as well as in simple inhumations as part of composite necklaces, either as single or multiple elements[699]. Two other sites with bulla-shaped amber pendants were identified in southern Campania in the Vallo di Diano at Sala Consilina and Padula. The necropolis of Sala Consilina featured female burials dating from the late 8th to the ear-

686 Hogarth 1908a, 215. 237.

687 Blinkenberg 1931, 421. 428. 436 pls. 68, nos. 1674–1675; 70, no.1720.

688 A female votive statue from Cales dated to 375–350 BC: Hofter 2010, 72 fig. 6, 3 (Antikensammlung Berlin, inv. TC 1347).

689 Enkomi, 6th cent. BC: Murray 1900, 4 fig. 3.

690 Ithaca, 7th cent. BC: Heurtley – Robertson 1948, 116, C 27–29 pl. 47.

691 In the tumulus burial at Duwanli, Plowdiw in Thrace, two necklaces of golden bulla-shaped pendants from female burials, 6th–5th cent. BC: Gold 1979, 88 f. 92. 96.

692 See several pendants made from gold and silver in the so-called Lydian Hoard: Özgen – Öztürk 1996, 189.

693 See bulla-shaped rock-crystal pendants, Early Archaic: Blinkenberg 1931, 100 pl. 10, 197.

694 Hogarth 1908a, 118 pl. 12, no. 10 (silver); 189 pl. 37, nos. 14–15 (bone).

695 Lamb 1934/1935, 154 f. fig. 11, 14.

696 Dunbabin 1962, 520–523 fig. 195. Probably other amber artefacts of this kind existed in Greece. Unfortunately, however, the excavation reports, including the ones above, often do not show appropriate images.

697 Amber votive pendants from this site are mentioned in preliminary reports: Koukoulidou et al. 2017, 241 fig. 138 a (lower row, third from left); see also Mazarakis Ainian 2019, 106.

698 Francavilla Marittima, graves 60 (Zancani Montuoro 1984, 30 f. nos. 18–19 fig. 6), 63 (34 f. no. 12 fig. 8), 88 (103 nos. 10–20 fig. 34), 89 (105 no. 4 fig. 35).

699 Amendolara, graves 10 (de La Genière 2012, 19 no. 7), 99 (44 no. 7), 144 (71 no. 6), 176 (99 no. 5), 220 (135 no. 8), 226 (139 no. 5), 254 (143 no. 3), 277bis (160 no. 3) and 279 (164 no. 14).

ly 6th century BC with rich amber ornaments such as large composite necklaces containing, amongst other adornments, bulla-shaped amber pendants[700]. Further amber objects were found near Padula as components of composite fibulae, beads and type 3 amber pendants. Unfortunately, no clear statement can be made regarding the circumstances of the find. The ensemble is believed to date from the 6th to the 5th century BC[701]. In Basilicata, an actual concentration of amber bulla-shaped pendants is recorded, especially in the area between the rivers Agri, Sinni and Bradano. One of the most prominent ensembles was found in the graves of Chiaromonte, again mostly female burials furnished with rich personal ornaments, such as earrings and fibulae, partly made from amber. These rich burials date from the 7th to the 6th century BC[702]. Type 3 amber pendants appeared here as parts of necklaces and girdles, including several other amber components like round pearls, triangles and bird-shaped spacers, offering a valuable comparison for amber artefacts from the Artemision of Ephesos[703]. Another concentration of amber pendants of type 3 in various sizes is in a richly equipped grave at Latronico, dating to the early 7th century BC[704]. Further north, interesting examples appear in the necropolis in Guardia Perticara, from the late 8th to the early 6th century BC[705], as well as in the necropolis of Alianello from the 7th century BC[706]. Together with a remarkable number of bulla-shaped pendants, the female graves also contained other personal ornaments, including several bronze bracelets, composite fibulae and necklaces with amber beads and shells[707]. Furthermore, twenty pendants of the shape in question dating to the 8th to 7th centuries BC, acquired on the art market by Sir William Turtle for the British Museum at the end of the 19th century, are believed to originate from graves in the vicinity of Armento (province of Potenza)[708]. The Daunian necropolis of Minervino Murge[709] as well as the princess's grave from Cupola Beccarini[710] near Manfredonia (province of Foggia) offer some comparable bulla-shaped amber pendants, which date from the 7th to the 6th/5th century BC. Furthermore, pendants of type 3 made from gold[711], bronze[712] and glass[713] were found in various regions of Italy, sometimes combined with those made from amber[714].

Also in Central Italy, examples of the bulla-shaped pendants appear in the necropolis of Satricum in Latium vetus, in the rich grave VI, dating to 650–640 BC. The grave contained over 500 amber objects – an extraordinary quantity – including figured pendants, pearls of various sizes and shapes and a considerable number of pendants of type 3, which were part of several necklaces[715]. In the cemetery of Osteria dell'Osa, amber pendants of this kind mostly appear in female

700 Sala Consilina: graves 360, 367 and 3 (M. Romito in: Ambre 2007, 224 f. no. III.231; 227 no. III.235 and 230 f. no. III.240).

701 M. R. Borriello in: Ambre 2007, 212 no. III.192.

702 Russo Tagliente 1992, 300–312; S. Bianco in: Ambre 2007, 239–242.

703 On spacers see below, chap. 2.4.

704 Latronico, grave 83, early 7th cent. BC: S. Bianco in: Ambre 2007, 238.

705 Guardia Perticara, graves 532 (750–700 BC: A. Bottini in: Ambre 2007, 234 fig. 1; Bianco 2011, 56), 514 (700–650 BC: Bianco 2011, 50 f. 57) and 122 (600–550 BC: Bianco 2012, 220 no. 23).

706 Alianello, grave 309: A. Bottini in: Ambre 2007, 234 fig. 2.

707 A. Bottini in: Ambre 2007, 235–236.

708 Strong 1966, 84 f. nos. 89–91 pl. 32, nos. 89–91.

709 Minervino Murge, grave 1/1992, late 6th–5th cent. BC contained Greek and Daunian pottery, artefacts made from gold, silver and bronze, as well as an amber necklace, including bulla-shaped pendants: Montanaro 2012, 47–49.

710 The ornaments also included six bulla-shaped pendants belonging to a necklace, dating to the 7th cent. BC: Montanaro 2010, 25 no. 16 pl. 10.

711 In Central Italy in Sabina at Colle del Forno, tomb XI: Santoro 1977, 267 fig. 71 no. 31.

712 In North-eastern Italy in Karst, 8th cent. BC: Maselli Scotti 1983, 138–141 pl. 39.

713 In North-eastern Italy at Este in Veneto: Capuis – Chieco Bianchi 2006, graves 92 (169 no. 21 pl. 80, 21), 104 (210 no. 9 pl. 104, 9) and 110 (227 no. 35 pl. 114, 35).

714 Two necklaces with bulla-shaped pendants made from amber and bone from grave 176 at Campovalano (early 6th cent. BC): A. Martellone in: Ambre 2007, grave 176, 182 nos. III.144–145.

715 Waarsenburg 1995, 409 f. See below, chap. 2.4, n. 807.

graves from the 8th to the 7th century BC[716], although not in the same abundance as in the burials in Campania or Basilicata. Other examples of this type of pendant are again found in the British Museum, where two necklaces with components of glass, faience and amber beads are preserved, and supposedly come from a tomb near Praeneste. The necklaces are believed to date to the 7th century BC[717]. Further examples of this type of pendant were found in Etruria in the necropolis of Quattro Fontanili in Veii mostly in phase IIc, which approximately dates to 730–720 BC[718]. In the necropolis of Vetulonia bulla-shaped pendants have been found in several burials, dating to the late 8th/early 7th century BC[719]. A female burial in Genua from the second half of the 5th century BC yielded a necklace with 58 amber elements including three bulla-shaped pendants, attesting the last appearance of this shape[720]. Further examples of this type of pendant were found in graves at Aleria in Corsica, dating to the 5th and 4th centuries BC[721].

In Emilia-Romagna, bulla-shaped amber pendants of type 3 were found at Verucchio, dating from the 8th to the 7th century BC[722] and at Bologna in the Tomba degli Ori from the late 7th century BC[723].

Further south along the Adriatic coast and its hinterland, five additional cemeteries dating from the 8th to the 5th century BC contained necklaces with bulla-shaped pendants in female graves, namely Belmonte Piceno in Marche[724], Campovalano[725], Fossa[726], Scurcola Marsicana[727] and Alfedena[728] in Abruzzo.

The northernmost examples of bulla-shaped amber pendants so far appear in Slovenia. Here, type 3 pendants with a plain as well as a ridged projection were found in the necropolis of Stična in Mound 48, dating to the late 7th century BC[729]. Also, at Magdalenska Gora necklaces with several pendants with a round shape, a pronounced, elongated neck and a horizontally perforated cylindrical projection were discovered[730].

Further to the east, sites in the Balkans yielded other bulla-shaped pendants made from amber. The necropolis of Kompolje in Croatia included several graves containing amber pendants of this shape, dating between the 7th and the 6th century BC[731]. Also further south, in Kosovo, the necropolis of Romaja included comparable pendants within their amber ensembles, dating to the

716 Bietti Sestieri 1992, grave 204 (834 f. no. 23 fig. 3 c, 33.23), and tomb 62 (866 f. no. PA 1–23 fig. 3 c, 102).

717 Praeneste: Strong 1966, 52 f. nos. 21–22 pl. 8.

718 See the grave Quattro Fontanili Yα: Ward-Perkins – Falconi Amorelli 1970, 266 no. 68 fig. 52 and Guidi 1993, 72 no. 212 and p. 90–92. 99 f. for the chronology of the phase. Carved amber pendants from Etruria show horizontal grooves on the top and a vertical through-boring as typical characteristics.

719 Massaro 1943, 40 type 7; four bulla-shaped pendants from the Tomba del Tridente – Fossa B, male burial, early 7th cent. BC (Cygielman – Pagnini 2006, 120 no. 335 pl. 15 a). Etruscan specimens can have horizontal grooves on the top.

720 Genua, grave 30: P. Melli in: Ambre 2007, 159 no. III.98.

721 Aleria graves 92 and 167, probably both female burials: Yon 1977, graves 92 (591–593 no. N 2419 c/1, 595 no. N 2419 c/14) and 167 (605 no. N 3513).

722 Verucchio, Lippi, grave XVIII: Gentili 2003, 134 no. 19 pls. 59 and CXVI; Boiardi et al. 2006, 1596–1598.

723 Bologna, tomba degli Ori, female burial containing a necklace of 58 pieces of amber, three of which can be classified as bulla-shaped pendants: Morigi Govi 1971, 228 f.

724 Belmonte Piceno, grave 86, necklace with 23 pieces containing several bulla-shaped pendants: Biocco 2001.

725 Campovalano, grave 176, female burial including two necklaces containing in total 22 bulla-shaped pendants: A. Martellone in: Ambre 2007, 182 nos. III.144–145.

726 Fossa: d'Ercole – Benelli 2004, graves 36 (21 pl. 7, no. 18), 47 (28 pl. 11, no. 13) and 550 (228 pl. 188, no. 4); Fossa, grave 198: Cosentino et al. 2001a, 116 pl. 40, no. 2.

727 In grave 19 at Scurcola Marsicana a necklace was also found with seven bulla-shaped pendants which all showed a perforation running horizontally through their cylindrical projection and another blind bore-hole running vertically through the object: Cosentino et al. 2001b, 107 s. v. collana, pl. 7.

728 In grave 30 at Alfedena, dating to the 5th cent. BC, an amber necklace including six bulla-shaped pendants was also found: M. Ruggeri in: Ambre 2007, 181 no. III.143.

729 Stična, graves 1 and 98: Gabrovec et al. 2006, 14. 16. 75 f.; Gabrovec – Teržan 2010, 290 f.

730 Magdalenska Gora, tumulus 13, graves 97 and 163 (Tecco Hvala et al. 2004, 154 pl. 100, 13; 162 pl. 123, 4).

731 See graves I, II, 172B, 13, 81, 182: Hiller 1991, 204 fig. 49 C–E.

6th to 5th centuries BC[732]. Further examples could be cited in Bosnia at Glasinac, where three type 3 pendants appeared in Warrior Burial 1, dating approximately to the second half of the 5th century BC[733]. The easternmost comparable example is located in the necropolis of Kargovite Trali-Tepolo near Katrishte in the Kyustendil region in ancient southern Thrace (Bulgaria). Here the two burials 16 and 17 contained several amber beads of various shapes, including a bulla-shaped pendant in grave 17, found along with a ›cage à oiseaux‹, which offers direct references to Southern Europe and Italy. Grave 17 dates from the late 7th to the early 6th century BC[734].

In addition to the bulla-shaped pendants with a smooth cylindrical projection, we can cite a type with elaborate projections, type 3b, identified in the Austrian and British excavations. Of these, the item **cat. 610** is a pendant with a projection defined by four vertical grooves. It is the only one for which comparable pendants are recorded in Italy. Similar works come from Verucchio[735], Bologna[736], Vetulonia[737], Scurcola Marsicana[738] and Satricum[739], Aleria in Corsica[740] and Stična in Slovenia[741]. The vertical grooves may be a reference to the twisted wire which forms the projection of bulla-shaped pendants made from metal.

The bulla-shaped pendants are the largest group of pendants in the Artemision, and amount to over 40 pieces. In the debate over the so-called breasts of the Ephesian Artemis, these ambers have been cited because of their shape and appearance. Ephesian Artemis is usually shown with multiple rows of rounded elements covering the figure's torso. They are most commonly interpreted as multiple breasts, which reinforces the deity's role as a kind of mother and/or fertility goddess[742]. Over the years, an increasing number of objections have been raised regarding this interpretation, and new explanations have been suggested[743]. S. Morris interprets the objects covering the bust of the Ephesian Artemis as a continuance of a Hittite cult object called *kuršaš,* a leather bag made of the hides of sheep, goats or lambs. These objects would thus symbolise fertility, wealth and prosperity in the cults and myths of Anatolia, almost an equivalent of the Greek cornucopia. A relationship between the Hittite word *kuršaš* and the Greek *aegis*[744] has been suggested in linguistic studies[745]. It is possible that this cult practice might have survived up to the time when Ephesian Artemis became popular.

Nevertheless, a clear designation of the true nature of these attributes of the goddess remains unknown. A closer analogy may be drawn between this form (pendants type 3) and the myth of Phaeton. After losing control of the chariot of his father Helios, the hero fell into the river Eridanos and died. His sisters, the Heliades, grieved and cried on the banks of the river until they turned into poplar trees and their tears became amber. It may be possible to use the myth of Phaeton to explain the shape of the bulla-shaped pendants and the ambers belonging to type 1.

732 Palavestra 1997, 28–30 pl. 7, 15.
733 Arareva gromila, grave 1: Benac – Čović 1957, 79 f. pl. 41, nos. 10–12.
734 Ivanova – Kuleff 2009, 31 fig. 5.
735 Grave Lippi XVIII: Gentili 2003, 132–135 pl. 59.
736 Morigi Govi 1971, 228 f. pl. 50.
737 Cygielman – Pagnini 2006, 120 f. pl. 15.
738 Grave 19: Cosentino et al. 2001b, 107 pl. 7.
739 Waarsenburg 1995, 400–409.
740 Yon 1977, 591–593. 605 figs. 1, N2419c/1; 2, N2419c/14.
741 Gabrovec et al. 2006, 75 f. pl. 55, 17.
742 Morris 2001a, 140; Morris 2008, 58 f.
743 Morris 2001a, 149; Morris 2008, 241.
744 Goat hide, metal shield or cloak, used in Greek mythology by Athena, Zeus and occasionally Apollo to create thunder and lightning to evoke human fear, but also used for protection: Parker 2014 <http://referenceworks.brillonline.com/entries/brill-s-new-pauly/aegis-e109870> (accessed 12. 06. 2020).
745 Morris 2001a, 146–148; Morris 2008, 59.

Type 4: Bottle-shaped pendants

Type 4 represents the so-called bottle-shaped pendants. This kind of pendant shows similarities with the bulla-shaped varieties. However, the section and shape are somewhat rounded in this type. It also features a round button-top as a projection, while a slanted or horizontal perforation runs through the neck. Two pieces of this type were discovered in the Austrian excavations. Of these two, one is round and rather flat, perforated through the neck and vertically through its whole body. The other type is a globular pendant with a round button-top, with a slanted perforation running from its top to its side.

Pendants of this kind, made from various materials, seem to have been popular in the Aegean and further west, in the Balkan peninsula, and sporadically in Italy. They appear, for example, at Kythnos, where they are made from rock crystal, as an offering from the 7th century BC[746], as well as in the sanctuary of Hera Limenia near Perachora, where they are made from ivory, stone, gold, coral and amber[747]. So far, in the Italian peninsula a single necklace with bottle-shaped pendants has been recorded and is now in the British Museum in London. It contains sixteen pieces, two with slanted perforations, and the remaining fourteen showing neck perforations. They are presumed to originate from a grave in the vicinity of Armento in Basilicata, although no clear statement can be made regarding the circumstances of the find[748]. The pendants probably date to the 7th/6th century BC. One other example was recorded in Southern Italy, at Braida di Vaglio and concerned the burial of a young girl from the 7th century BC. It featured about 40 silver fibulae and a remarkable 300 amber artefacts, a considerable portion of which consisted of bottle-shaped type 3 amber pendants (pl. 15)[749].

The greatest concentration of type 4 amber artefacts comes from the Balkan peninsula. Here they appeared in the princely graves of Novi Pazar[750] and Atenica[751], as well as in one example in the necropolis of Skara near the village of Romaja[752], all three dating to the 6th and 5th centuries BC. Also, a rich male burial dating to the 7th century BC near Aivasil (Republic of Northern Macedonia)[753] yielded a pendant comparable to the bottle-shaped pendants (pl. 14, 1).

This type of pendant seems to have had the same apotropaic function as the bulla-shaped pendants discussed above, with which they share a similar shape. They seem to have originated on the coast of Asia Minor and subsequently spread to the Balkan peninsula[754], where they were widespread.

Type 5: Fruit pendants

After the bulla-shaped pendants, the second largest group of pendants within the two deposits of Naos 1a and Naos 2 is made up of 29 pendants designated as type 5. Ornaments of this kind show an elongated oval form with a round section and round button-top, either plain, or defined as a rosette, or showing radiating incisions. They can be perforated either by two horizontal or slightly slanted drill holes that intersect each other, or by a single drilling, which either runs horizontally through its rounded base, or lengthwise through the whole object. They appear five times in the British excavations, where four are perforated vertically and one has a horizontal intersecting perforation. In the Austrian excavations, this type occurs twenty-five times: here 19 items show a

746 Mazarakis Ainian 2010, 35–38 pl. 20, 4.
747 Dunbabin 1962, 442. 518. 524. 526 pls. 188, A288–290; 194, F6–7; 195, J9–10. L1.
748 Strong 1966, 84 pl.32, 89 a. b.
749 Grave Braida di Vaglio 102: Bottini – Setari 2003, 32. 40.
750 68 bottle-shaped pendants of various types, with a slanted perforation through their button-top: Palavestra – Krstić 2006, 221–239; Krstić 2007, 48. 89.
751 13 bottle-shaped pendants, mostly from the central mound II, with a slanted perforation through their button-top: Dmitrić 2006, 325–327.
752 Grave 23: Palavestra 1997, 28–30 pl. 7, 15.
753 Strong 1966, 46 pl. 2, 9.
754 Palavestra – Krstić 2006, 219.

perforation, thrice with a horizontal drilling or intersecting drill holes. They are partially designated as pomegranate pendants, based on the similarity of these objects with fruits, for their rosette button seems to resemble the calyx of a pomegranate or an apple. Additionally, the objects with round projections with radiating incisions could be geometric-style renderings of the seed-pods of poppies[755]. We can imagine pendants with a vertical perforation suspended with their button-tops facing upwards or downwards. Due to convincing comparisons from Southern Italy, we can imagine their button-tops pointing downwards, but the opposite is also possible.

Objects of this kind and designation were fairly popular in the Aegean from the 7th to the 5th century BC. They are made from various materials like gold, bronze and bone or ivory, and are used either upside down as pendants or as pinheads with the elaborate button-top pointing upwards. Pendants in this form may have originated from Mycenaean varieties from around 1500 BC, where they appeared as components of necklaces in some of the shaft graves at Mycenae[756]. Later on, they reappeared in the Geometric and Archaic periods in various sanctuaries all around the Aegean. For example, items made from bronze following somewhat geometric shapes appear in the sanctuaries of Athena Ithonia in Philia (Karditsa, Thessaly), of Athena Alea at Tegea (Arcadia) and of Artemis Orthia at Sparta (Laconia), as well as at the sites of Valanida in Thessaly and Ithaka on Cephalonia[757]. Other objects with the same shape came to light in the sanctuary of Artemis Orthia, within the 8th- and 7th-centuries BC layers. They were made from bone, and functioned as pinheads[758]. Pinheads of this kind, also made of ivory, were found in a grave near Enkomi on Cyprus[759]. Pomegranate-shaped artefacts made from gold appeared as pendants in the sanctuary of a supposed, and as yet unidentified, goddess on Kythnos in the western Cyclades[760] as well as on Rhodes as decorations of plates of gold foil and other jewels[761]. Further small pendants in the shape of pomegranates were found in graves dating to the 7th and 6th centuries BC near Sardis[762]. Also, in the so-called Lydian Hoard, probably from Uşak, Western Türkiye, some specimens made of gold occurred[763]. Here the pendants were attached to tiaras and other suspended ornaments.

However, pomegranate pendants made from amber are comparatively scarce (pl. 14, 2). They appear in the Aegean only on Chios in the sanctuary of Kato Phana, combined with other forms of amber pendants like bulla-shaped varieties[764] (see above). Further examples were observed in the Balkans, in the necropolises of Zaton near Nin, presumably used as pendants and roughly dating to the 8th century BC[765]. Comparable examples, however, are found in Basilicata, in Chiaromonte. Here in several female burials dating from the late 8th to the late 6th century BC, pendants of this kind appeared as components of necklaces and girdles that were made entirely from amber pieces of various shapes[766].

These pendants are elongated, with a round, seemingly plain button-top at the lower end. Nevertheless, regarding their shape and size, they look like exact replicas of the Ephesian varieties.

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755 Kilian-Dirlmeier 1979, 123; Özgen – Öztürk 1996, 60; Ondřejová 2011, 375.

756 Higgins 1961, xvi. 77 pl. 6 b; Kilian-Dirlmeier 1979, 126.

757 Kilian-Dirlmeier 1979, 123–125.

758 Dawkins 1929, 226 f. pl. 136, 4.

759 Murray 1900, 15 fig. 24.

760 Mazarakis Ainian 2010, 40 f. pl. 24, 1.

761 Laffineur 1978, 192 no. 3 pl. 1, 3; 200 no. 43 pl. 5, 3; 202 f. no. 56 pls. 5, 2 and 7, 6; 203 no. 58 pl. 7, 5; 209 no. 91 pl. 11, 1; 210 no. 96 pl. 10, 3; 210 f. nos. 98–99 pl. 12, 1–2; 213 nos. 111–112 pl. 14, 1; 213 no. 114 pl. 14, 3; 230 nos. 198–199 pl. 23, 1–2.

762 Curtis 1925, 26 no. 51.

763 Özgen – Öztürk 1996, 186 fig. 135.

764 Within the Geometric and Archaic period deposits, 8th–6th cent. BC: Lamb 1934/1935, 154 f. fig. 11 nos. 7. 10.

765 Nin, grave 3, late 6th cent. BC, vertically perforated: Hiller 1991, 387 f. pl. 47, 479.

766 Chiaromonte, graves 152, 91, 96, 156, 732: S. Bianco in: Ambre 2007, 239–242 nos. III.250–III.269; Bianco 2020, 111 figs. 14–16 (respectively graves Chiaromonte 156 and 152, late 8th–early 7th cent. BC) and 122 fig. 22 (grave Chiaromonte 96, early 6th cent. BC).

The pendants feature either two intersecting drill holes or a single vertical one, which perforates the whole object – another resemblance to the ones from Ephesos. This resemblance to Ephesos is further reinforced by the fact that the ensemble includes one example with a plain button-top as one end (**cat. 345**). Another example of pomegranate-shaped pendants made from gold was located in the mentioned burial at Braida di Vaglio. Here, eight globular suspensions with round rosette buttons at their bases were used to decorate a diadem of laminated gold, decorated with zoomorphic and floral motives[767] (pl. 15).

For artefacts described as fruit-shaped, pomegranates or the like, not all of which are made of amber, we can suggest a range of uses. It seems reasonable to see the ones with two intersecting drill holes as pendants for necklaces, also because of comparable examples from Italy and the Aegean. Their function as girdle pendants is also a possibility, based on comparable finds from Southern Italy[768]. A clear purpose is difficult to establish for the pendants with a vertical drilling running through the entire object. Hogarth classifies the amber pendants, positing that, in addition to type a (here type 3) and type b (here type 2), there are pendants of a third type, which he describes as »elongated, without base, but with round button-top, incised rosette pattern above«[769]. According to Strong, the five objects in question from the upper deposit are pinheads[770]. There are also some comparable varieties within the ivory finds of the Artemision from the British excavation[771]. Therefore, a designation of the fruit-shaped artefacts with a vertical drilling in both ways seems possible.

Type 6: Wineskin-shaped pendant

A single square pendant is the sole member of the sixth group. It features an elaborate upper section, showing two grooves and a horizontal, perforated gable top with a row of vertical incisions. This specimen was discovered in the British excavation and is so far unique. With a length of almost 3 cm, it represents the largest pendant within the ensemble. It was probably worn as a central piece in a composite necklace, along with other elements made from amber and/or other precious materials.

Comparable objects were observed only at Ithaca, made from ivory and bone, dating to the 7th century BC[772]. However, they appear less elaborate than the one made from amber in the Artemision.

To date, the best comparisons for this pendant type can be found in the Balkan peninsula in the 6th century BC. They are referred to as ›heart-shaped‹ pendants/bullae, ›large bullae‹, ›craters without handles‹ or more commonly as ›wineskin-shaped‹ pendants[773]. Here the ambers are shaped as big pendants with a plain, cursorily worked body and an elaborate upper body with vertical, horizontal and/or intersecting decorative incisions. According to A. Palavestra the wineskin pendants represent a characteristic shape typical of the Central Balkans, where they appeared from the late 6th to the early 5th century BC in various necropolises in different varieties[774]. For the wineskin-shaped pendant of Ephesos, the most adequate comparisons according to their shape and elaboration were found at Novi Pazar[775] and in rich female burials of Pécka Bonja[776], Rogovo-Fuše[777],

767 Bottini – Setari 2003, 39 no. 108 pls. 41–42.
768 S. Bianco in: Ambre 2007, 239 no. III.254; 242 no. III.264.
769 Hogarth 1908a, 215.
770 Strong 1966, 43–45.
771 Hogarth 1908a, 187 f. pl. 33, nos. 1–11.
772 Heurtley – Robertson 1948, 116 pl. 47, 22–27.
773 Palavestra – Krstić 2006, 195.
774 Palavestra 1997, 18–30. 35; Palavestra – Krstić 2006, 196.
775 Palavestra – Krstić 2006, 198–218; Krstić 2007, 88.
776 Palavestra 1997, 18–22 pl. 2, 1–2; Palavestra – Krstić 2006, 348.
777 Palavestra 1997, 24–26 pl. 5, 3; 6, 6–9.

Romaja[778], Atenica[779] and Lisjevo Polje[780]. Furthermore, amber wineskin pendants with a horizontally perforated projection, decorated with horizontal grooves and a button at the base, have been found in warriors' graves in the necropolis of Trebenishte in today's Republic of Northern Macedonia[781] (pl. 16, 1).

Female clay statuettes and busts, such as one from Lavinio in Latium vetus, dating to the 5th century BC[782], and three from Spain, dating to the 4th and 3rd centuries BC[783], testify to the long life of pendants of this shape, which are reproduced in sophisticated and elaborate parures together with other ornaments. However, it must remain questionable whether the real pendants were made from amber, gold, silver or other precious materials.

2.3.4 Conclusions

The amber pendants of the Artemision at Ephesos feature one of the largest artefact groups, deposited in several hoards as a foundation deposit in the second half of the 7th century BC. The pendants themselves were divided into six groups (types 1–6), which are characteristic of different diffusion periods and areas all over the eastern half of the Mediterranean.

Types 1 and 3 represent the amber pendant types with the longest lifespans in the Ephesian ensemble. They appeared from the 10th to the 5th century and from the 8th to the 4th century BC, respectively. Both types reached their maximum diffusion in the Italian peninsula, particularly in the southern regions. Furthermore, the bulla-shaped type 3 pendants were highly popular in the entire Eastern Mediterranean, where they were made from various materials such as gold, silver, bronze, bone, and amber. By contrast, it is, however, interesting to note that these pendants were rare in the Balkans, where other varieties of amber pendants seem to be more widely distributed. In this region, they only appear at Stična and Magdalenska Gora in Slovenia and Kompolje in Croatia. Also, the pendants of type 5 show a long distribution span. Presumed to originate in the Middle Bronze Age in the context of Mycenaean jewellery, they reappeared from the 7th to the 5th century BC, mostly in the Aegean and in several sites in Asia Minor. They are believed to be shaped in the likenesses of fruits such as apples, pomegranates and poppies, and might possibly refer to beliefs connected to fertility.

They were used as pendants, suspensions for pectorals, girdles and diadems, as well as pinheads, represented by the pinhead types 1 and 2 (see below, chap. 2.7). However, in the Aegean, varieties of these pendants and pinheads were frequently made from precious metals, rarely from amber. Also, while several more geometric varieties of type 5 amber objects appeared in Southern Italy, this shape is represented in Ephesos only once. The remaining types 2, 4 and 6 of the ensemble show a limited lifespan and distribution area. The elongated pendant of type 2 with a button at its end seems to be primarily distributed from the 8th to the 6th century BC. Comparisons occur mostly in the Aegean and are only scarcely attested in Italy. Several comparable examples for type 4 appear in the Aegean on Kythnos and at Perachora, as well as in Italy, at Armento in Basilicata, all three sites dating to around the 7th century BC. Type 6 features only one comparison in the Aegean, namely on Ithaca and made from bone, also dating to the 7th century BC. However, types 4 and 6 find their best comparisons in the later princely graves in the Balkans dating to the 6th to 5th centuries BC.

This summary of the distribution of the various pendant types from the Ephesian Artemision highlights the various connections and relations between the different regions of the Archaic Mediterranean. However, it is difficult to reconstruct and assess the full extent and nature of these contacts and their subsequent influences. For example, on the one hand, a connection between South-

778 Palavestra 1997, 28–30 pl. 7, 14.
779 Palavestra – Krstić 2006, 335.
780 Palavestra – Krstić 2006, 355.
781 Trebenishte, graves II–VII: Filow 1927, 96 nos. 147–148 figs. 113–114; Stibbe 2003, 21–31 figs. 4–9.
782 Palavestra – Krstić 2006, 108. 196 fig. 53.
783 Palavestra – Krstić 2006, 107 f.

ern Italy and Ionia is well documented through the Greek foundations in Italy: Greek settlers were in touch with Oenotrian people, who produced a great variety of amber ornaments. Furthermore, of the six established pendant types, four show clear and numerous comparisons in the Italian peninsula in general and its southern half in particular. Also, these sites mainly date to a similar time frame as the Artemision deposit. These observations might indicate a development of similar tastes in jewellery between the Greek settlers and the local population. They might account for the rich supply of amber objects at the Ephesian Artemision. On the other hand, comparable pendants also appear within the rich princely graves on the Balkans, which would also indicate contacts between Asia Minor and the regions adjoining the northern border of the Greek world. This is an especially interesting aspect. Except for the main areas of Greek influence, this is the only area in which we find comparisons for pendants of types 4 and 6. However, the sites in which these types appear mainly date significantly later than the Artemision amber deposit. Therefore, apart from the possibility of local and independent innovation, it seems that impulses to import or create these kinds of ornaments originated within the Greek world and only reached the northern regions after a considerable amount of time. Regrettably this explanation is not entirely satisfactory: we agree with Hogarth, who so fittingly stated that this class of jewellery is »notoriously difficult to ascribe to definite periods, since articles of personal ornament usually continue long in use, and are handed down as heirlooms through many generations«[784].

To conclude, we can affirm that in the Archaic period, throughout the Mediterranean, pendants made from amber represent important components of jewellery, mostly worn by women, presumably for their apotropaic, magical and healing properties. Either as part of lavish necklaces, pectorals or girdles, the six different pendant types appear in different regions and over different time spans. They seem to feature a broad spectrum of influences from different regions, from Central Anatolia to the west coast of the Aegean, ranging from the Balkans and the Italian peninsula and to the shores of Corsica. Nevertheless, these contacts were unlikely to be one-sided, but rather worked in both directions over a considerable period of time.

Caroline Posch

2.4 SPACERS (CAT. 350–488. 631–634)

2.4.1 Introduction

Spacers are amber plates of various shapes which show parallel through-borings drilled from side to side through their thickness[785]. The purpose of the spacer-plates is to act as intermediary pieces and separate the different strings of beads of a suspended ornament, such as a necklace, collar, pectoral, girdle, etc. In such cases, spacers can be used as end-pieces, to collect the strings together and keep them in order. The spacer-plates acquired particular value, because they implied the ownership of a large number of beads.

Amber spacer-plate necklaces of various shapes are documented in the Late Neolithic and the Copper Age in Central Europe during the Funnel Beaker Culture and the Passage Grave Culture. They become more frequent from the Early Bronze Age onwards in several European regions, corresponding to modern-day Latvia, Bohemia, Germany, France, Austria, Switzerland, Greece and Crete[786]; recent finds also document their distribution in Northern Italy[787]. We know that during the Early Bronze Age the Wessex Culture witnessed a particular flourishing of spacer-plate

[784] Hogarth 1908a, 240.

[785] The position of the through-borings, drilled side by side through the depth of the amber, is crucial to define a spacer and to distinguish it from carved ambers stitched on dresses, which have frontal through-borings.

[786] du Gardin 2003, 192–197; Maran 2013.

[787] Marzatico 1997 (Cles, dated to the Middle Bronze Age, 16th–15th cent. BC) and Salzani et al. 2006, 1608 f. fig. 1 (grave Olmo di Nogara 122, dated to the Late Bronze Age, »età del bronzo recente«).

necklaces in Great Britain[788]. A careful review of the geographic distribution and chronology of the Bronze Age spacers allowed C. du Gardin to presume that in this period each centre had its workshop and that possibly the earliest Central European examples inspired the spacers in Great Britain and Greece. By contrast, C. Gaslain suggested a Mediterranean origin for the ornaments and J. Maran classified the spacers from Wessex as earlier attestations, which could have influenced firstly the Mycenaean contexts in the Aegean and secondly the specimens in the Central European area[789].

In the Early Iron Age, from the 8th century BC onwards, spacer-plates and multiple necklaces of amber are widely documented, especially in Italy. Rectangular-shaped spacer-plates with rounded corners have been found in female graves in Veneto[790] and Emilia-Romagna at Brescello, Bologna and Verucchio[791]. In Central Italy they are known in Etruria at Vetulonia[792] and Veii[793]; in Latium at Satricum and Osteria dell'Osa[794]; in Marche at Novilara, Ripatransone, Colli del Tronto and Matelica[795]; and in Northern Abruzzo at Tortoreto[796]. In Southern Italy specimens are known in northern Campania at Cumae and Longola di Poggiomarino[797], in northern Apulia[798] and in Calabria[799]. In the Italian contexts, several Oenotrian cemeteries in modern-day Basilicata stand out. Accurate excavations of the inhumation burials of the Oenotrian cemeteries of Guardia Perticara, Alianello, Chiaromonte, and Latronico have been carried out. This led to the identification of several types of multi-wire female amber ornaments, such as necklaces, pectorals and girdles. In several graves, the same burial yielded very elaborate parures of suspended amber ornaments comprising several necklaces, pectorals and girdles, with ample use of spacers. The funerary interments are still unpublished in their entirety. However, the amber ornaments published in preliminary reports, and related graves are dated from the early 7th to the early 6th century BC[800] (pl. 16, 2).

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788 Harding 1993; Woodward – Hunter 2015, 261–388.

789 du Gardin 2003, 192–7. *Contra:* C. Gaslain in: Magie 2005, 69. A balanced overview is presented in Maran 2013.

790 Venetian find site unknown: Moosleitner 1997 (with seven strands), dated to the 8th–7th cent. BC. Pieve d'Alpago, grave 10, around 550 BC: Voltolini 2016, 43 f. and 58 no. 19.

791 For the amber necklace from Brescello (Reggio Emilia), dated to the 2nd half of the 7th cent. BC: Macellari 2014, 98–100 fig. 1 and R. Macellari in: Etruschi 2019, 428–431 no. 294.6. For the rectangular-shaped spacers with eight, nine and ten through-borings from Bologna and Verucchio: Cygielman – Pagnini 2006, 117 no. 315, with previous literature to up-to-date with L. Bentini – P. von Eles in: Etruschi 2019, 363–375.

792 Rectangular-shaped spacers with six, eight and nine through-borings on the short sides have been found in the Circolo del Tridente, dated to the early 7th cent. BC: Cygielman – Pagnini 2006, 117 f. nos. 315–319 fig. 33 c. e. i pl. 23, r. s. t. u; colour photo in: Cygielman – Spaziani – Rafanelli 2009, nos. 5 a–c. Other spacers from Vetulonia are mentioned by Colombi 2018, 173 n. 1959.

793 Rectangular-shaped spacers: Cavallotti Batchvarova 1965, grave HH 11–12, 132 no. gg 3 fig. 52 (with three holes); Bartoloni – Pandolfini 1972, grave PQ 4 a, 309 no. 10 fig. 76 (with five holes); Fabbricotti 1975, grave EF 13, 94 no. 27 fig. 18 (with four holes).

794 Satricum, tomb VI, 650–640 BC: Waarsenburg 1995, 411 f. 473 nos. 6, 63–66 (trapezoidal); 6, 67–72 (rectangular) pl. 87 (four specimens with three borings and one specimen with six borings). Osteria dell'Osa: Bietti Sestieri – De Santis 1992, 437 type no. 90a–c pl. 44 (rectangular, with two, three and four borings, from several tombs).

795 Macellari 2014, 100, includes literature for rectangular spacers from cemeteries of Novilara, Ripatransone and Colli del Tronto, dated to the 8th–7th cent. BC. For Matelica see E. Biocco in: Potere 2008, 71 no. 50 (rectangular, with seven borings through the short side intersecting with two other borings drilled in the long side), from the grave Crocefisso 108 belonging to the late 8th–early 7th cent. BC.

796 Tortoreto, cemetery of Colle Badetta: Arbace – Belfiore 2018, 38 f. (with eight borings), early 8th cent. BC (colour photo, without information), belonging to a necklace. Information about the unpublished finds from Colle Badetta is given in Iezzi 2006, Lapenna 2010 and Papi 2022.

797 Cumae: Borriello 2007, 211 no. III.189 (with five borings); for Longola di Poggiomarino: Cicirelli 2007, 217 no. III.209 (with five borings).

798 Two spacers with seven through-borings have been found at Carlantino (province of Foggia), Santo Venditti, grave 11 (6th cent. BC): De Benedittis – Santone 2006, 53 no. 5.

799 Benedetti – Cardosa 2006, 1579 fig. 3 (tiny, for two and three strands).

800 Macrì 2009 and Bianco – Preite 2014 offer a general review of Oenotrian cemeteries and their study. S. Bianco in: Magie 2005, 88–101 mentioned amber necklaces and girdles from the graves Chiaromonte 140, 142, 152 and 156, Alianello 286 and Latronico 83. S. Bianco in: Ambre 2007, 238–243 published detailed descriptions of several

Outside of Italy, rectangular amber spacer-plates occur in Early Iron Age burials in Southern Germany, Austria and Switzerland from the 7th to the 5th century BC[801]. Amber spacers are documented in Slovenia at Most na Soči, Magdalenska Gora and Novo mesto, in Serbia at Novi Pazar, from the 7th to the 5th century BC and the 6th to the 5th century BC[802] respectively.

In Ionia outside Ephesos, square amber spacer-plates are rare; some still unpublished specimens dated to the 7th century BC have been found at Miletos[803]. In modern-day Greece no specimen of square amber spacer-plates dating to the 7th century BC has been identified.

There is ample evidence to prove that from the early 7th century BC the same suspended ornament could often include beads and spacers of different colours and materials – amber, bone, glass, clay and so on. The contrast between the different colours of the materials, such as the white bone and the red amber, was decisive in the final assemblage of the ornaments[804].

Finds from female burials dated mostly in the 8th and 7th centuries BC from Verucchio and other Italian sites show clearly that bone spacers were put to another functional use. These objects were connected to the weaving process, and in particular to the tablets employed in producing the borders of precious textiles. Small narrow pieces keep the threads apart to avoid entanglement[805]. The bone spacers used in the weaving process are flat, pierced by several holes, and generally associated with spools and spindle-whorls. As these features do not apply for any of the Artemision finds, a possible function of the Ephesian spacers as weaving tools seems very unlikely.

2.4.2 Typology

The spacers from the Artemision can be assigned to eight main shapes (pl. 17).

Type 1: Triangular-shaped end spacer-plates (cat. 350–351) (with five borings)
pls. 18, 1. 2; 49

Spacers of triangular or trapezoidal shape are documented already in the Middle Bronze Age in France and Germany. They are characteristic end-pieces of multiple-row necklaces and were used

finds (see below).

801 Kossack 1959, 115–117 fig. 18 C (distribution in South Bavaria and Hallstatt) pl. 109, 5 (rectangular spacer-plate with six through-borings); Kromer 1959, 145 pl. 123, nos. 4–5 (Hallstatt grave 694); Tischer 1994, 34 f. pl. 26, no. 12 (rectangular spacer-plate with nine sets of V-shaped borings); Stahl 2006, 27 listed other artefacts; Primas 1965/1966, 194 fig. 3, 8 and Voltolini 2016, 47 f. fig. 3 (Pianezzo, South Switzerland, 5th cent. BC).

802 A. Crismani in: Ambre 2007, 120 no. III.8 (Most na Soči, grave 3070, late 7th–early 6th cent. BC); Tecco Hvala 2012, 283 fig. 105 no. 6 (Magdalenska Gora, grave Preloge 13/117, 6th–5th cent. BC); Križ – Turk 2003, 94 no. 42 = Križ 2017, 130 no. 5 (Novo mesto, 5th–4th cent. BC); Palavestra – Krstić 2006, 276 f. and Palavestra 2009 (Novi Pazar). Later amber spacers are reported from Novo mesto: Križ 2017, 48 and 133 no. 13 (4th cent. BC).

803 Small amber rectangular spacers (inv. Z.09.73.273 and some additional fragments) have been found in the bothros of the Aphrodite sanctuary at Zeytintepe. They have been dated to the 7th cent. BC (von Graeve 2013; von Graeve 2107). In the summer of 2012, Prof. V. von Graeve and Dr. G. Günay von Graeve kindly showed me the Milesian amber finds.

804 Bone spacer-plates and amber beads or, by contrast, amber spacer-plates and glass or clay beads are documented in several interments in Italy: a comprehensive list lies outside the purposes of this research. For bone spacers see the following note.

805 Gleba 2008, 152 f. figs. 98. 104–105 collected and discussed the finds of bone spacers from Italy; another bone spacer from a rich grave in San Giovanni in Persiceto (province of Bologna) has been published by Christiansen and Petersen 2017, 478 no. II.21 (Copenhagen, Ny Carlsberg Glyptotek, inv. HI 353). Unpublished finds have been identified in graves 25/1984 (6th cent. BC) and 55/2000 (7th cent. BC) of the cemetery Mossa at Fermo, and in grave 14 of the cemetery at Pitino (commune of San Severino Marche, province of Macerata), dated to ca. 600 BC. Among the finds listed by M. Gleba, the specimens from the Oenotrian cemetery of Incoronata (commune of Pisticci, province of Matera) in the hinterland of Metaponto play a different role. These objects are made of bronze and are part of female ornaments (Chiartano 1994, 50 f.); they were probably used as rattles and meant to produce sound (Pacciarelli 2007, 119; Saltini Semerari 2019, 35).

to collect together all the strings of one ornament[806]. Usually, triangular spacers have parallel borings: the number of borings can vary from 2–7 or even more. In the 7th century BC spacers were adopted in Central Italy at Satricum in the rich tomb VI, which belongs to the most extensive amber contexts in the Mediterranean, totalling over 500 objects[807]. The rich female Oenotrian graves explored in Southern Italy in modern-day Basilicata yielded very elaborate parures of amber ornaments still in their original position. These include necklaces but also other suspended ornaments, such as pectorals and girdles, all in the same burial[808].

Triangular and trapezoidal spacer-plates are less common than rectangular ones. The striking similarities between the two examples from Ephesos (**cat. 350**–**351**) with regard to their respective find-spots, size and number of borings, show that both might belong to the ends of the same ornament, deposited during the infilling of Naos 1 in the building phase called Naos 1a (see below)[809].

Type 2: Rectangular-shaped spacer-plates (cat. 352–353. 356. 631. 633–634) pls. 49. 62

Spacers of rectangular shape are intermediary pieces, which may belong to necklaces if they were meant for a vertical position, or to pendants if they were supposed to hang in a horizontal position. In spacer-plates of rectangular shape, the through-borings are generally drilled on the long side through the short side. Both in the Bronze and in the Iron Age, some rectangular spacers can have simple parallel or more complex borings in different combinations, such as V-shaped and Y-shaped borings[810]. The rectangular spacers from Ephesos **cat. 352**–**353**. **633**–**634** have different numbers of parallel borings. The spacers **cat. 356** and **631** show several borings through the short sides intersecting one boring, which runs lengthwise through the centre of the object. The vertical perforation was probably destined to hang up a pendant. It belonged to the lower row of the ornament[811].

Rectangular-shaped spacer-plates can be used with the long sides in a vertical position in necklaces and girdles or with the long sides in a horizontal position in extremely elaborate pendants, as testified by some pendant-pectorals found in female graves dated to the 6th and 5th centuries BC from Veneto, Slovenia and Switzerland[812].

Regarding the rectangular-shaped spacer-plates, the different sizes and the find-spots mean they can all be assigned to different suspended ornaments, which have not yet been reassembled, including also **cat. 634**, which is characterised by horizontal and vertical borings. These ornaments were deposited in foundation deposits both in the »Hortfund« in Naos 1a (**cat. 352**–**353**. **356**) and in Naos 2 in the Green Schist Basis (**cat. 631**. **633**–**634**), which yielded beads of various materials, including amber. Suspended ornaments may contain amber beads together with bone, ivory, rock-crystal and glass beads.

806 See du Gardin 2003, 181 fig. 4, 1–3.

807 Waarsenburg 1995, 411 f. 473 nos. 6, 63–66 pl. 87. Tomb VI of Satricum yielded at least six triangular-trapezoidal end-spacers, belonging to a minimum original number of three amber suspended ornaments such as diadems, necklaces, pectorals, or girdles. The ornaments have not been precisely identified in the publication. This is due to the poor state of conservation and the lack of information concerning the exact find-spot in the tomb, which yielded a remarkable quantity of pendants.

808 Basilicata: S. Bianco in: Ambre 2007, 238 no.III.247 (girdle, grave Latronico 83, early 7th cent. BC); 239 nos. III.251 and 254 (necklace and girdle, grave Chiaromonte 152, late 7th cent. BC); 242 no. III.264 (girdle, grave Chiaromonte 156, early 6th cent. BC). S. Bianco in: Magie 2005, 88–101 reported other amber necklaces and girdles from the graves Chiaromonte 140, 142 and Alianello 286.

809 Both end-spacers were found in the same metrical unit (*870352*).

810 See du Gardin 2003, 183–191 figs. 5–8 (Bronze Age); Tischer 1994, 34 f. pl. 26 no. 12 (Early Iron Age).

811 A close comparison for the combination of vertical and horizontal borings on the same spacer is provided by a rectangular spacer from the grave Crocefisso 108 at Matelica. It shows seven borings on the long side and two on the short side, and is dated to the late 8th–early 7th cent. BC: E. Biocco in: Potere 2008, 71 no. 50.

812 For the pectorals from Pieve d'Alpago, dated around 550 BC, and Pianezzo, dated in the 5th cent. BC, respectively, see Voltolini 2016, 47 f. fig. 3, with previous literature. Another example occurs at Most na Soči in the grave 3070 (625–575 BC): A. Crismani in: Ambre 2007, 120 no. III.8.

Type 3: Uniquely shaped spacer-plates (cat. 354–355) pl. 49

The two spacer-plates have the same unusual shape, adapted to a double-row ornament. Although roughly comparable to spacers in the form of a dumbbell documented during the Bronze Age in Central Europe[813], they find a fair comparison in Iron Age contexts only in Central Italy, at Satricum, in the rich tomb VI[814]. In the harbour sanctuary at Chios, a similar amber ornament has also been found, but it is drilled longitudinally[815]. Their precise role is not clear. It is hard to understand the original position of these spacers and to determine if they belonged to a necklace or a pendant: the tiny dimensions are suitable for a small two-row pendant. The rare shape is probably due to a local development for a specific (multi-material [?]) ornament, which has not yet been identified.

Types 4–6: Bird-shaped spacers (cat. 357–417) pls. 18, 3; 50; 51

It is well known that during the Early Iron Age various types of birds took on a religious meaning and became a popular motif in several materials and classes of objects in the Aegean, and Central-Eastern Europe[816]. In the 8th century BC the symbolic meaning is stressed by amber pendants carved as the double protome of a bird; these occur in burials at Torano Castello and Crichi, in modern-day Calabria in Southern Italy[817], at Nin and Osovo on the Eastern Adriatic coast, in modern-day Croatia and in Bosnia[818]. To the third quarter of the 8th century BC date three amber spacers carved as double protomes of birds and recalling the tradition of the sun ship: they were found in the very rich female burial 74 explored in southern Campania at Montevetrano near Pontecagnano[819]. The leading role played in Etruria by the amber workshops of Veii is stressed by a single pendant in the shape of a bird found in a rich female grave, which is dated to the third quarter of the 8th century BC[820].

The origin of amber bird-shaped spacers can be traced back to Southern Italy, to an area of modern-day Calabria. Finds are documented there, at Francavilla Marittima in the Oenotrian cemetery at Macchiabate, in female burials dated around 750 BC[821]. Other still unpublished finds from Francavilla Marittima, such as carved ambers from the graves Temparella 39 and 84,

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813 See du Gardin 2003, 191 fig. 9, 7 (Unetice). A three-boring specimen from Kakovatos dated to the Late Bronze Age has a similar shape (du Gardin 2003, 191 fig. 9, 6), but it is flat (Sgouritsa Polychronakou – Nikolentzos 2016, 251 C fig. 2).

814 Satricum, tomb VI, 650–640 BC: Waarsenburg 1995, 408. 471 no. 6.33 pl. 83 (three spacers).

815 Boardman 1967, 240 no. 262 fig. 162.

816 See respectively Benson 1970, 28–31 pls. 24–25 for the Aegean area, Kossack 1954, 50–58; Kossack 1999, 120. 137. 163–165; Teržan 2013 for Central Europe; Damiani 2011 for Italy.

817 Kilian 1970, 244 f. 288–290 with a bibliography for Southern Italy. Negroni Catacchio 1975/1976, 34; Negroni Catacchio 1978, 181 and Spadea 2004, 91 (Crichi); de La Genière 1977, 404, 86 (Torano Castello). Similar finds from Tiriolo have only been mentioned (de La Genière 1972, 237 f.): an expert connoisseur of Calabrian finds such as R. Spadea is not aware of any bird-shaped amber pendant from Tiriolo (R. Spadea, personal communication). A (probably) similar pendant has been found in Southern Campania in the necropolis of Sala Consilina in the female grave 278, dated to the early 7th cent. BC (mentioned by Roncoroni 2006, 56. 58 f.; Romito 2019, 622).

818 de La Genière 1972, 237 f. with references. For Nin: Batović 1968, 15–25 pl. 11 (male graves 6 and 27, 8th cent. BC); Palavestra – Krstić 2006, 46 f. fig. 17. Amber pendants reproducing various kinds of birds occur in Serbia at Novi Pazar, Atenica and other sites, belonging to the late 6th–early 5th cent. BC, and they have been accurately published by A. Palavestra (Palavestra – Krstić 2006, 178–193 and Palavestra 2009).

819 Iannelli 2011, 178 no. 211. The spacers probably belong to a suspended two-row ornament (girdle [?], chain [?]), whose shape is unknown.

820 Cavallotti Batchvarova 1965, 202 no. ii fig. 104, from the grave II 9–10, dated to the phase Veii IIB2 (Guidi 1993, 76. 90. 99 f.); Negroni Catacchio 1978, 180 fig. 8. The pendant probably belongs to a suspended ornament together with other amber objects from the same burial.

821 de La Genière 1972, 237 f. with references; Zancani Montuoro 1976, grave S 60, 24 f. fig. 7; Zancani Montuoro 1979, grave U(liveto) 16, 72 fig. 25 h; S. Bianco in: Magie 2005, 91; Benedetti – Cardosa 2006, 1583 fig. 4 (below), classified as a button; Cossalter 2009, 347 (mention). Similar finds from Sybaris are mentioned: Negroni Catacchio 1978, 180 (referring to a personal communication by P. Zancani Montuoro).

date to the third quarter of the 8th century BC and include bird-shaped amber spacers of various sizes[822].

As already mentioned (above, chap. 2.4.1) the inhumation burials of the Oenotrian cemeteries revealed several types of multi-wire female amber ornaments, such as necklaces, pectorals and girdles, which contained bird-shaped spacers. The funerary interments are still unpublished in their entirety. However, the amber ornaments have been published in preliminary reports and the related graves have been dated from the late 8th to the early 7th century BC. In particular, the necklaces and the girdles from the rich graves Latronico 83, Chiaromonte 156 and Chiaromonte 140 offer comparisons to identify the amber spacers from Ephesos as bird-shaped spacers, and to clarify their original functions[823].

Among the amber finds from the Artemision at Ephesos, two types of bird-shaped spacers are documented, each showing two different perforation systems, which were probably used in the same ornament, which in turn was meant to be used for two different functions. The different shape of the spacers does not seem to play as important a role as the one played by the different perforation systems. According to this system, therefore, spacers will be assigned to one of two types, based on the number of perforations rather than on the shape. Except for the differences in the bore-hole systems, all bird-shaped spacers from the Artemision form a homogeneous group and very likely belong to the same ornament[824].

Type 4: Bird-shaped spacers with three borings (cat. 357–361. 368. 370. 373–381. 387–389. 393–394. 397–403. 405–406. 411. 414) pls. 18, 3; 50; 51

Bird-shaped spacers with three borings may have a triangular (**cat. 357**–**361**. **397**–**403**. **405**–**406**. **414**) or a rectangular-shaped base (**cat. 368**. **370**. **373–381**. **387–389**. **393–394** and **411**)[825]. Each element is perforated through on the front and back. The boring on the back is always transversal from face to face. By contrast, the borings on the frontal side can show different systems, and they can be V-shaped (**cat. 357**–**361**), T-shaped (**cat. 368**. **370**. **373**–**381**. **387**–**389**. **393**–**394**. **411** and **414**) or curved (**cat. 397**–**406**). The variation in frontal borings probably depends on the shape and size of each spacer – one needs well-defined corners to drill V-shaped borings – while the front is often rounded and only allows curved borings. T-shaped borings occur on the smallest pieces, where the size of the piece only allows for one boring in the middle, connected to the frontal, transversal boring.

Bird-shaped spacers with three borings (type 4) are thicker than bird-shaped spacers with two borings (type 5). Those with three borings (type 4) have been used to connect two horizontal rows of the ornament and to sustain a vertical row of pendants on the front of the ornament. They were originally placed on the ornament's lower row.

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822 Dr. F. Quondam (Rome, Vienna) kindly showed me the drawings of still unpublished finds from some graves at Francavilla Marittima (Temparella 39, Temparella 84 and Uliveto 16), consisting of several bird-shaped spacers and furnished the related information. He will soon comprehensively publish the funerary interments of the cemetery (Quondam [forthcoming]).

823 Preliminary reports and reproductions of single ornaments are found in S. Bianco in: Magie 2005, 91–93 and Bianco 2020, fig. 21 (grave Chiaromonte 140, late 8th cent. BC); S. Bianco in: Magie 2005, 94–99; S. Bianco in: Ambre 2007, 238 no. III.247; Bianco 2020, 111 (grave Latronico 83, early 7th cent. BC); S. Bianco in: Ambre 2007, 242 no. III.264; Bianco 2020, fig. 14 (grave Chiaromonte 156, late 8th–early 7th cent. BC); Preite 2016, 121–126. 189–191 gives a bibliography for each site.

824 60 amber bird-shaped spacers were concentrated in the metrical units *870232* (18 items), *870246* (27 items), *870281* (9 items) and *870352* (6 items), as M. Kerschner noted for the contexts of carved ambers found in the Artemision in the 1987 excavation season (Kerschner 2005, 138 n. 88). For additional observations about the provenience of the spacers inside the Artemision see above, chap. 1.1 and below, chap. 5.5.

825 The spacers **cat. 368**, **370**, **373**–**374**, **376** belong to the bird-shaped spacers type 1, although they actually have two borings, because they are not entirely preserved and some parts are missing.

Type 5: Bird-shaped spacers with two borings (cat. 362–367. 369. 371–372. 382–386. 390–392. 395–396. 404. 407–408. 410. 412–413. 415–417) pls. 18, 3; 50; 51

Bird-shaped spacers with two borings have a quite irregular, rectangular base, which in some exemplars tends to become almost trapezoidal[826]. These spacers are flat and thin; the borings run transversally from face to face on the front and back. Bird-shaped spacers with two borings (type 5) have been used to connect the components of a single row of a girdle horizontally. They formed the central rows in the ornament.

Type 6: Bird-shaped spacer, special shape (cat. 409) pl. 51

This spacer stands out on account of its large size, (H 1.4 cm against 0.5–0.6 cm) and for the unique boring system, having three through-borings, one horizontal through the base and two vertical. Probably, having been broken during the working process, it was adapted for a special purpose. It was meant either to connect the interior rows of the ornament or to hang up a pendant, as attested by the presence of vertical borings. As it constitutes a unique piece, it is actually impossible to determine its approximate original position in the ornament.

Type 7: Triangular spacer-plates (cat. 418–472) pls. 18, 4; 51; 52

Small geometrical spacer-plates are quite rare as stand-alone amber ornaments as they are usually used to connect single elements or pendants of different shapes. They occur in Italy, mostly in Oenotrian graves from the early 7th century BC and in Picenian graves from the 6th century BC, and are always combined in several rows of similar elements[827]; in the late 6th to the 5th century BC they also appear in the Central Balkans. Regarding Southern Italy, one can repeat the description offered regarding the bird-shaped spacers: the inhumation burials of the Oenotrian cemeteries of Latronico and Chiaromonte yielded several types of multi-wire female amber ornaments, particularly girdles and pectorals, including triangular, square and lozenge-shaped spacers. Publication of the funerary interments in their entirety has yet to be undertaken. However, the amber ornaments have been published in preliminary reports, and the related graves have been dated from the late 8th (graves Chiaromonte 152 and 156) to the early 7th century BC (grave Latronico 83). The girdles from these three rich Oenotrian graves offer useful comparisons to help identify the functions of the triangular-shaped spacers from the Artemision at Ephesos[828]. Other suspended amber ornaments constituted of several rows of beads, and including square spacers, have been found in a burial remarkably rich in amber artefacts (more than 500), namely, tomb VI at Satricum in Latium vetus, dated 650–640 BC[829]. Suspended amber ornaments of unknown destination (diadems [?], pectorals [?], girdles [?]), composed of triangular and square spacers, are reported in female depositions in modern-day Abruzzo, as in grave 75 in the cemetery of Campovalano (commune of Campli, province of Teramo), dated to the first half of the 6th century BC, and in

826 The spacers **cat. 363**, **365**, **367**, **369** and **372** actually feature only one transversal boring on the frontal side, but they are not entirely preserved.

827 The Picenian grave Moie di Pollenza 4, dated to the 8th cent. BC also comprises a chain composed of two rows of triangular pendants (Percossi – Frapiccini 2004, 85 unnumbered figure).

828 Preliminary reports and reproductions of single girdles: S. Bianco in: Magie 2005, 94–99; S. Bianco in: Ambre 2007, 238 no. III.247 and Bianco 2020, 111 (grave Latronico 83, early 7th cent. BC); S. Bianco in: Ambre 2007, 242 no. III.264 and Bianco 2020, fig. 14 (grave Chiaromonte 156, late 8th–early 7th cent. BC); S. Bianco in: Magie 2005, 91–93 (grave Chiaromonte 140). The grave Chiaromonte 152, originally dated to the late 7th cent. BC (S. Bianco in: Ambre 2007, 239 no. III.254) is now dated to the late 8th cent. BC (Bianco 2020, 111 figs. 15–16); M. Tagliente in: Magie 2005, fig. at p. 76; Bianco – Preite 2014, 420; Bianco 2020, 111 f. figs. 17–20 (grave Chiaromonte 325, late 8th–early 7th cent. BC); Preite 2016, 121–126. 189–191 gives additional bibliography for each site.

829 Satricum, tomb VI, 650–640 BC: Waarsenburg 1995, 408. 471 nos. 6.40–6.41 pl. 83 (14 spacers each with two perforations).

grave 5 in the cemetery explored near the abbey of San Clemente at Casauria (commune of Tocco Casauria, province of Pescara), dated to the first half of the 5th century BC[830]. A suspended ornament composed of rows of square and triangular plates, similar to the Oenotrian ornaments, has been identified in the incredibly rich female grave »tomba della Regina« in Numana, dated to the end of the 6th century BC. The grave yielded more than 3,000 carved ambers, which makes this one of the richest burials not only in Central Italy but in the whole of the Mediterranean[831]. The sequence from Numana, a harbour site closely connected to the opposite shore, directly across the eastern Adriatic, allows us to understand the presence of similar objects found in the Central Balkans. According to A. Palavestra, these are probably linked to the spread of Italian models and dated to the turn of the 6th to the 5th century BC.

Based on the perforations of triangular and square spacers, Palavestra identified a suspended ornament in the funerary context explored at Novi Pazar and suggested the hypothetical reconstruction of a necklace. The Serbian scholar also published similar finds from other Central Balkan localities[832].

The small triangular spacer-plates from Ephesos are all very similar: each has three borings drilled, on in each corner from face to face. Except for 12 examples (**cat. 418**. **420**–**429** and **439**), all other 43 spacers (**cat. 419**. **430**–**438**. **440**–**472**) show a frontal engraving of a circle enclosing a central point. All spacers are very similar to each other in shape and size, and all are accurately polished on both sides, so it is highly likely they all belonged to the same object. Their respective find-spots confirm this hypothesis, as the triangular spacer-plates were found in the 1987 campaign in the same four metrical units, lying side by side[833]. The evidence offered by Oenotrian girdles mentioned above suggests that the triangles originally formed two different horizontal strings, which hung opposite each other by their apexes. The lack of a vertical boring indicates that the two rows of triangular spacer-plates were originally placed towards the top of the ornament to which they belonged.

Type 8: Round spacer-plates (cat. 473–488. 632) pls. 52. 53

By classing the ambers according to the perforation systems, the 16 spacers can be divided into three subtypes, the ones with one boring (type 8a, **cat. 473**), those with two connected borings (type 8b, **cat. 474**–**475**) and those with two unconnected borings (type 8c, **cat. 476**–**488**). Spacers of the third type, **cat. 476–482**, **484**–**485**, show a circle with a central point engraved on one side. Except for the differences in the borings, the round spacers are very similar: they are quite flat, thin and well polished on both sides.

The round spacer-plates form a group essentially similar to the triangular spacers as they share the same ornamentation. The unadorned round spacers (**cat. 473**–**475**) are slightly larger than, or similar to the decorated ones (**cat. 483**. **486**–**488**). It is likely that they all belonged to the same

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830 Campovalano grave 75, 14 trapezoidal-shaped spacers with vertical and horizontal perforations: P. Boccolini in: Chiaramonte Treré – d'Ercole 2003, 58 no. 36 pl. 65, no. 8; 149 for the chronology. Tocco Casauria, grave 5, triangular- and square-shaped spacers with vertical and horizontal borings: Terrosi Zanco 1975, 245 f. (only mentioned); Papi 1979, 80–83 fig. 22 pl. 15, 7.

831 The grave as a whole is still unpublished: main preliminary reports see Landolfi 1997; M. Landolfi in: Piceni 2001, 350–365; and especially focusing on amber, M. Landolfi in: Ambre 2007, 174–178. The girdle is exhibited in the museum in Numana, no. 92975 and is still unpublished, but mentioned by Bardelli 2021, 13 fig. 7. Dr. G. Bardelli (Naples) is working on the grave's furnishings to publish them comprehensively.

832 Palavestra 2003, 221 fig. 9; Palavestra – Krstić 2006, 276 f. fig. 68 with a full description of finds from other Central Balkans sites; Palavestra 2009, 167–169 fig. 3.

833 Fifty-five triangular amber spacers were concentrated in the metrical units *870232* (9 items), *870246* (19 items), *870281* (4 items), *870352* (23 items), as M. Kerschner noted for the contexts of carved ambers found in the Artemision in the 1987 excavation season (Kerschner 2005, 138 n. 88). For additional observations about the provenience of the spacers inside the Artemision see below, chap. 5.5.

ornament. They were found in the »Hortfund« in Naos 1a[834].

Comparisons for round spacers outside of Ephesos cannot be established. Probably they must be considered as a special shape developed in the Artemision at Ephesos for a particular purpose. They have been tentatively associated in the reconstruction of a single suspended ornament (see below).

2.4.3 Conclusions

Except for a few pieces, the spacers were mostly found in the »Hortfund« in Naos 1a, which indicates that they probably originally belonged to the same, multi-row suspended ornament[835].

The shape of type 1 end-spacers immediately points to the original presence of one suspended ornament, to which both these pieces belonged.

Type 2 spacers may belong to necklaces and to pendants, but in both cases, the original ornament remains unidentified; this is also the case for the two spacers of type 3, probably a locally developed shape.

Type 4 and 5 bird-shaped spacers show the same style, and they belonged to the same ornament. The total number of the two types of bird-shaped spacers are quite similar (32 examples for type 4 and 28 for type 5), indicating that the original ornament probably had two rows of spacers, each composed of roughly 30 pieces. The bird-shaped spacers of type 5 were placed in the upper or in the middle part of the ornament and the bird-shaped spacers of type 4 occupied the lowest row, sustaining other suspended pendants thanks to their vertical boring.

The bird-shaped spacer of type 6 is a unique piece, probably the result of a reworking of broken amber, which was reused as it was made of a precious substance.

Type 7 triangular-shaped spacers form a homogeneous group of 55 items and they belonged to the same ornament: in colour and style they are very similar to the bird-shaped spacers (types 4 and 5, 60 pieces in all) and they show the same engraved ornamentation, a circle with a central point. Sharing a similar aspect and their respective find-spot being located within the same metrical units, it is highly probable that all 115 bird-shaped and triangular spacers belonged to the same suspended multi-row ornament. Their pertinence to the same ornament is confirmed by the find-spot: the »Hortfund« in Naos 1a, particularly for both end-spacers of type 1 and round spacer-plates of type 8.

It is highly likely that small and perishable components were lost when the filling layer under the central base of the Artemision was infiltrated by groundwater over an extended period of time or during the modern excavation (see above, chap. 1). One can conclude that the total number of bird-shaped spacers of types 4 and 5 (60 pieces) corresponds roughly to the total quantity of the triangular spacers of type 7 (55 pieces) and that both constitute only a part of the elements originally offered to the deity.

Based on comparisons with amber ornaments from Southern Italy and the role of girdles as a votive offering to Artemis in Ephesos, it is very likely that the suspended ornament was a girdle composed of hundreds of carved ambers (for the reconstruction and the discussion see below, chaps. 5.5–6).

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834 15 carved spacers were found in *870232* (2 items), *870246* (10 items), *870281* (1 item) and *870352* (2 items), respectively. Another round spacer was found in a different metrical unit *870146*.

835 Except two pieces found in 1990 (*900146*) and in 1994 (*940486*), 136 carved spacers of the types 1–8 were found in 1987 in the »Hortfund« in Naos 1a, in the metrical units *870232* (30 items), *870246* (56 items), *870281* (15 items) and *870352* (35 items).

2.5 FIBULAE (CAT. 489–523. 635–652)

2.5.1 Introduction

Amber fibulae can be categorised as a subclass of polymateric ornaments, whose sophisticated construction combines both organic and inorganic materials. The definition »amber fibula« refers to a fibula which combines a metal framework (bronze, gold, silver and iron) and organic components used for decoration (amber, ivory) and assembly (vegetable fibres, wax, natural glue).

Amber fibulae were used to fasten and embellish clothing. However, in addition to their practical use, they formed part of the female funerary costume[836], as elements of strong symbolic value. They are documented already from the end of the 9th or early 8th century BC, with the highest presence from the second half of the 8th to the early 6th century BC in rich female grave sets. Fibulae are mostly found in Italy, a few specimens come from Croatia; only sporadically do they appear in Greece, Türkiye and Central Europe. A comparison of depositions in funerary and sacred contexts underscores the differences between Greece and Italy. Amber fibulae are more common in Italy, where they appear in rich female graves displaying the wealth and social class of a woman; far less often, they appear as votive offerings in the sanctuaries in the Aegean[837].

Since the first publication by D. G. Hogarth, several triangular, elongated and irregularly shaped beads have been classified as »Embellishments of fibulae, or of other metal objects«[838]. The amber artefacts from the sanctuary of Artemis at Ephesos include 51 amber items assigned to fibulae: 17 specimens are in the Archaeological Museum in Istanbul, one is preserved in the British Museum in London and 33 are in Archaeological Museum in Selçuk.

A careful technical evaluation and comparison with other specimens can help gain a better understanding of the origin, the meaning and the use of amber fibulae in the Artemision.

2.5.2 Technical features and typology

As the fibulae comprise a metal framework and an organic implanted decoration, every type is a combination of parts created using completely different manufacturing techniques and subject to different damage and deterioration processes. The nomenclature and classification usually applied to amber fibulae are based on: decoration details and additional organic materials components, the shape and thickness of the rod, the length and shape of the catch-plate, the bend of the bow, the number of the spiral's turns, and finally features of the fastening system (pl. 19, 1). The relationship between the length of the bow and the size of a fibula's amber coating also helps to determine its assignation to a specific type. For example, a big flat amber bead could be mounted on a bow of equal or greater length. In the first case the fibula will have a massive aspect; in the second case the fibula will be well-balanced. Suppose the bow is longer than the amber coating. In that case, inserted elements become more likely: these can include decorative parts such as cone-shaped bone, which are characteristic of a type widespread in Southern Italy.

The bronze fibulae from the Artemision have been edited by G. Klebinder-Gauß, but none of them can be related to fibulae with amber revetments[839]. In most cases we lack essential categorical and chronological criteria to assign the amber coatings to specific types. Only the specimens **cat. 521** and **522** show remains of bronze wires[840].

836 In Verucchio, whose graves are remarkably rich in amber artefacts, fibulae with amber decoration have also been found in male graves (von Eles 2015).

837 Strøm 1992 noted some differences between Italian and Greek contexts regarding the deposition of luxury goods.

838 Hogarth 1908, 214 f.

839 Klebinder-Gauß 2007, 21–70.

840 Hogarth 1908, 214 pl. 47, no. 10 described remains of bronze wire in the amber bead with four longitudinal borings.

Taking into account all the constraints, the typological determination proceeds on the basis of the shape, component materials, and size. The fibulae from the Artemision can be classified under three types (pl. 19, 2):

Type 1: With amber and bone segments, inlaid with amber
Type 2: With amber segments and bone or ivory discs
Type 3: With an oval-shaped amber bead on the bow.

Type 1: Fibulae with amber and bone segments inlaid with amber (cat. 489–490)

pls. 19, 3; 53

In these fibulae, bone segments become the supporting base for precious amber inlays, varying in shape:

a. circular with flat support surface and external convex surface;
b. ring shape with flat surfaces;
c. round shape with both flat surfaces;
d. rectangular shape with flat and convex surfaces;
e. rectangular shape with underlying decoration applied on a thin sheet of tin, visible due to the transparency.

The bone parts can be combined with bone discs, amber segments, and cone-shaped end-beads.

The two fibulae from the Artemision belong to a peculiar type, defined by a thicker central bone segment, carved to insert a rectangular amber tile on the upper surface, and two round amber inlays on lateral surfaces. Fibula **cat. 489** still preserves one round amber inlay and the upper rectangular tile on the central bone segment, which is joined with four amber segments interposed between four thin bone discs (pl. 20, 1).

Firstly, comparisons should be established with composite fibulae found in Greece. In the Aegean, one can mention an inlaid bone fragment from the sanctuary of Athena at Lindos on Rhodes[841], and well-preserved fibulae with long catch-plates from Perachora[842]. A fibula from Perachora shows the same construction, with a central bone segment with carved round cavities and rectangular setting on the top for rectangular amber inlay[843], as in the fibulae from Ephesos. The popularity of fibulae also influenced the sanctuary of Artemis Enodia at Pherai (Thessaly), whose votive record also includes badly preserved bow fibulae ending with lateral cone-shaped bone pieces[844]. Remains of fibulae in bone and amber from the sanctuary of Athena Itonia at Philia, which are contemporary to those from Pithekoussai described below, may refer to this type[845].

The comparison with composite fibulae from Sparta[846] and Eleutherna (Crete)[847] reveals striking similarities in both cases. The published pictures of the fibulae from the sanctuary of Artemis Orthia show the structure of a larger central bone segment, with round cavities on two sides and a rectangular cavity on the upper side, as in the fibulae from Ephesos. The only difference is that the fibulae from Sparta are flanked by thinner bone segments carved with a sequence of round cavities. An unpublished fibula from the Orthi Petra necropolis of Eleutherna is an extraordinarily well-preserved example: its rectangular cavity on the upper side of the central bone inlaid segment

841 Blinkenberg 1931, 86–88 nos. 103a–b pl. 8; Sapouna Sakellarakis 1978, 116 f. pl. 49 no. 1581.
842 Dunbabin 1962, 439–442 nos. A 239–A 264 pl. 187.
843 Dunbabin 1962, pl. 187, no. A 241.
844 Kilian 1975, 101–103 pl. 43, nos. 1250–1252; pl. 44, nos. 1266–1267. Only the no. 1250 still has a fragment of the central bone piece with a round cavity.
845 Kilian-Dirlmeier 2002, fibulae with elongated catch-plate 29, nos. 362–369. nos. 370 (bone). 371–373 (amber).
846 Droop 1929, 196–202 no. 224, pl. 83, no. i.
847 The fibula was found in the Orthi Petra necropolis and is preserved in the Archaeological Museum in Rethymnon (inv. O 089). I owe this mention to the late Dr. A. Bedini (formerly Soprintendenza Archeologica Roma).

is underlined by a frame. The fibulae from Greece[848] mentioned above mostly belong to the 7th century BC and can be related to the composite fibulae from Italy and especially from Southern Italy[849], where the long catch-plate becomes popular from 750–730 BC onwards after developments in manufacturing techniques. In Southern Italy the composite fibulae have a tapered shape and cone-shaped bone end-pieces are inserted at the sides of the central bone segment. A parallel may be established between the fibulae **cat. 489**–**490** and specimens from Southern Italy, and especially those from Pontecagnano and Pithekoussai in Campania. These last two are the areas in which the highest concentration of this type of fibula is found. The Pontecagnano fibulae are widespread mostly in Early Iron Age (phases IB–II) contexts, and sporadically in ancient Orientalising graves[850]. A close parallel may be drawn with the bronze fibula with a long catch-plate from grave 4898[851] (pl. 20, 1). The majority of composite fibulae with amber inlays are found at Pithekoussai. They belong to an Italian tradition with a long lifespan, present not only in Campania, but also in most of the peninsula. At Pithekoussai, the type, classified as type 172 by F. Lo Schiavo, can be dated between LG I (grave 599[852]) and LG II (graves 653[853] and 422[854]).

In the cemeteries of Verucchio many types and varieties of fibulae with amber inlays appeared in the late 8th century BC. The fibulae at Verucchio make up 30 % of the entire local evidence for amber. They offer the most varied and sophisticated examples in this class of ornaments[855]. The Ephesian pair **cat. 489**–**490** is very close to the type of Verucchio 72, varieties A[856] and B[857]. The Ephesian fibulae are strikingly similar to a pair of fibulae of variety A from the grave Lippi 40/2006[858] (pl. 20, 1). In Verucchio metal remnants are rarely preserved; however, in the fibula from the grave Lippi 127/1972 remains of a short catch-plate have survived[859].

Type 2: Composite fibulae with amber segments (cat. 491–502. 635–646)

pls. 20, 2–5; 53–54; 63

Composite fibulae with amber segments and bone or ivory discs, graded by size and shape, form a large class of amber fibulae. The group includes fibulae coated with amber segments and bone or ivory discs, which can vary in number from three up to eighteen[860]. The bone or ivory discs are extremely thin and placed singularly or in groups between the amber segments. Composite

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848 To the list can be added a fibula of uncertain provenance (Thebes [?]), formerly in the collection Gabriel von Max and now preserved in the Ludwig Maximilian University of Munich: Donder 1994, pl. 7, no. 34.

849 As an example of similarity, we can cite two fibulae from Perachora (Dunbabin 1962, pl. 187, no. A 240) and from the acropolis of Polizzello (province of Caltanissetta) in Sicily (Sole 2005), respectively.

850 The fibulae from Pontecagnano have been classified by d'Agostino – Gastaldi 1988, 56 as type 32B23, corresponding to Lo Schiavo types 172.1 and 172.2 (Lo Schiavo 2010, 390–392). Two fibulae with a long catch-plate: Lo Schiavo 2010, 389 pl. 206, no. 2842; 391 pl. 208, no. 2865. Further still unpublished fibulae are preserved in the Archaeological National Museum of Pontecagnano Faiano: inv. 147207 (Piazza Sabbato necropolis, grave 1319). Unpublished fibulae with very thin inlaid bone with a singular round amber tile and inserted bone nails in the Archaeological National Museum of Pontecagnano Faiano: Piazza Sabbato necropolis, grave 45, inv. 2–3; Piazza Sabbato necropolis, grave 1293, inv. 47028; Contrada Sant'Antonio necropolis, grave 600, inv. 1555. In the grave Casella 4891 the type with the disc-shaped catch-plate is documented: T. Cinquantaquattro in: Ambre 2007, 219 nos. III.215–III.217.

851 Cinquantaquattro 2001, 44. 161 pl. 24, no. 14 (grave Casella 4898).

852 Buchner – Ridgway 1993, 588 f. no. 3 pl. 173; Lo Schiavo 2010 pl. 208, no. 2859.

853 Buchner – Ridgway 1993, 637 no. 11; Lo Schiavo 2010 pl. 208, no. 2861.

854 Buchner – Ridgway 1993, 440 no. 3; Lo Schiavo 2010 pl. 208, no. 2864.

855 Amber fibulae from Verucchio have been classified by A. Boiardi and P. von Eles (Boiardi – von Eles 2003; Boiardi et al. 2006; von Eles 2015).

856 von Eles 2015, 70, type 72 variety A, pl. 121, fibulae no. 1236 (grave Lippi 32/2006). nos. 1237–1239 (grave Lippi 40/2006).

857 von Eles 2015, 70, type 72 variety B, pl. 121, fibulae nos. 1240–1241 (grave Lippi XIV/1970). nos. 1242–1243 (grave Lippi 36/1972).

858 von Eles 2015, 70, type 72 variety C, pl. 121, no. 1238 and type 72 variety A, pl. 121, no. 1239.

859 von Eles 2015, 70 f. pl. 122, no. 1245.

860 Verucchio, grave Lippi XV/1970 (von Eles 2015, 66, type 71 variety A, pl. 112, no. 1159).

fibulae could be of iron or bronze with a short, symmetric, occasionally disc-shaped catch-plate and a long asymmetric catch-plate. Frequently the segments are joined together by a complex system of very small piercings (1 mm diameter) up or around the central bow boring. The final result depends on the structure and decoration and the colour effects created by the combination of bone and amber. Amber segments of a composite fibula can be distinguished from amber beads of necklaces on the basis of several criteria: 1. the shape of an amber segment for a fibula derives from a section of a ring shape characterised by a gradual tapering of its thickness; 2. every segment has a circular or an oval-shaped centre section; 3. the sides are cut to form two flat surfaces; 4. the through-boring is usually larger in fibulae than in beads. 5. the thickness and shape reveal the position of the segments on the bow, because conical-shaped segments are placed laterally and central segments have symmetrical sheer surfaces. The boring of the central segment is exactly in the centre, while the boring of the external segments is slightly off-centre.

Cat. 491 and **494** are similar to each other as regards colour (red amber) and size, very probably forming the central discs of two similar fibulae. They are characterised by a peculiar upper expansion of a typical composite fibula with a markedly angular outline. Fibulae from central Italy have this same shape[861]. The rhomboid-shaped fibulae develop into larger shapes and the segments are enriched by small borings placed around the central one. Proper composite fibulae with amber segments also occur sporadically in Central and Northern Europe, in Slovakia[862], the Czech Republic[863] and Poland[864], and are interpreted as exotic imports from Italy[865]. **Cat. 493**, the biggest one, seems to be worn-out and cannot be related to other segments.

Some segments (**cat. 497**–**500**) could belong to the same fibula. **Cat. 497** and **498**, both in orange amber, whose sides match each other, are two segments of the same amber coating. The two segments match a bone disc, probably placed between them. Also items **cat. 499** and **500** probably belong to the same fibula. The four amber segments and the bone disc were found in the same metrical unit[866]. **Cat. 501**–**502** are the same size and may belong to the same fibula, and their shape indicates that they could have occupied a lateral position. **Cat. 635** and **642** had central positions in two different fibulae. The badly scraped surfaces and slightly tapering thickness of **cat. 641** cast uncertainty over its classification as a fibula amber segment.

These fibulae may belong to the type with a short symmetric or elongated catch-plate with amber segments pierced with one boring and separated by bone discs. This shape appears earlier than types featuring a long catch-plate and includes amber segments with a large central boring and surrounding small blind borings[867]. Unfortunately, the fact that most parts of the fibulae have not survived makes this hypothesis impossible to verify. Moreover, it cannot be excluded that some amber segments originally formed part of composite fibulae with amber inlays of type 1 already described.

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861 Narce, La Petrina A, grave 30 (XXV): Tabolli 2013, 122 no. 27 pl. 32, no. 27; p. 322 type 85g2c fig. 4, 75 for the chronology and the distribution.

862 A fibula with a broken catch-plate and two bone cones without amber covering from Špačince (grave 2) dated to Ha D1 and ones with a long catch-plate, bone cones and remains of amber decoration from Smolenice »Molpír« (Haus 17) dated to Ha C2: Novotná 2001, 67 pl. 17, nos. 156–157.

863 Three broken catch-plates with remains of the bow's tips including bone cone-shaped elements presumably belonging to this type come from Brno, Dobročkovice and Prace: Říhovský 1993, 83 f. pl. 14, nos. 131–133.

864 Gedl 2004, 93 pl. 264, no. 266.

865 Specimens found in Ephesos are different from the fibulae shapes of Northern Italy in the Este and Golasecca cultures, north of the Alps in Austria (Hallstatt) and Slovenia between 7th and 6th cent. BC. See Saldalamacchia (forthcoming).

866 The metrical unit *870232* lay in Naos 1a and was one of the richest contexts in amber finds. The bone disc is excavation inv. ART 870232.180, AMS inv. 15.2.99.

867 The fibulae from the necropolis of Osteria dell'Osa (province of Rome) dated from the second periods of the Latial culture (9th cent. BC) onwards are among the earliest specimens: Bietti Sestieri 1992, 370–372, type 39.

The rare items documented in Greece refer typologically to the fibulae with a carved central bone element suitable for amber inlays and cone-shaped end-pieces[868]. Composite fibulae with amber segments pierced with one boring, and ivory or bone discs with a short catch-plate are relatively well documented in Italy in several Early Iron Age contexts, especially in Emilia-Romagna. Regarding the size and shape, the segments from Ephesos are comparable to fibulae from Emilia-Romagna[869] and Bologna[870]. Some specimens are documented at Verucchio in the type 71 varieties called A[871] and B[872], which began in the local phase II and developed in the following phases. Other parallels can be found in Etruria, especially at Veii[873], Cerveteri[874], Tarquinia[875] and Vulci[876], then in Ager Faliscus[877] and Latium vetus[878]. Furthermore, the fibulae of this type were very common between 750–650 BC in Campania. A comparison with the earliest fibulae with a short catch-plate and one central boring can be established with some specimens from Pontecagnano[879], Sala Consilina[880] and two other sites in Campania[881] and Calabria[882].

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868 Bone discs belonging to bronze fibulae have been found in Pherai (Kilian 1975, pl. 23, nos. 1250. 1252) and Kato Phana at Chios (Lamb 1934/1935, 154 f.).

869 Crespellano, Calcara podere Riolo (province of Bologna): Dore – Marchesi 2010, 153 no. 246. Brescello (province of Reggio Emilia): Damiani et al. 1992, pl. 57, nos. 809–814 (3 bone cones, perhaps belonging to this fibula shape). San Giovanni in Galilea (province of Forlì-Cesena): Orsini 2010, 225 pls. 4–5 (amber segments of two fibulae without a catch-plate). Castelfranco Emilia (province of Modena): Orsini 2010, 208 pl. 2 (the catch-plate is not preserved, remains of the amber central segment and thin bone discs survive).

870 Fibulae with a short catch-plate from Bologna: Frey – Gabrovec 1971, 194 nos. 15–16 (grave Benacci 56) pl. 4, nos. 7 and 10 (grave Benacci 888); pl. 6, no. 11 (grave Melenzani 7, three borings and smaller surrounding piercings on the amber coating); Dore 2010, 94 no. 12 (grave Melanzani 64, 750–720 BC). Müller-Karpe 1959, pl. 69 A, no. 2 (grave San Vitale 735); pl. 69 C (unnumbered grave); pl. 70 M (grave San Vitale 612). Grave Malvasia Tortorelli 2: Marchesi 2011, pl. 17, no. 46 (only amber segments). Similar fibulae from the Benacci Caprara cemetery: Tovoli 1989, 267 f., type 102 variety A (small size) and variety A (large size).

871 von Eles 2015, 66, type 71 variety A. To the variety A belong the following fibulae: von Eles 2015, pl. 111, nos. 1155–1158 (grave Le Pegge 5/1970); pl. 112, no. 1159 (grave Lippi XV/1970); nos. 1160–1162 (grave Lippi 46/1972); nos. 1163–1165 (grave Lippi 111/1972); no. 1166 (grave Lippi 120/1972); no. 1167 (grave Lippi 121/1972); no. 1168 (grave Lippi 13/2005, R 7); no. 1169 (no context).

872 von Eles 2015, 67, type 71 variety B. The following fibulae belong to the variety B: von Eles 2015, pl. 112, no. 1170 (grave Moroni 19/1969); nos. 1171–1172 (grave Lippi 111/1972).

873 The fibulae with a short or disc-shaped catch-plate from Veii, identified by Close-Brooks 1965, 63 fig. 5 types 4 and 30, have been attributed to phases Veii IIB2–IIC (Guidi 1993, 52, type 110).

874 Pohl 1972, 221 fig. 87, nos. 9–10 (grave Sorbo 6); Pohl 1972, 223 pl. 203, nos. 2–3 (grave Sorbo 93); Pohl 1972, 253 fig. 251, nos. 3–3bis (grave Sorbo 340).

875 Hencken 1968, 76 fig. 62c (grave Selciatello Sopra 150, phase Villanovan IB).

876 Moretti Sgubini 2001, III.B.2.19, fibula with a long catch-plate (grave Marrucatello G, late 8th–early 7th cent. BC).

877 Narce: Tabolli 2013, 121 f. nos. 21–22 (La Petrina A, grave 30/XXV).

878 Fibulae with a long catch-plate from the cemetery of Osteria dell'Osa: Bietti Sestieri 1992, pl. 3 c, 35–36 nos. 12 and 17, nos. 24–25 (group A grave 116, phase IV A1); Bietti Sestieri 1992, pl. 3 c, 9 no. 26 (grave 178/F3).

879 The fibulae of this shape from Pontecagnano have been classified by d'Agostino – Gastaldi 1988, 54 as type 32C7 and dated in the local phases Ib and II. Fibulae with amber segments and a short catch-plate: T. Cinquantaquattro in: Ambre 2007, 219 nos. III.215–III.217 (grave 4891); Lo Schiavo 2010, 281 pl. 137, nos. 1687–1688; Cinquantaquattro 2001, pl. 23, nos. 19–20 (grave Casella 4894). Fibula with amber segments and a disc-shaped catch-plate: Cinquantaquattro 2001, 44. 161 pl. 24, no. 12 (grave Casella 4898). Three unpublished fibulae with amber segments, decorated with engravings, in one case with the preserved long catch-plate, have been found in the cemetery of Piazza Sabbato, grave 45, dated to 700–650 BC (Archaeological National Museum of Pontecagnano Faiano, inv. 15–21. 13861–13862).

880 Sala Consilina: Lo Schiavo 2010, 281 f. pl. 137, nos. 1695 (grave E14). 1704 (grave E2) and 1708 (grave Sant'Antonio 119)

881 San Marzano sul Sarno, grave 18: d'Agostino 1970, 616 pl. 18, nos. 1–2. Fibulae with alternating amber segments and bone discs, fastened laterally with two bone cones have been found at Longola di Poggiomarino in graves of the Early Iron Age–Early Orientalising period: C. Cicirelli in: Ambre 2007, 216 f. nos. III.200, dated to the Early Orientalising period.

882 Janchina: Orsi 1926, 267 fig. 188; Sundwall 1943, 198 no. G Iαb7 fig. 319; Lo Schiavo 2010 pl. 183, no. 2469; Canale: Sundwall 1943, 198 no. G Iαb8; Lo Schiavo 2010 pl. 183, no. 2467.

Type 3: Fibulae with an amber bead on the bow (cat. 503–523. 647–652)
pls. 54–57. 63–64

This group stands out because of the unique, large amber coating, which varies in shape and section. The shape and size are strictly connected to the morphological characteristics of the raw amber lump and the manufacturing practices adapted to it. Every bead was shaped with a flatter surface coming into contact with the tissues and an opposite convex side facing outwards. However, the final overall shape is regular, symmetrical, and for some types has a contour similar to the leech-shaped fibula.

The craftsman needed to secure the amber decoration with ›fastening applications‹. The application of external fastenings might consist of structural modifications of the arch, such as a flattened or swollen, progressively tapering short section, or bronze spirals[883]. Often the amber bead is cut laterally to fit with further elements which are rarely preserved, such as cone-shaped amber or bone/ivory end-pieces, placed next to the spiral and the catch-plate. The bow is slightly thickened just above the amber bead to avoid slippage and fractures of the amber decoration.

Generally, the diameter of the central boring of the amber bead is larger than necessary, if compared to the size of the bow's rod. This made it easier to insert and curve the bow, which was covered with wooden fibres and glue. Usually it has a thickness of 1.5–2.5 mm, so the central boring of the amber coating can be estimated at 3.5–6 mm. In this research this criterium has been followed, namely, to distinguish between amber beads or pendants related to necklaces and amber beads originally belonging to fibulae.

The specimens from the Artemision whose characteristics are coherent with those of the fibulae, such as the shape and central boring diameter of more than 3.5 mm, are **cat. 510**–**511**, **514**–**516**, **520**, **523**, **647**, **649**–**650**, and these may fall into the group of amber fibulae. They are characterised by oval and elongated shapes and oval sections: the longest margins are straight, parallel and rounded, while the shortest margins are truncated, presumably for the insertion of amber or bone/ivory segments. The beads **cat. 512**, **517**–**518** and **650** have a big central hole, but are too fragmentary to allow a clear classification.

The specimens **cat. 503**–**508**, **517** and **519**, in orange and yellow amber, are triangular and show rounded edges. At the Artemision, almost all the ambers have rounded edges, which is mostly due to the action of polishing or groundwater. The size of the central diameter boring measuring between 3 and 3.5 mm is at the limit of the range identified as characteristic for fibulae. **Cat. 508** and **519** are probably broken and do not preserve the original shape. **Cat. 504**–**507** and **509** have two flattened surfaces, different from the shape of amber beads meant for fibulae. **Cat. 509** and **513** have been intentionally cut to obtain a rectangular profile and a section with rounded and polished corners. **Cat. 509** preserves a circular concavity on one side to fit with neighbouring beads. Particularly noteworthy are small and irregular line engravings on the surface. The triangular or rectangular shapes may be related to square beads (see chap. 2.2, beads type 7). **Cat. 651** shows a larger rounded part and a smaller part on the top, both broken on one side, similar to pendants in the form of a bulla, which are always smaller than **cat. 651**. The section is flat and convex and its profile, showing parallel sides, has no comparable exemplars. The sequence of linear engravings may be interpreted as a residual result of the working technique – it seems to be an unfinished product, comparable to raw amber (see below, chap. 2.8).

The coatings of three fibulae from Ephesos have three borings (**cat. 521**–**523**), and one (**cat. 652**) shows four borings. Amber coatings of fibulae can have multiple lengthwise perforations, and frequently have three borings, a larger central one for insertion on the bow, and two smaller parallel borings. They could be meant to fit the central bow and thinner bronze rods or might be

[883] Some specimens are known from Bologna, graves Benacci Caprara 59 (Tovoli 1989, pl. 91, no. 14 with amber bead) and Benacci 888 (Frey – Gabrovec 1971, pl. 4, nos. 1 and 4, with an amber bead and with segments, respectively).

meant to be filled with an internal solution such as wood fibres and special glues[884]. The perforations served a double purpose, as they kept the bow coating in place and increased the chromatic effects created by the amber's natural transparency.

Cat. 521 is an oval-shaped amber bead with three parallel borings running lengthwise, where the larger bore-hole in the centre still shows remains of the bronze bow. **Cat. 522** and **523** are almost rectangular shaped and the latter still shows part of a second smaller parallel boring next to the fracture. It might be suggested that it was the central of three piercings. **Cat. 652** is an elongated amber bead pierced lengthwise with four parallel borings, of which three smaller ones are set above and one larger one below. In the lower boring meant for the bow, remains of the bronze bow were detected, but have not survived[885].

The very same **cat. 521** fibula with three borings is comparable to type 76[886], variety A[887] of the fibulae from Verucchio. Several fibulae from Verucchio show many varieties of amber coatings on the bow, mostly with a central bead flanked by surviving lateral amber segments. Truncated ends of amber beads, like, for example, **cat. 515** and **521**, are indicative of the fact that the coating of the two fibulae was completed by amber segments or cone-shaped end-pieces made of bone or ivory.

A setting for cone-shaped bone inserts distinguishes several fibulae with an oval-shaped amber bead from the sanctuary of Hera at Perachora. These were found associated with Proto-Corinthian pottery in the lowest stratum of that deposit, which, according to T. J. Dunbabin, may belong to the late 8th century BC[888]. Fibulae of this type ended with the cone-shaped bone elements. Other fibulae with inlays have been found in the sanctuary of Artemis Orthia at Sparta[889], where spectacle fibulae, of the type documented by one specimen in the Artemision at Ephesos, were recovered in the deposit of the Geometric period[890]. This is a remarkable parallel for the fibulae from Ephesos, the earliest of which date to the late 7th century BC[891]. Further bronze fibulae with remains of cone-shaped end-pieces have been found in the sanctuary of Athena at Ialysos on Rhodes[892].

Fibulae characterised by cone-shaped end-pieces made of bone and a long catch-plate belong to types of amber fibulae very common in Southern Italy between the second half of the 8th and the 7th century BC especially in Campania from several cemeteries at Capua[893], Nola[894], San Marzano sul Sarno[895], Suessula[896], Calatia[897], Pontecagnano[898],

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884 Results of analyses carried out on cone-shaped end-pieces of amber fibulae from Pithekoussai indicated that the rod was coated with the shaft of a chicken's feather: Buchner – Ridgway1993, 381 n. 3.

885 Hogarth 1908, 214, no. XIVII.10: »lentoid bead, red; L. 030, broken at ends: pierced with four longitudinal bores, in one of which a piece of flat bronze wire still remains«.

886 von Eles 2015, type 76. 76–81 pl. 160–173, nos. 1419–1635.

887 von Eles 2015, 77, no. 1448 (grave Lippi 13/1972).

888 Dunbabin 1962, 439 f. pls. 187. 194, nos. A239–A244, are fibulae with a long catch-plate and bone cone-shaped end-pieces described as »leech shaped fibula« (type A) or with a trapezoidal bow (type B) with amber, and ivory segments inlaid with amber. Some specimens come from the Argive Heraion (Dunbabin 1962, 439).

889 Dawkins 1929, 224 f. pl. 82, nos. a. b. e. f.

890 Sparta: Dawkins 1929, 224 pl. 82, nos. d. h. m. s; Ephesos: Klebinder-Gauß 2007, 237 no. 217 pls. 16. 107.

891 Droop 1929, 198: »None of the examples was found outside the limits marked by the presence of Proto-Corinthian pottery.«

892 Blinkenberg 1931, pl. 8, no.103; Sapouna Sakellarakis 1978, pl. 48, nos. 1571. 1573–1574.

893 Capua, grave 363: Lo Schiavo 2010, pl. 199, no. 2736; grave 920: Lo Schiavo 2010, pl. 185, no. 2491; grave 953: Lo Schiavo 2010, 385, pl. 202 no. 2789.

894 Nola, grave Torricelle 112, dated to the late 8th–early 7th cent. BC: F. Grasso in: Ambre 2007, 190 no. III.153; grave 308 dated to the late 8th cent. BC: F. Grasso in: Ambre 2007, 194 no. III.160.

895 San Marzano sul Sarno, grave 190: Lo Schiavo 2010, pl. 183 no. 2471.

896 Suessula, Spinelli collection: Lo Schiavo 2010, 359, pl. 183 no. 2475.

897 Calatia, south-western necropolis, grave 270 dated to 625–600 BC: Saldalamacchia 2016a, pl. 35, no. 111; grave 120: Saldalamacchia 2016a, pl. 35, no. 108; grave 270 dated to 625–600 BC (unpublished, Archaeological Museum of Calatia at Maddaloni, inv. 311184. 311190. 226942. 226944).

898 Cinquantaquattro 2001, 44. 161 pl. 24, no. 13 (grave Casella 4898). Pontecagnano, western necropolis of Piazza

Arenosola[899], Sala Consilina[900] and elsewhere in Magna Graecia[901]. A large number of their amber components are pierced several times, often three times, like **cat. 521**–**523**. Examples of fibulae with the central amber bead with multiple perforations come from Cumae[902], Torre Annunziata[903], Capua[904] and Santa Maria delle Galazze[905] in Campania and Alianello[906], Chiaromonte[907], Serra di Vaglio[908] and Armento[909] in Basilicata. A few specimens are recorded from Calabria and Sicily[910]. In some fibulae from the necropolis of Calatia in northern Campania, the amber beads have a ribbed decoration on the upper side[911].

Bronze and iron fibulae with a bow covered by an amber bead are also distributed in the Picenian culture, in the Italian regions overlooking the Adriatic; they appear during the Picenian phase I at the end of the 9th century BC and are broadly documented in the 8th century BC (Picenian phase II)[912]. Among fibulae from Picenum, the fibulae from Ephesos are comparable with some bronze fibulae with a short catch-plate and oval-shaped amber from Ascoli Piceno and Fermo[913]. Among the several fibulae from the Balkans dated from the 8th to the end of the 6th century BC, fibulae similar in shape and size have been found in Nin and Prozor[914].

Sabbato, grave 45 dated between 700–650 BC (unpublished, in the Museo Archeologico Nazionale di Pontecagnano Faiano, inv. 5–8).

899 Arenosola, grave 5, 1950: Lo Schiavo 2010, pl. 202, no. 2807.

900 Sala Consilina, grave A 87: Lo Schiavo 2010, pl. 200, no. 2753; grave A 278: Lo Schiavo 2010, pl. 201, no. 2781; grave A 109: Lo Schiavo 2010, 366, pl. 189, no. 2570.

901 For a typology of fibulae from Southern Italy and Sicily: Lo Schiavo 2010, 279–285 type 130 (I Fe 2a–early I Fe 2B); 358–360 type 168 (between I Fe 2A and 2B and until early I Fe 2 B); 360–371 type 169 (phase I Fe 2 B and has a long production during the 8th cent. BC); 371–387 type 170, 388–390 type 171; 390 f. type 172.1; 391 f. type 172.2; 392 f. type 173. Guzzo 1982, 57–59 suggested comparisons among fibulae from Campania, Calabria and Sicily.

902 Cumae: Lo Schiavo 2010, pl. 198, no. 2729.

903 Fibulae with several piercings formerly in the Temple collection and now in the British Museum, have been recovered at Torre Annunziata: Strong 1966, 47 pl. 2, no. 10.

904 Capua, grave 511: Lo Schiavo 2010, pl. 198, no. 2732.

905 Lo Schiavo 2010, 367 pls. 189–190, nos. 2578–2579 (grave A); 377 pl. 196, no. 2689 (grave 29); 378 pl. 196, no. 2702 (grave 38); 383 pl. 201, nos. 2779–2780 (graves 159 and 104); 383 no. 2784 (grave 104).

906 Alianello, grave 309: A. Bottini in: Ambre 2007, 234.

907 Chiaromonte: S. Bianco in: Ambre 2007, 239 f. nos. III.253 (grave 152, late 7th cent. BC); III.256 (grave 91, early 6th cent. BC). Six bronze fibulae are part of a rich jewellery set of amber ornaments, found in grave 325 and dated to the late 8th–early 7th cent. BC: M. Tagliente in: Magie 2005, fig. at p. 76; Bianco – Preite 2014, 420; Bianco 2020, 111 f. figs. 17–20.

908 Serra di Vaglio: Lo Schiavo 2010, 367 pl. 190, no. 2580.

909 Three amber beads, one with three borings and two with ten borings, said to be from Armento, are preserved in the British Museum, inv. 1856.12–26.1476: Strong 1966, 59 pl. 13, nos. 29a–c.

910 In Calabria, at Francavilla Marittima: Lo Schiavo 2010, 367 f. pl. 190, no. 2589. The votive deposit of the sanctuary explored in the ancient Temesa in modern-day Amantea (province of Cosenza) also yielded 15 bronze fibulae. Two have several thin amber segments and another has a central amber bead with three borings and bone cones: La Torre 2000, 646 pl. 2 a. Further fibulae have been found in eastern Sicily, in the province of Siracusa at Lentini in the grave Sant'Eligio 18, early phase I Fe 2B (Lo Schiavo 2010, 368 pl. 191, no. 2598) and at Villasmundo (Lo Schiavo 2010, 368 pl. 191, no. 2599).

911 Fourteen fibulae with a long catch-plate and ribbed amber bead have been found in the rich female grave 201 of the southwestern necropolis of Calatia, dated to 750–700 BC: M. R. Borriello in: Ambre 2007, 198–200 nos. III.164–III.166. For further similar fibulae from Calatia: Laforgia 2003, pl. 144, nos. 139–142 (grave 284); Saldalamacchia 2016a; Saldalamacchia 2016b. Two ribbed beads for fibulae have been found at Ithaca (Heurtley – Robertson 1948, 117 pl. 48, nos. D3–D4).

912 A fibula with a short catch-plate and amber bead on the bow from grave 18 at Matelica is considered the earliest and dated to the Picenian phase I (900–800 BC: Potere 2008, 59 no. 4).

913 Some unpublished examples are preserved in the Archaeological Museum in Ascoli Piceno, inv. 6212. 20053. K 1132. K 1147. Other comparable specimens have been found at Fermo and are preserved in the Archaeological National Museum in Ancona, inv. 19940. 20032. 20033. Bronze fibulae with a short catch-plate coated by a parabolically shaped bead are peculiar to the Picenian culture.

914 For Nin: Glogović 2003, pl. 37, no. 272 (grave 45); pl. 37, no. 263 (grave 88); pl. 37, no. 273 (grave 32). For Prozor, see a fibula preserved in the Naturhistorisches Museum in Vienna (inv. A.30.2.4–19790).

2.5.3 Conclusions

To summarise, all amber fibulae from Ephesos consist exclusively of the organic parts, and are made of amber and bone. Among the amber beads from fibulae belonging to type 1 and on the basis of **cat. 521**–**522**, it is assumed that the metal parts were made of bronze. The pair of fibulae (**cat. 489**–**490**) of type 3 from the Artemision is very similar to composite fibulae with amber inlays from Emilia-Romagna (Verucchio) and Campania (Pontecagnano and Pithekoussai). They undoubtedly recall specimens from other Greek sanctuaries, which are directly comparable to those found in Southern Italy. The amber beads certainly ascribable to fibulae are quite small, have a length not exceeding 4 cm and one boring to fix them on the bow. Their shape, size and perforation mean they are comparable to several examples from Italy, especially from Emilia-Romagna. The specimens with more than one boring are also similar to fibulae common in Southern Italy. Composite fibulae with amber segments of type 2 are completely disassembled and it is possible to identify some amber segments belonging to the same fibula only in one case (**cat. 497**–**500**). There are no significant traces of metals, but a bone disc usually positioned between two amber segments has survived. The segments are characterised by a round shape, small size and one central boring. It is difficult to find pertinent parallels because of their very poor state of preservation, but they appear to be comparable to early shapes of fibulae with a short catch-plate. As very fine and prestigious weaving implements commissioned by high-ranking people, amber fibulae were used to fix and adorn ceremonial and funeral costumes. Consequently, they were also suitable as votive offerings for female deities. This use is well documented in Greece in the sanctuaries of female divinities like Athena at Ialysos on Rhodes or Hera at Perachora. The fibulae were probably related to the offering of perishable and organic items such as precious fabrics and clothing accessories which have not survived. In the iconographic evidence, fibulae and pinheads have been used with a wide range of garments such as the peplos, chiton, himation and chlamys in the Greek sphere[915].

It may be argued that the origin of the fashion for coated fibulae travelled along the same channels as luxury goods, which in turn benefitted from the movement of people across the Mediterranean and was likely to increase with the establishment of Greek foundations in Italy.

The fibulae could be interpreted both as imports or as local products, the result of the circulation of common models. Indeed, one can assume that single craftsmen from major amber-working centres such as Verucchio may have played an important role in the production and the circulation of these luxurious items, if they were able to reach the distant sanctuary of Artemis at Ephesos or to inspire local imitations. Raw materials and unfinished products of ivory and amber (**cat. 535** and **651**) point to the presence of a carving workshop in the sanctuary.

Nunzia Laura Saldalamacchia

2.6 INLAYS (CAT. 524–533. 653–655)

2.6.1 Introduction

Inlays are carvings destined to be visible only on one side, having a well-polished outer surface, usually rounded, while the opposite side is usually rough and flattened. Once they were carved into a certain shape, the inlays were applied to a base provided with matching blind cavities, where the inlays could be fixed in various ways, depending on the materials composing the base. Inlays have a long history: the remains of one of the earliest items of ivory furniture known, a gilded chair dated to the early 2nd millennium BC from Acemhöyük in Anatolia, date back to the Middle Bronze Age. It also includes four sphinxes, whose eyes were originally inlaid with discs,

[915] See the review in Brøns 2014; Brøns 2017.

now lost, which are thought to have been made of faience[916]. In the Late Bronze Age in the Near East, the custom of decorating wooden furniture with ivory inlays was developed further[917]. One of the earliest archaeologically attested ivory beds was found in Syria at Ras Shamra, the ancient Ugarit, and it is dated to the 13th century BC[918].

After the appearance of early furniture of the Late Bronze Age, several Iron Age sites in the Near East yielded thrones and beds with ivory inlays, which are mentioned in the annals of Assyrian kings as booty or tribute. A beautiful set of Phoenician carved ivories, belonging to the late 9th/early 8th century BC, included decorated pieces of luxury furniture, which were discovered in a building »Bâtiment aux ivoires« of the palace at Arslan Tash, the ancient Hadatu, in Northern Syria[919]. These and other finds from Near Eastern sites show that from the first half of the 8th century BC, skilled workers used gold leaf, paint, coloured pastes and especially glass inlays on Phoenician ivories to increase the polychromy of the carved artefacts[920].

During the Orientalising period, Near Eastern items spread into the Mediterranean Far West. This meant that the custom of polychromy also reached Central Italy. A critical context is the Bernardini tomb at Praeneste, closed in the second quarter of the 7th century BC and full of imports from several areas. Among the Bernardini ivories, F. Canciani was able to distinguish stylistically different types. On the one hand, there were ivories bearing glass inlays, which were assigned to Syrian-Phoenician carvers. On the other hand were ivories with amber inlays showing a Phoenician influence. Unfortunately, the Bernardini ivories are no longer part of the objects they originally decorated. The wooden items are not identified with any certainty[921]. Baltic amber as a raw material was relatively uncommon in the Near East but by contrast, was largely available in Central Italy: here Near Eastern carvers and their (local) apprentices used and appreciated amber to increase the polychromy of ivories and bone artefacts. Amber also acquires a special meaning for modern scholars, because it allows them to assign such artefacts to the local activity of skilled workers and not to consider them as imported items.

In the course of the 8th to 7th centuries BC, amber inlays were mostly used in Central Italy to enrich not just ivory and wooden artefacts, but sometimes also luxury objects meant for various purposes, such as polymateric sceptres[922], bronze fibulae[923], metal swords[924], gold jewels[925] and single items such as bronze and iron axes, coated with ivory, and encrusted with amber[926], and an ivory musical horn[927].

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916 Simpson 2013 suggested the reconstruction of the ivory chair from Acemhöyük.

917 Gruber 2004 collected and analysed Near Eastern ivory inlays.

918 For the ivories of Ras-Shamra see Gachet-Bizollon 2007, 135–146. 275–281 and Baughan 2013, 211 f. fig. 142. Beds with ivory inlays are mentioned in the inventory of the properties of Ahatmilkou, daughter of the king of Soumour, as reported by Gubel 2009, 223 with previous literature.

919 On the ivories from Arslan Tash see Fontan 2014 and more extensively Fontan – Affanni 2018.

920 For a general view see Lightfoot 1991, 68; for single sites see Aruz – de Lapérouse 2014, 150 (Nimrud) and Fontan 2014, 156 (Arslan Tash).

921 The carved ivories from the Bernardini tomb have been critically reviewed by F. Canciani in: Canciani – von Hase 1979, 7 f. 65 nos. 108–110 (with glass inlays). 68 no.120 (with amber inlay).

922 From Veii, grave Casale del Fosso 1036, mid 8th cent. BC: L. Drago in: Arancio – Massimi 2012, 91 no. IV.1 (with notice of another specimen from the grave Casale del Fosso 800). From Caere, tomb San Paolo I, 2nd quarter of the 7th cent. BC: Rizzo 2015, 39. 177 no. I.244.

923 Nine bronze fibulae with amber inlays have been found at Falerii Veteres in the grave Montarano NNE 2 (late 8th cent. BC): G. Ligabue in: Arancio – Massimi 2012, 67 no. II.13.

924 Amber pommel on a silver sword from the Bernardini tomb at Praeneste, closed in the 2nd quarter of the 7th cent. BC: F. Canciani in: Canciani – von Hase 1979, 9. 44 no. 39; R. Zaccagnini in: Arancio – Massimi 2012, 81 no. II.31 with other literature. An iron sword from Veii with amber inlays is mentioned, but it is now lost (Naso 2006b, 362 f.).

925 See, for instance, the gold pectorals from female burials in Etruria and Latium, recently discussed by Ambrosini 2015, 57–64 no. 14 (early 7th cent. BC).

926 From Chiusi, grave Rione Carducci, early 7th cent. BC: Minetti 2004, 110 no. 27.2.

927 The elephant tusk worked as a musical horn shows amber triangular inlays and was found at Praeneste in the Barberini tomb, closed in the 2nd quarter of the 7th cent. BC: R. Zaccagnini in: Arancio – Massimi 2012, 83 f. no. II.32.

The workshops at Verucchio play a very special role in the use of amber during the 8th to 7th centuries BC: here, amber inlays were applied to bronze and iron items, meant for both male and female use, such as horse bits, swords, knives, girdles, pectorals, bronze and clay vases[928]. The extensive range of commodities produced here characterises Verucchio as one of the finest amber-working sites, if not the finest, not in Italy alone, but in the whole of the Mediterranean until the 650s BC[929]. In the Adriatic area after the decline of Verucchio, the central amber-working district shifted to Picenum, an area corresponding to the southern part of modern-day Marche; significantly, 6th-century BC amber inlays are not so widely attested as before in Italy and are confined to very select items, particularly in the Marche, as shown by two bone statuettes and a recently found ivory box, both from Belmonte Piceno, and probably by a couple of female sandals from Numana[930].

It is generally acknowledged that amber, ivory and bone inlays are documented earlier in Italy than in the Aegean and that these elements originally belonged to wood furniture whose shapes are clearly identifiable only in a handful of cases. In the Italian peninsula amber, ivory and bone inlays have been recovered in northern Etruria, in tombs dated to the 7th century BC at Quinto Fiorentino[931] and Chiusi[932], and to the early 6th century BC at Cortona[933], Castelnuovo Berardenga[934], in the Giglio wreck[935] and in unknown sites[936]. Triangular ivory and amber inlays related to boxes or furniture have recently been identified at Caere in a princely tomb dated to the first half of the 7th century BC, probably to 675–650 BC[937]. A workshop was identified at Poggio Civitate, which was active in the second half of 7th century BC and specialised in carving bone and ivory. Its remains also included unfinished finds, which have been partially published[938]. In Latium vetus, amber inlays are reported from tomb VI at Satricum, dated to 650–640 BC[939], and probably in

928 Boiardi et al. 2006 give an overview of the extensive use of amber to decorate a range of objects, such as the clay kantharoi from the graves Lippi 30/1972 and Moroni 1969/A (Boiardi et al. 2006, fig. 4).

929 For a general view of Verucchio see von Eles – Pacciarelli 2018. The literature of amber finds, and amber working in Verucchio is impressive: the main phases are described in Verucchio 1994; Boiardi et al. 2006; von Eles et al. 2009; Bentini et al. 2020.

930 Graves of Belmonte Piceno yielded two female bone statuettes which originally had the faces inserted as amber inlays (grave 83) and recently an astonishing ivory box with figured amber inlays (grave 1/2018), both examined by Weidig 2021. Bone plates with amber inlays are reported for the female polymateric sandals found in the grave »della Regina« at Numana, dated to 520–500 BC: M. Landolfi in: Piceni 2001, 359 no. 131.

931 The tholos tomb Montagnola, built in the mid 7th cent. BC (3rd quarter [?]) and probably still used until the early 6th cent. BC yielded ivory sherds with amber inlays, presented in Caputo 1989/1990, 49–55 and Mastrocinque 1991b; other bibliography of the tomb and the funerary interments is in Esposito et al. 2015 and Maggiani 2020.

932 Two bone eyes with amber inlays have been found in the chamber tomb of Poggio alla Sala, 630–620 BC: Minetti 2004, 161 no. 36.17; 392–394 for the chronology.

933 The Tomb Melone del Sodo I, dated to the late 7th–early 6th cent. BC (Bruschetti 1992; Zamarchi Grassi 2005) also yielded a beautiful ivory handle with amber inlays in the shape of a palmette with volutes, assigned to the lid of a pyxis (A. M. Esposito in: Arezzo 1984, 122 f. no. 70; A. M. Esposito in: Saarbrücken 1986, 79 and 232 no. 1; Bruschetti 1992, 182).

934 The tomb B del Poggione, closed in the early 6th cent. BC, also yielded many ivory, bone and amber inlays, related to several not clearly identifiable objects: Mangani 1990/1991, 62–65 nos. 226–275 figs. 46–50.

935 For the ivory or bone inlays from the Giglio wreck: Bound 1991a, 236 fig. 87. For amber from the Giglio wreck see below 3.8, Raw and unfinished amber. The wreck also yielded a wooden leg of a kline, decorated with glass and bone discs, which has been tentatively connected to the inlays: Bound 1991a, 235 f. fig. 86; Cristofani 1995, 131–138; Colonna 2006, 658; Baughan 2013, 64.

936 Twenty-five square amber inlays of different sizes belonging to an unknown item from Etruria are preserved in the Metropolitan Museum of Art, inv. 1992.11.48: De Puma 2013, 278 no. 7.62.

937 Rizzo 2015, 26. 68–70 nos. I. 26–I. 33 (ivory); 71 f. no. I. 34 (amber).

938 The carving finds from the workshop at Poggio Civitate have been reviewed by Nielsen 1984a, Nielsen 1984b and Nielsen 1995. For the chronology of the related building see Winter 2019, 82–84.

939 A set of amber inlays comprising round (15 exx.), rectangular (5), triangular (11), trapezoidal (2) and crescent (1) inlays not assigned to any object has been discovered at Satricum in tomb VI: Waarsenburg 1995, 473 nos. 6.73–6.80 pl. 86.

the 6th century BC at the sanctuary near the church of Sant'Omobono in Rome[940]. In the Marche, the unique finds from Belmonte Piceno mentioned earlier are followed by amber, ivory and bone inlays relating to wooden objects at Numana and San Severino Marche dating to the late 6th century BC[941]. In Sicily some graves and the sanctuary of Athena at Syracuse dating to the 7th and 6th centuries BC yielded finds[942]; a very fine inlay of amber and ivory originally belonging to a leg of furniture has been found in the indigenous sanctuary at Polizzello, dated to the mid 6th century BC[943] (pl. 21, 1, 1) The round amber inlays recovered in some Greek graves at Metaponto belong to the first half of the 6th century BC[944].

In modern-day Greece ivory, bone and amber inlays related to wood *klinai* have been found at Athens in the Kerameikos cemetery in four graves, dating from ca. 560 to 540 BC. The shaft grave in Mound G, from around 560 BC, yielded some ivory and amber inlays. However, the most famous kline of the series, accurately discussed by U. Knigge and recently reviewed by E. Baughan, was discovered in shaft grave 3 (HW87) of the South Mound, dated to ca. 540 BC[945]. The elaborate inlay ornament of the kline includes petals, rays of stars, discs and other elements, which form palmettes, volute capitals with amber eyes and other motifs, systematically alternating bone and amber inlays for chromatic effect. Thanks to the conservation of its inlay ornaments, the kline from grave 3 (HW87) constitutes the critical monument for the study of Greek wooden furniture with inlays. The kline belongs to type B, according to the typology established by H. Kyrieleis following earlier classifications, and its inlaid ornamentation has been classified as Eastern Greek work (pl. 21, 1, 2)[946].

Using the *kline* from Athens as the main comparison, U. Fischer was able to suggest a reconstruction as a furniture leg ornament for the amber, bone and ivory inlays which came to light in the Hallstatt D2–D3 (late 6th–early 5th cent. BC) Celtic grave of Grafenbühl at Asperg in the Heuneburg district in the heart of south-western Germany (pl. 21, 1, 3). In the same region, two other graves yielded similar inlays in small quantities (pl. 21, 2)[947]. In the case of the Grafenbühl

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940 The inlays are mentioned and illustrated, but not described (Pisani Sartorio 1977, 56 f. fig. 18; Virgili 1989, 53 f. fig. 28).

941 Both pieces are unpublished: the inlays from the kline of the grave della Regina at Numana are briefly mentioned (Landolfi 1997, 234; M. Landolfi, in Ambre 2007, 172). A single bone or ivory petal from the Picenian settlement of Pitino (commune of San Severino Marche, province of Macerata) is on display in the Museo Archeologico at San Severino Marche, without inv. no. For a preliminary report of the excavation see Lollini 1965.

942 Syracuse, sanctuary of Athena: Orsi 1919, 499 fig. 91; Syracuse, Fusco cemetery: Orsi 1893, grave XXVIII, 456 f. and Verger 2019, 390 and 394 (twice the same grave XXVIII); Syracuse, Giardino Spagna cemetery: Cultrera 1943, grave I, 43 no. 4 (together with red-figured pottery); grave XIX, 58 no. 5 (together with Etruscan bucchero kantharoi of type Rasmussen 3e, 600–550 BC); grave XLVI, 73 no. 5. The inlays from Syracuse are often associated with bronze nails, probably showing a local peculiarity in the ornamentation of the *klinai*, also partly documented at Metaponto (Bottini – Vullo 2019, graves 590 and 595, discussed by Verger 2019, *loc. cit.*).

943 Polizzello, sacello B, mid 6th cent. BC: Perna 2005; Naso 2007, 26–28; Panvini 2008, 212. 218 fig. 2; Palermo 2008, 266 fig. 13; Tanasi 2009, 44 fig. 59; 86 no. 166: Baughan 2013, 61 (dated to the 1st half of the 6th cent. BC).

944 Bottini – Vullo 2019, 69 no. 10 (grave 566, early 6th cent. BC); 99 no. 13 (grave 590); 102 no. 5 (grave 595, both dated to the 1st half of the 6th cent. BC); 156 for the chronology.

945 Knigge 1976, 7. 60–83 *(kline)*; 80 f. (other inlays); 84 f. no. 3 pl. 18 (grave and funerary interments); Kunze-Götte et al. 1999, 6 no. 5 for amber inlays from Shaft Grave 2. Baughan 2013, 60–64 reviews the remains of inlays on *klinai* from the Kerameikos graves.

946 For *klinai* types A and B see Kyrieleis 1969 and Baughan 2013, 15 with additional literature. In the 19th cent. O. Rayet presumed an Eastern Greek role in the *klinai* production, which was then analysed by W. K. Pritchett in the 20th cent. (Pritchett 1956, 227–230). Later beds with bronze linings in Greek tombs and sanctuaries have been mentioned by Touloumtzidou 2017, 214 f.

947 The inlays from the Grafenbühl, near Asperg, were discussed and assigned to the leg of a kline by Fischer in 1990. However, they were later considered to belong to a throne by Jung 2007, with a few convincing hypotheses, as noted by E. Baughan (Baughan 2013, 64). Other amber inlays from Celtic graves in the Heuneburg district, like those from Hundersingen and Ludwigsburg, are discussed in Zürn 1970, 14 f. fig. 6, 1–7 (Hundersingen: three rectangular panels, an eye and three petals) and 6, 8–9 (Ludwigsburg: two petals). Although their shapes fit well in the repertoire of inlaid furniture, they are too scarce to identify the objects to which they belonged.

grave, earlier inlaid objects have also been recovered: in particular, two sphinxes made of ivory and deer antler, respectively, the second having a human face carved from amber and belonging stylistically to the 600s BC. The two fittings were initially applied to an as yet unidentified wooden item; some gilded bronze rivets, surely not originally part of the original furniture, show that the sphinxes were reused for a new purpose in the Celtic settlement. A passage of the lexicon by Patriarch Photios (ca. AD 810–893) mentions sphinxes with amber eyes applied on *klinai*. It seems to match the findings of the Grafenbühl grave and could indicate the reuse of sphinxes as ornaments on the *kline*[948].

Finally, ivory inlays belonging to Classical and Late Classical *klinai* came to light on the northern coast of the Black Sea, on the Kerch peninsula at Kul'-Oba in a grave belonging to the late 5th to mid-4th century BC, as well as in another burial on the opposite Taman peninsula, and at Olbia Pontica[949].

Wooden *klinai*, thrones, and coffins depicted on Athenian red-figured vases often include double volutes, palmettes, rosettes and other ornaments painted in dark colours, which can all be interpreted as reproducing polymateric inlays, including amber[950].

These finds on the northern coast of the Black Sea are closely connected to the Greek foundations in the region. The colonists originally came from Ionia and particularly from Miletos: the search for ivory inlays on wooden furniture in Ionia can identify only scanty finds. Examples for Ionia are found in the Artemision at Ephesos[951], in the »Löwengrab« at Miletos, around 550 BC (pl. 21, 3)[952] and in a sanctuary at Mykale[953]. Furthermore, ivory inlays have been found in Mound II at Gordion in Phrygia, dated to ca. 600 BC, and have been assigned by the excavators to a wooden sarcophagus[954]. Some amber inlays have been found in the harbour sanctuary at Chios[955] and in the sanctuary of Apollo at Eretria[956]; in continental Greece, some finds in Thessaly from the sanctuary of Athena Itonia at Philia deserve to be mentioned[957]. Seven ivory inlays forming straight and rounded petals have been found at Metaponto in Basilicata, in the grave 610[958].

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948 Literary sources are collected by Mastrocinque 1991b and also discussed by Naso 2007, 21. The scepticism expressed by E. Baughan about the presumed pertinence of the sphinxes to the kline as reuses seems inspired by a purely Greek view. It appears slightly excessive if applied to Central Europe (Baughan 2013, 64). Baughan does not consider either the non-Greek cultural environment of the Heuneburg district or the Celtic tradition of restoring Mediterranean imports, which included changing their original destination.

949 I was not able to find an exhaustive study of the remains of the kline in the literature about the famous grave of Kul'-Oba, as kindly confirmed by D. Zhuravlev (Moscow): Sokolskiy 1971, 89–92; Knigge 1976, 82; Firsov – Zhuravlev 2007, 276–282. Wood *klinai* with inlays have been found in the Taman peninsula (Maximova 1979, 95–98) and at Olbia Pontica (Zhuravlev 2002, 75 no. 288).

950 Naso 2007, 15 (coffins). 17 *(klinai)* and 32 fig. 13 (thrones). For an extensive collection of images of *klinai* on Greek, mostly Athenian, vase paintings see Baughan 2013, 30–33. 44–49 fig. 32 (type A legs). 49–60 figs. 35–36 (type B legs).

951 Hogarth 1908, 192 pl. 35, no. 23 (round); 196 pl. 40, nos. 9–10 (rounded petals or pointed buds); 13 (elongated triangle) and 15–16 (buds), mentioned by Knigge 1976, 70; Naso 2007, 29 and Baughan 2013, 64. The dimensions range from 3.5 cm (no. 16) to 5 cm (no. 13). Pointed buds and elongated triangles, once made up into a lotus star, alternated with one another.

952 Several inlays are reported, and the one reproduced consists of a bone rosette containing a bone disc and an amber eye: Forbeck – Heres 1997, 31 f. fig. 28; Naso 2007, 15 fig. 1. The finds are lost. Other round amber inlays have been found in the bothros of the Aphrodite sanctuary at Zeytintepe, possibly connected to bone and ivory *astragali*, also recovered in that bothros. For the chronology of the bothros, still closed in the 7th cent. BC, see von Graeve 2013, von Graeve 2017 and von Graeve 2019.

953 Lohmann 2012, 103 reported briefly the finds of ivory inlays.

954 Körte – Körte 1904, 110–117; Knigge 1976, 70. One can invoke a modern reworking of the Gordion finds to assess the old interpretations critically, following E. Simpson's similar remarks about some wooden furniture from Mound III of Gordion (Simpson 1996, 188 f. 201).

955 Boardman 1967, 240 nos. 563–566 (circular and triangular).

956 Huber 2003, 83. 54–55 nos. O106–O110 (circular and rectangular).

957 Kilian-Dirlmeier 2002, 74 nos. 1147–1149 pl. 72 (round eyes).

958 Bottini – Vullo 2019, 76 no. 17 figs. 18 and 94 (grave 610, 1st half of the 6th cent. BC).

Unfortunately, the small quantities of inlays yielded by Ionian sites are not enough to identify the objects to which they belonged. It is uncertain whether the amber inlays were meant for *klinai*, thrones or coffins, although a wooden *kline* would likely be in a chamber tomb without beds cut out in the rock, as in the case of the »Löwengrab« at Miletos. The sanctuary of Zeus at Olympia also yielded some amber inlays, but they are related to figured bronzes[959]. The existence of lyres inlaid with ivory and amber is documented in Late Classical Athens, in both literary and epigraphic sources[960].

Finally, an ivory furniture panel was found at Kerkenes Dağ, in the mountains of Central Anatolia. It was carved in relief, showing a frieze of five animals, having gilding and amber insets. It had once belonged to a chair. E. Dusinberre classified it as a Western Anatolian or Lydian work and dated it to 580–570 BC[961]. It must be noted that no stylistic relationship can be established between the amber inlays from the Ionian site and the panel from Kerkenes Dağ, inspired by a Near Eastern style.

2.6.2 Shapes of the inlays

All the inlays from the Artemision (pl. 22, 1) repeat shapes documented by the inlays mentioned above, but the closest comparisons are with the type B furniture leg ornaments from Polizzello, Athens grave 3 (HW87) and the Grafenbühl tomb near Asperg (pl. 21, 1).

Eyes (cat. 524–528. 533) pls. 21, 1; 57

Except for **cat. 524**–**528** and **533** are round inlays, with a diameter ranging from 0.8–1.2 cm. **Cat. 524** is flat on both sides, **cat. 525**–**526**. **528** and **533** show an upper side that is convex, rounded and polished. Such eyes are included in every type of design on wooden furniture inspired by early Greek architecture. For instance, in the *kline* from the Kerameikos grave 3, eyes form part of several compositions, ranging from the volutes of the palmettes and the Ionic-style feet on both legs, to the larger volutes of the capital at the headboard end[962]. **Cat. 528** shows a surviving bone disc inlay like the one mentioned from the so-called Löwengrab at Miletos, which is now lost and was constituted by an amber rosette, a bone disc and an amber eye (pl. 21, 3). **Cat. 533** shows remains of a horizontal blind hole on the lower side, the perforation probably being due to a prior destination, as it was probably first used as a bead. Reuse is quite common for a rare material such as amber was in Ionia, and indicates that carving could have been carried out in the Artemision itself.

The five eyes mentioned above were found scattered around the site. **Cat. 527** does not belong to this series and is slightly larger and thicker than the other pieces. It shows a slight cavity on both faces, each containing the remains of metals. These have been identified by a fluorescence analysis as iron and copper in a ratio of 4 : 1, with traces of silver and lead (see **cat. 527**). It is uncertain to which object **cat. 527** may belong. This object was deposed on the floor in Naos 1a in the »Hortfund«.

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959 See the descriptions in Furtwängler 1890, 208. The generic reference by Strong 1966, 23 to amber finds from the Heraion of Samos (Walter – Vierneisel 1959, 27) probably refers to the amber inlays which, according to D. Ohly, were used for the filling of the eyes in the exceptional ivory statuette of the »Jüngling«. This work is dated to the 2nd half of the 7th cent. BC (Walter 1959; Ohly 1959, 55): but, in my opinion, the eyes were more likely to be made of glass or faience.

960 Aristoph. Eq. 532 quoted by West 1992, 55. Ohly 1959, 55 quoted an inventory of a Parthenon treasure, 398 BC: IG II–III 1388 line 80.

961 Dusinberre 2002.

962 Knigge 1976, fig. 22.

Petals (cat. 529–530) pls. 21, 1; 57

The two pieces have different shapes: **cat. 529** is straight, **cat. 530** is larger and more rounded.

Unfortunately, **cat. 529** is missing its lower end. It is uncertain whether it was a petal, perhaps belonging to a palmette, or a rosette, as a petal. It may have been meant as a bud of a lotus star, in which petals are truncated at the end, and buds are pointed. The last of these possibilities seems more likely because of the small size of the inlay. **Cat. 530** represented a rounded petal and belonged to the base of a palmette or possibly to the top of a volute capital, as documented for the Athenian *kline* (pl. 21, 1, 2).

Rectangular panel (cat. 531) pls. 22, 1, 4; 57

Four rectangular panels, larger but of the same proportions as **cat. 531**, were originally placed in the abacus on the top of each leg in the Kerameikos *kline* and in the Grafenbühl furniture leg (pl. 21, 2. 3).

Astragalus (cat. 532) pl. 57

Ivory, artificial *astragali* with amber inlays will be illustrated only through the new find **cat. 532**. The work belongs to a series of objects primarily documented in the Artemision in the British excavations. D. G. Hogarth called them artificial *astragali* to distinguish them from natural *astragali* (in English, »knucklebones«). A number of natural *astragali* have also been found in the Artemision. The English excavations yielded 99 complete, and 35 partly preserved halves of ivory artificial *astragali*. The different types have been classified by Hogarth. Other pieces have been recovered in the Austrian excavations[963].

Cat. 532 is an artificial bone *astragalus*. It shows a close similarity to some ivory pieces, as well as to some round amber inlays. It bears an incised ornamentation on one face, to distinguish one face from another, according to the use of *astragali* as dice to throw. *Astragali* may have several functions. According to D. G. Hogarth, »… our *astragali* are specimens used for divination in the Artemision, and, in the majority of cases, at any rate, dedicated thereafter to the Goddess«. A. Greaves reviewed the finds of *astragali* in Greek sanctuaries. He explored the possible use of both natural and artificial *astragali* in divination. He focused in particular on the finds from the sanctuary of Apollo at Didyma, the most famous oracle site in Ionia, and on those from the Artemision at Ephesos[964]. Among the *astragali* from Greek sanctuaries, a colossal (27.9 × 39 × 24.5 cm) bronze inscribed knucklebone, weighing 93.07 kg – equivalent to 220 Milesian minas – and dated around the third quarter of the 6th century BC plays a unique role. It was found on the acropolis at Susa in Persia and is now preserved in the Musée du Louvre. It bears an inscription mentioning Apollo and two Milesian offerers. Scholars believe it was once a votive offering in the sanctuary at Didyma. It was then looted by the Persian army in 494 BC during the sacking of Miletos and Didyma, and brought to Susa[965]. *Astragali* can have several meanings as votive offerings to a deity, particularly if the find-spot is not associated with divination. According to their gaming and gambling function, they can express gratitude for successful gambling which

963 Hogarth 1908a, 190–192 pl. 36, 1–40 (artificial *astragali*) and 192 pl. 36, 41–44 (natural *astragali*). The specimens from the Austrian excavations are unpublished. Klebinder-Gauß 2007, 184 f. provided an overview of the finds of *astragali* in the Artemision of Ephesos.

964 The quote is from Hogarth 1908a, 191. The large presence of *astragali* oracles in sanctuaries in Greece and Asia minor is stressed by Greaves 2012, 183–192 and Greaves 2013, 511–513 for the finds from the Artemision. Further bone and ivory *astragali* (see inv. Z.08.477.110) have been found in the *bothros* of the Aphrodite sanctuary at Zeytintepe, still closed in the 7th cent. BC, according to von Graeve 2013, von Graeve 2017 and von Graeve 2019.

965 Paris, Musée du Louvre, inv. Sb 2719. The Greek inscription from Susa has been commented and translated by Eidinow 2013, 54 f.

the oracle had been asked to grant, and they can also become amulets. More recently B. Carè has opened a new perspective regarding metal replicas of *astragali*; by connecting them to a value, rather than a functional use in games and divination, this researcher considers them as substitutes for sacrificed animals[966].

Discs (cat. 653–655) pl. 64

The three discs are classified as inlays because all show a convex upper face and a flat back. They have one horizontal (**cat. 653**), five (**cat. 654**) and three (**cat. 655**) vertical through-borings, respectively, and **cat. 655** has another horizontal through-hole. Both **cat. 654** and **cat. 655** are quite thick, and the holes are large enough to hold pins of various materials (ivory [?], bone [?], wood [?]) connecting each disc to one or more other items, resulting in a composite polymateric object. **Cat. 654** in particular might be the base of a composite object, the central bore-hole being larger than the other four, thus revealing two different functions for the different-sized holes. A similar amber bead with five vertical through-holes has been found in a rich female grave, Preloge 13/117, in Magdalenska Gora. The bead is dated to the Certosa phase (6th–5th cent. BC) and was found with other amber ornaments, also comprising a five-row necklace[967].

2.6.3 Conclusions

The review of the archaeological record shows that amber was a western peculiarity. Also, amber inlays were mostly applied to ivory and bone objects in the Mediterranean, firstly in western areas, and later in the eastern regions.

The amber inlays from the Artemision belong to two different series, one comprising the item **cat. 532** and the other, the remaining specimens. As **cat. 532** is an artificial *astragalus*; it is a special inlay, belonging to a well-documented series of votive offerings from the sanctuary of Artemis at Ephesos, and it was probably meant for several purposes.

As single elements in the Artemision, all the other amber inlays completely conform with the geometrical style of the Eastern Greek furniture tradition, as evidenced by the close comparisons with the type B furniture leg ornaments from Polizzello, Athens and the Grafenbühl tomb near Asperg: the eyes **cat. 524**–**526**, **528** and **533**; petals or buds **cat. 529**–**530**; and rectangular panel **cat. 531** may once have belonged to volutes, palmettes, rosettes or lotus stars (pl. 21, 1). In the pieces of furniture examined, however, amber inlays were less abundant than bone and ivory inlays. U. Knigge clearly stated this in the edition of the most complete *kline* from the Kerameikos grave 3 (HW87). The lack of amber among the ivory inlays from the British excavations in the Artemision also proves the point[968]. A systematic search for ivory and bone inlays has not been carried out among the Artemision finds. A single piece was identified, which very probably belonged to the same ornament as the amber inlays, i.e. a burnt leaf-shaped ivory filler inlay, which was once placed between the two diverging volutes of a capital (pl. 22, 2)[969]. The piece from the Artemision is flat on both sides and was burnished, probably to imitate the dark colour of amber, a substance quite rare in Ionia, and thus substitute amber in the leg of an unidentified object. It is noteworthy that both the described ivory inlay and the amber inlay **cat. 533** come from a secondary deposition in a layer explored in the area east of

966 For metal replicas of *astragali* see the detailed review of Carè 2019, with additional literature for several aspects of the topic. A book on the *astragali* is announced (Carè [forthcoming]).

967 Tecco Hvala 2012, 283 fig. 105 no. 9; 305 for the chronology.

968 The composition of the Kerameikos *kline* is commented by Knigge 1976, 63. For the already mentioned finds from the Artemision see Hogarth 1908a, 192 pl. 35, no. 23; 196 pl. 40, nos. 9–10. 13. 15–16.

969 Excavation inv. ART 940260.1: Naso 2013, 270 fig. 27 (lower row, first on the left). For some comparisons see Knigge 1976, 65 f. fig. 23 (amber inlay); Baughan 2013, 54 figs. 35 c and 36 b (Athenian vase paintings).

the Sekos 2 wall. This layer has been interpreted as filling for the floor level of Limestone Basis B, and dated around 600 BC[970].

Amber inlays were scattered throughout the sanctuary of Artemis, and no particular concentration can be identified. Some have been found in layers also containing precious votive offerings and remains of sacrifices. The amber petal or bud **cat. 529** was found in the area east of Limestone Basis D in an ashy layer with animal bones and votive offerings, also including remains of gold and two electrum coins[971]. The rectangular panel **cat. 531** was found beneath the south-west corner of Croesus' temple in a layer also yielding gold finds, dated to the late 7th to the early 6th century BC[972].

The find-spots and the scarcity of inlays, not even enough to compose a single ornament, would indicate that these are the remains of carving activity, carried out in or in the immediate surroundings of the sanctuary of Artemis, as was common in major Greek sanctuaries. The sanctuaries of Artemis Orthia at Sparta, Apollo at Delos and Hera at Perachora yielded both ivories and bone objects. These consisted mostly of fibulae, with amber inlays and unfinished pieces of amber, ivory and bone proving the existence of local carving workshops[973]. In the Artemision at Ephesos a remarkable number of unpublished pieces, scattered throughout the sanctuary, document every stage of the work in the production chain for both ivory (pl. 23) and bone (pl. 24), from the collecting of natural animal bones to the unfinished pieces left at various work stages, including also test-pieces[974]. These finds are too many and too tiny to be votive offerings or sacrificial residues. They are workshop remains and constitute valuable proof of the existence of a carving workshop for bone and ivory in the sanctuary of Artemis at Ephesos, a hypothesis already reached for gold jewels and bronze ornaments[975]. The rich ivory artefacts gifted as votive offerings in the Artemision show the long tradition of carving activity in the area[976], which can also include inlaid items. Regarding amber, the local carving is documented by several reworked items and by two lumps of raw, only partly worked amber (catalogue **cat. 535** and **641**; see below, chap. 2.8).

Stylistically the amber inlays from the Artemision are rooted in the Eastern Greek traditional ornaments for wooden furniture[977]. They constitute precious proof of the existence of local carving

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970 The two metric units are *940260* for the ivory inlay and *940268* for the amber inlay, respectively, and they have been examined by Kerschner 1997, 104. 181 figs. 3. 10. 11, 224–226 (»Aufschüttung B«: 140–155). In the filling, an electrum coin was also found: Kerschner – Konuk 2020, 93 no. 107.

971 For the fragment of gold sheet see Pülz 2009, 344 no. 631; for the context Kerschner – Konuk 2020, 113. 150 figs. 33. 92, nos. 97–98 for the electrum coins.

972 For the stratigraphy of the area see Weißl 2002, 333 f. fig. 13 and Pülz 2009, 152 plan 1. For the gold finds see Pülz 2009, 293 no. 343 (appliqué). 309 no. 411 (miniaturistic vase). sheets (328 no. 515; 332 no. 544; 343 no. 624) and the refuse from the workshop (354 nos. 699–700).

973 Dunbabin 1962, 528 f. with other literature on the carving activity in the mentioned sanctuaries. In Western Greece the remains of a bone workshop, including several unfinished objects stylistically dated to the 5th cent. BC, have been recovered in the centre of modern-day Taranto (Dell'Aglio – Lippolis 1995, 105; Dell'Aglio 2002, 192 f.; Dell'Aglio – Masiello 2019).

974 The research on unfinished ivory and bone pieces in the Artemision finds is far from systematic, but the related pieces are enough to prove the existence of a locally well-established carving activity.

975 Klebinder-Gauß 2007, 204 f. and Pülz 2009, 23 with literature for the hypothesis of metal workshops in the Artemision. Here I wish to mention the presence, in a layer datable not later than the late 7th cent. BC, identified by means of sherds of fine local painted pottery, of the fragmentary lower part of a coarse ware crucible (excavation no. ART 820175.1), still containing consistent remains of metals, which have been identified by a fluorescence analysis as copper and iron with traces of tin. I would like to thank Prof. Dr. Manfred Schreiner and Dr. Michael Melcher, Institute for Natural Sciences and Technology in the Art at the Academy of Fine Arts, Vienna for the spontaneous collaboration and the execution of the analysis at Selçuk.

976 A complete review of the carving ivories from the Artemision is missing: the pieces found in the British excavations have been edited by C. Smith and D. G. Hogarth (Hogarth 1908a, 155–185. 186–198), and a selection of the later finds has been published in an exhibition catalogue (Seipel 2008, 159–186). The role played by local skilled carvers at Ephesos in the late 7th cent. BC has been stressed by T. Şare (Şare 2010).

977 In the Artemision several bronze nails originally belonging to furniture have been found (Klebinder-Gauß 2007,

activity, whose roots can be traced back to the late 7th to the early 6th century BC. We can therefore ascribe to this period the early phases of amber inlays created for wooden furniture in Ionia, partly filling a chronological gap with the earlier finds from the western Mediterranean[978].

Alessandro Naso

2.7 PINHEADS (CAT. 534. 656–658)

2.7.1 Introduction

P. Jacobstahl once remarked that the Heraion of Argos and the Artemision of Ephesos had yielded the largest ensembles of pins in the Aegean belonging to the Archaic period. In the Argive Heraion, about 2,800 pins were recovered, which is more than all the pins found in Archaic tombs in Greece. The pins found in this sanctuary were mostly made of ivory and bronze, and no pinheads made from amber were recorded[979]. At Ephesos, in addition to pins made from electrum, gold, silver, bronze, ivory and bone (almost 280 specimens in the British excavations and almost 100 metal specimens plus fragments in the Austrian ones) one example of an amber head for a pin was found in the Austrian (**cat. 534**)[980] and three examples in the British excavations (**cat. 656**–**658**).

2.7.2 Typology

Type 1: Pinhead with rosette button-top (cat. 656) pls. 25, 1. 2 a; 64

Globular pinhead with an inserted neck, followed by a circular flattened rosette-shaped button-top. The artefact features a central vertical blind bore-hole.

Type 2: Pinhead with floral button-top (cat. 657) pls. 25, 1. 2 b; 64

Globular pinhead with an inserted neck, followed by a circular floral button-top. Its lower section features a cylindrical ending, defined by a bulge and a vertical blind bore-hole.

Type 3: Pinhead with grooves (cat. 658) pls. 25, 1; 64

Globular pinhead with a grooved surface, followed by an inserted neck and ending with a flattened cylindrical bottom. At its base is a vertical blind bore-hole.

Indeterminable (cat. 534) pl. 57

Globular head, sustained by a carved ring-shaped relief on the bone pin, which is inserted in a through-hole. The fragment is tentatively classified as a pinhead, but the original object it belongs to is not securely identifiable.

191 f.). The destination of different nails, based on their shape, has been established according to the typology suggested for the finds from the Heraion of Samos (Peltz 2011).

978 As noted by Verger 2019, 390.

979 Jacobsthal 1956, 33. 96. Brøns 2017, 427 mentions the pins from the Artemision.

980 The pinheads from the Artemision have been reviewed by G. Klebinder-Gauß, who published the bronze pinheads found in the Austrian excavations (64 specimens and 273 fragments: Klebinder-Gauß 2007, 71–77 nos. 217–304 and 10 white metal specimens: Klebinder-Gauß 2007, 278 nos. D4–D13), and by A. Pülz, who published the gold pinheads from the Artemision (19 specimens: Pülz 2009, 89–93. 221 f. no. 28; 268–272 nos. 235–253).

2.7.3 Conclusions

The three items **cat. 656–658** are classified as pinheads, because the perforations did not penetrate the whole object. The shape resembles ivory pinheads of the same period from the Artemision itself and the Artemis Orthia sanctuary at Sparta[981].

Cat. 656–657 are stored in the British Museum and were defined by the present writer as type 1 and 2. Both have a globular shape, with an inserted neck and a round rosette button-top, and a vertical perforation running about halfway through the body. In form and general appearance, they both resemble the pomegranate pendants of type 5. Both show a bulge and cylindrical finish. A third pinhead (**cat. 658**), defined as type 3, was recorded in the Archaeological Museum of Istanbul: it has a globular shape; its surface is entirely covered by shallow, horizontal grooves; and it ends with a cylindrical bulge and a vertical blind bore-hole running through its base.

Although Hogarth stated that about 20 amber pinheads appeared in three varieties within the Green Schist Basis, only the three described above could be recorded in the British Museum and the Archaeological Museum in Istanbul. Hogarth noted three varieties:

a) Horizontally fluted spheroids with or without finial tuft
b) orange-shape, plain or with horizontal ribbing
c) conical spheroids plain or horizontally ribbed.

Regarding these descriptions, variety a seems most likely to match our type 1, while 2 and variety b probably correspond to our type 3. The three objects were all found without a needle, so that no clear statement can be made regarding the materials, but it seems likely that the needles were made of bone or ivory[982]. In other sites which yielded a significant number of comparable pins for types 1 and 2 made of gold, electrum, silver, ivory and bronze, like Perachora, Sparta[983], Delos, Corinth and Aphaia, no amber pinheads have come to light. Comparable »vase-shaped« amber pinheads have been identified only at Kato Phana on Chios[984].

Caroline Posch

2.8 RAW AMBER AND UNFINISHED PIECES (CAT. 535. 651) PLS. 25, 3; 63

The raw amber lump **cat. 535** from the Artemision was only partially worked; however, its uneven colour was revealed when it was cut, showing large, random yellow patches, so work was suspended, and probably the lump was never used again. It can be considered as a workshop's reject and can be considered as precious as two gold cast residues from the same find-spot[985], as it constitutes valuable evidence of local amber cutting activity. Another unfinished piece is **cat. 651**, whose blind holes and short lines allow us to suppose its function as a test-piece. From this perspective, it also constitutes evidence of local working in the Artemision (pl. 25, 3).

Raw amber nodules are quite rare and, if broken, are not easy for archaeologists to identify. Some finds from Miletos and Chios can be mentioned, and some comparisons from Italian contexts dating from the 9th to the 6th century BC are known. Regarding the Greek world and Ionia, a few amber pieces, apparently without traces of working, have been found in the *bothros* of the Aphrodite sanctuary at Zeytintepe explored at Miletos, sealed as early as the 7th century BC: the small pieces are in a very poor state of conservation, and the identification as raw amber is questionable[986].

981 Hogarth 1908a, 187 pl. 33, nos. 1. 6; Dawkins 1929, pl. 136, 4.
982 Strong 1966, 44.
983 Dawkins 1929, pl. 136, 4.
984 Lamb 1934/1935, 154 f.
985 Pülz 2009, 354 nos. 699–700.
986 The related pieces have the following excavation nos.: Z.09.23.26, Z.09.59.25, Z.09.119.7, Z.09.120.14. Preliminary reports on the bothros are given in von Graeve 2013, von Graeve 2017 and von Graeve 2019.

In the early 20th century K. Kourouniotes mentioned unworked amber lumps at Phanai on Chios, but these are unpublished[987].

In Southern Italy at least two Early Iron Age find-spots should be mentioned. Grave 206 of the Torre Galli cemetery in Calabria, a rich male burial belonging to the first half of the 9th century BC, also yielded a piece of uncut amber, identified by IR (Infrared) analysis as Sicilian amber or simetite[988].

Several pieces of uncut amber have been found in northern Campania in the Early Iron Age and Orientalising settlement of Poggiomarino, in layers dated from the 9th to the early 7th century BC. These lumps and the original shapes of amber beads and fibulae coated with amber slices, dating from the 9th to the early 7th century BC, indicate that amber was carved locally. DRIFT (diffuse reflectance for infrared Fourier spectroscopy) analysis revealed the samples from Poggiomarino were of both Baltic and non-Baltic origin, the latter remaining unspecified[989].

In Central Italy raw amber nodules have been found in at least two graves at Vetulonia in Etruria, dated to the first half of the 8th century BC[990]. The archaic votive deposit explored in Latium vetus at the acropolis of Satricum also includes at least six nodules of raw amber[991].

Two, possibly three, small pieces of uncut amber have been found in the Archaic wreck off Giglio island (Tuscany), trapped in a thick layer of pine pitch. The wreck excavators presumed that originally the vessel carried more amber, but this floated away or was washed away by underwater currents when the ship sank. The cargo of the Giglio-Campese ship consisted of fine wares from several factories in Greece and Etruria; Etruscan and Greek trade amphoras made from various materials containing olive oil, wine, pine pitch and olives; metal ingots of iron, copper and lead; and other wares, which allowed dating of the wreck to around 580–570 BC[992].

Usually, raw amber has been interpreted as evidence of local cutting and working in the area of each find-spot. M. Bound raised another interesting perspective, relating to the finds from the Giglio wreck: the British scholar presumed the amber pieces could be used as currency for trading aboard ship, as for some copper nuggets yielded by the same wreck (*aes rude*)[993]. It is hard to find a comparison for this stimulating hypothesis because the actual archaeological record is mostly based on evidence from contexts of a different nature, such as burials and sanctuaries. It may be difficult to imagine the raw lump (**cat. 535**) from the Artemision being used as currency – after all, this was an expensive, exotic import which had proved disappointingly defective and was consequently rejected.

Both unfinished amber pieces from the Artemision indicate the activity of local carvers. It is well known that major Greek sanctuaries hosted handicraft workshops, meant to satisfy the demand for votive offerings: apart from bone, ivory and amber carvers, bronzesmiths and goldsmiths were also active in the Artemision, as posited by G. Klebinder-Gauß and A. M. Pülz respectively[994].

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987 Kourouniotes 1916, 193. 211; Boardman 1967, 238.

988 Pacciarelli 1999, 188 no. 10 for the funerary interments and G. Guerreschi in: Pacciarelli 1999, 219 for the IR analysis of the amber. As already mentioned, female graves belonging both to baby girls and women in the cemetery of Torre Galli yielded an amber necklace composed of beads and pendants of various shapes (Pacciarelli 1999, 75. 86 f. 140).

989 Cesarano – Bellintani 2012, 165 for a review of amber finds from Poggiomarino, and Bellintani – Angelini 2012 for the results of the DRIFT analysis.

990 Cygielman – Spaziani – Rafanelli 2009, nos. 12–13 (pages unnumbered).

991 Waarsenburg 1995, 430 f. pl. 88. The early votive deposit of the temple of Mater Matuta at Satricum is one of the largest, if not the largest, in Latium vetus, and it was used from the late 9th to the 3rd quarter of the 6th cent. BC (Gnade 2008, 25).

992 For the amber: Bound 1991a, 232 fig. 77; Bound 1991b, 28 fig. 74. For a global interpretation of the Giglio wreck: Cristofani 1996 (Eastern Greek origin); Colonna 2006 (Etruscan origin).

993 Bound 1991a, 232; Bound 1991b, 28.

994 See above, chap. 2.6 for literature about the metalworking in the Artemision at Ephesos.

3 INFRARED SPECTROSCOPY OF AMBER SAMPLES FROM EPHESOS

3.1 INTRODUCTION

The archaeological investigation of the Artemision at Ephesos (present-day Selçuk in Türkiye) dates back to 1864 when J. T. Wood was recruited by the British Museum to excavate the region and he discovered the Artemision site in 1870. D. G. Hogarth continued work on the excavation during 1904–1905 and discovered additional floors of earlier periods of the Artemision temple; in 1908 he published his report[995]. The finds from these excavations are divided between the Archaeological Museum in Istanbul and the British Museum in London. Subsequent excavations by the Austrian Archaeological Institute have unearthed a large number of ambers, which are believed to be votive offerings.

The provenance of amber samples found in archaeological sites in Italy is of interest for understanding the practice of trade and the value of amber in early cultures. The substitution of Baltic amber for Sicilian amber has been documented, along with importation of amber from other countries over the past three centuries. Amber found in Italy has been identified to a number of sources, which include copal (a semi-fossil material), Baltic, local simetite, imitation amber and, in more recent years, red Dominican amber[996]. Two amber samples from tomb 3 of the Eneolithic necropolis at Laterza (province Taranto) were determined to be Sicilian ambers[997], which indicated that local amber was used in early Italian culture before the arrival of Baltic amber from Northern Europe.

In this investigation, samples from Ephesos were studied by FTIR spectroscopy to determine if they were Baltic amber, or of other types.

3.2 METHOD OF ANALYSIS

The amber samples were analysed by Fourier transform infrared (FTIR) spectroscopy using a KBr pellet; 1 mg of amber sample was finely ground with 0.1 gm of dried KBr and pressed into a pellet in vacuum under high pressure. The FTIR instrument used was ThermoNicolet model Nexus 670. The samples were analysed immediately after preparation to minimise uptake of water under ambient conditions.

3.3 PHYSICAL DESCRIPTION OF THE AMBER SAMPLES FROM EPHESOS

A total of 30 samples were received for analysis from Dr. Alessandro Naso[998]. E1–E7, E9–E31 are samples from beads, pendants, inserts or raw material collected from the temple of Artemis in Ephesos. These artefacts are dated to the late 7th century BC, and believed to be used as votive offerings.

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995 Hogarth 1908a.

996 Beck – Hartnett 1993.

997 Beck 1971.

998 The export of amber samples was thankfully permitted through the authorisation by the General Direction of the Antiquities in Ankara and occurred as part of the sample export through the Austrian Archaeological Institute, whom we together with Alessandro Naso sincerely thank.

3.4 RESULTS AND DISCUSSION

FTIR spectroscopy was successfully applied to characterise samples E1–E7, E9–E31. All the samples were organic based and contained several peaks that are commonly found in fossilised resins (hydroxyl, saturated CH stretches and bends, carbonyl group and C–O). The Baltic ambers where identified based on the characteristic pattern in the region of the vibrational stretch of the C–O bond; Baltic ambers show an absorption peak at about 1,160 cm^{-1}, which is preceded by a broad flat shoulder found between 1,175–1,250 cm^{-1} (referred to as the »Baltic shoulder«). This shoulder is not seen in any other type of European fossil resin, and is believed to arise from the presence of succinic esters. Another feature that is also typically observed in Baltic ambers is a small peak at 890 cm^{-1} (molecular vibrations of exocyclic C = CH_2 groups) and points to a labdane skeleton that is expected for Baltic amber. This exocyclic C = CH_2 group is consumed in the conversion of resin to amber, and consequently only detected as a small peak.

The list of amber samples studied by FTIR spectroscopy is tabulated in table 5, which lists the FTIR spectrum number, sample identification, inventory number, type of sample, archaeological location, and type of amber samples as determined by FTIR spectroscopy and comparison to our infrared database.

Table 5 Results of FTIR Spectroscopy of E1–E7, E9–E31. All samples are from Ephesos

Spectra	Sample	Cat.	Inventory #	Description	Provenience
IR8212	E–1	529	ART 860155	Fragment (Inlay)	Baltic Amber
IR8213	E–2	258	ART 860203	Fragment (Bead)	Baltic Amber
IR8221	E–3	531	ART 860217	Fragment (Inlay)	Baltic Amber
IR8215	E–4	526	ART 870081	Fragment (Bead)	Baltic Amber
IR8222	E–5	45	ART 870199	Fragment (Bead)	Baltic Amber
IR8223	E–6	47	ART 870246.2	Fragment (Bead)	Baltic Amber
IR8229	E–7	57	ART 870349	Fragment (Bead)	Baltic Amber
IR8246	E–9	295	ART 870354.4	Fragment (Bead)	Baltic Amber
IR8247	E–10	315	ART 870362	Fragment (Pendant)	Baltic Amber
IR8248	E–11	316	ART 870409	Fragment (Pendant)	Baltic Amber
IR8244	E–12	349	ART 900374.3	Fragment (Pendant)	Baltic Amber
IR8249	E–13	536	ART 900380.3	Fragment (Pendant)	Baltic Amber
IR8250	E–14	537	ART 900380.4	Fragment (Pendant)	Baltic Amber
IR8230	E–15	61	ART 900402.1	Fragment (Bead)	Baltic Amber
IR8251	E–16	299	ART 900402.2	Fragment (Pendant)	Baltic Amber
IR8231	E–17	62	ART 900434	Fragment (Bead)	Baltic Amber
IR8235	E–18	113	ART 900483	Fragment (Bead)	Baltic Amber
IR8252	E–19	292	ART 900486.1	Fragment (Bead)	Baltic Amber
IR8245	E–20	293	ART 900486.2	Fragment (Bead)	Baltic Amber
IR8253	E–21	357	ART 900486.3	Fragment (Spacer)	Baltic Amber
IR8254	E–22	298	ART 901329	Fragment (Pendant)	Baltic Amber
IR8255	E–23	199	ART 910496.2	Fragment (Bead)	Baltic Amber
IR8236	E–24	82	ART 910584	Fragment (Bead)	Baltic Amber

Spectra	Sample	Cat.	Inventory #	Description	Provenience
IR8237	E–25	530	ART 910611	Fragment (Inlay)	Baltic Amber
IR8239	E–26	259	ART 931010.2	Fragment (Bead)	Baltic Amber
IR8240	E–27	63	ART 931289	Fragment (Bead)	Baltic Amber
IR8256	E–28	311	ART 940014	Fragment (Pendant)	Baltic Amber
IR8241	E–29	260	ART 940110	Fragment (Bead)	Baltic Amber
IR8243	E–30	64	ART 940242.4	Fragment (Bead)	Baltic Amber
IR8242	E–31	533	ART 940268	Fragment (Bead)	Baltic Amber

E1–E7. E9–E31 samples

All the samples in this group are fragments from beads, pendants or inserts and clearly Baltic amber based on the presence of the characteristic pattern in the region of 1,175–1,250 cm^{-1} by FTIR spectroscopy (see representative spectrum for sample E1 in diagram 1); the characteristic Baltic shoulder for E1 compares closely to the spectrum b for an authentic Baltic amber.

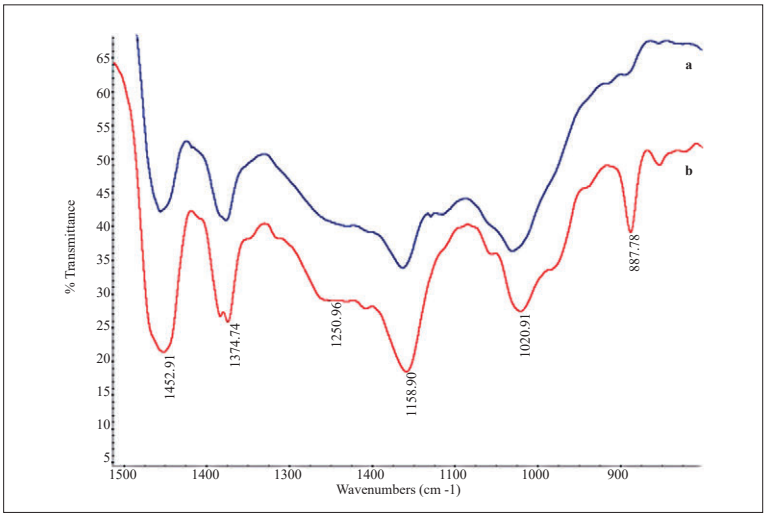


Diagram 1 FTIR spectra of a) E1 amber sample and b) authentic Baltic amber sample (© Vassar College)

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4 ANCIENT NEAR EASTERN AMBER: AN OVERVIEW OF THE CUNEIFORM SOURCES*

4.1 INTRODUCTION

Our present information on the early circulation and use of amber in pre-Classical literate Western Asia has been revolutionised by the discovery, in 2002, of a beautiful amber lion-headed cup with lid in the Royal Tomb (»Königsgruft«) in Mishrife (Syria), ancient Qatna, datable to the beginning of the second half of the 2nd millennium BC (pl. 26, 1)[999]. This 6 cm-long Qatna masterpiece was carved – probably at Qatna itself – from Baltic amber[1000]. This fact is to be considered as a confirmation of the existence of long-distance trade between Northern Europe and the Levant during the Late Bronze age, facilitated by Mycenaean Greece[1001]. In the South, this trade included sea voyages, as shown by the amber beads found in the Uluburun shipwreck, off the coast of Southern Türkiye, which sank at the end of the 14th century BC[1002]. However, mass and infrared spectroscopy dates, where available, have shown that the amber found in the Near East came not only from the Baltic[1003], but also from Mediterranean areas, including Lebanon, and sometimes from much further afield, for instance East Africa, in the case of the copal pendant from Tell Asmar (Ešnunna) in Mesopotamia, datable to ca. 2400 BC[1004].

It is not the aim of this article to give a complete list of the archaeological evidence for Ancient Near Eastern amber, since our main focus is on the cuneiform textual evidence[1005]. Here we wish to provide a very general overview, limiting ourselves to a few remarks.

Amber artefacts from Anatolia predominantly include beads of various shapes and sizes. Though many studies have been published concerning aspects of the foreign relations of Anatolia, to the best of our knowledge a systematic survey of beads and other pieces of amber from Anatolia still remains a desideratum[1006]. On the western Anatolian coast, besides the controversial beads from Troy[1007], some Late Bronze Age amber beads, probably of Baltic origin, have been found in Panaztepe[1008]. They must have arrived in Panaztepe from Greece, similarly to other objects known from central and southern Anatolian sites. Considering inner Anatolia,

* We thank Alessandro Naso for inviting us to participate in this volume. We are also grateful to Benjamin Foster, Gianni Marchesi, Giovanni Mazzini and Wilfred Watson for their useful suggestions.

999 Pfälzner 2011, 146–149. Besides the lion's head with its lid and many beads (see below), also a miniature hand in amber has been found, Pfälzner 2011, 179 f.

1000 Mukherjee et al. 2008.

1001 Pfälzner 2012, 794. For the involvement of the Mycenaeans in the Baltic amber trade see Maran 2013.

1002 Yalçın et al. 2005, 588 f. cat. 94.

1003 On the very probable North European origin of the amber of the two beads from Assur see now Bunnefeld – Martin 2020 and Bunnefeld et al. 2021.

1004 Meyer et al. 1991.

1005 Furthermore, Jörg Adam Becker is currently writing a contribution on this topic, announced in Bunnefeld – Martin 2020, 163 as »Das Gold des Nordens im Alten Orient. Bernsteinfunde des 3. und 2. Jahrtausends v. Chr.«. See now Bunnefeld et al. 2021. For a historical survey of the Mesopotamian amber see Moorey 1999, 79–81 (and also the realistic *caveat* on pp. 78 f., with literature and discussion of two amber statuettes of unknown origin, representing a standing Assyrian king and a standing god in Neo-Assyrian style, whose authenticity is a matter of debate: for the first see Muscarella 2000, 177 f., and below n. 1240). See also Cultraro 2007, 54–56 and the map of the distribution of the Middle Bronze Age finds in Bunnefeld – Martin 2020.

1006 See Pieniążek 2016, 52 f.

1007 See Cultraro 2007, 48 and Pieniążek 2020, 131, with literature.

1008 See Çınardalı-Karaaslan 2012, 72 fig. 5.

the finding of amber beads is reported among the grave goods of the Early Bronze Age royal tombs of Alaca Höyük[1009]. However, subsequent studies mention only frit beads, red agate and red chalcedony beads besides gold and rock crystal beads[1010]. Furthermore, amber from Alaca Höyük is virtually absent from recent publications. Isolated objects were found in Late Bronze Age contexts in another site of Central Anatolia, Alişar Höyük, as well as further east, at Korucutepe and Tille Höyük[1011], and possibly Kültepe[1012]. Only two amber beads were found in Boğazköy-Ḫattuša during the old excavations[1013]; they may have arrived there in the period of the Hittite kingdom. To sum up, the sparse evidence recalled above seems to indicate that amber was not very common in Bronze Age Anatolia. Also, in Mesopotamia and Syria the finds of amber objects are relatively limited[1014] and mainly consist of beads. Complementing the already mentioned historical survey by Roger Moorey[1015], where finds from Ur (Middle Bronze Age), Babylon (Iron Age), Assur (Middle Bronze or Iron Age), Nineveh (Iron Age), Alalakh (Late Bronze Age), Ugarit (Late Bronze Age), Tell Akhziv and other sites in Israel (Late Bronze Age) are reported, here we can quote some new discoveries made in recent years. Amber beads have been found in Late Bronze Age levels at Tell Hariri (Mari)[1016], Tell Atchana (Alalakh)[1017], Tell Afis[1018], and above all, at Mishrifeh (Qatna) itself[1019].

The new extraordinary finds from Qatna can be seen as one of the two main poles of the current dataset concerning Ancient Near Eastern amber in archaeological and textual sources, the other one being the well-known mention of this material at the beginning of the much later biblical book of Ezekiel (beginning of the 6th cent. BC and later reworkings). Describing in Ezechiel 1, 26–27 his vision of the chariot of the Lord at the Chebar canal, in Babylonia, the prophet writes that »Above the expanse over their (= the vehicle's creatures) heads was the semblance of a throne, in appearance like lapis lazuli (*ʾeben sappîr*); and atop the semblance of the throne there was a semblance of a human form. From what appeared as his loins up, I saw a gleam as that of amber (*ḥašmal*) – what looked like a fire encased in a receptacle (*kĕ-marʾē ʾēš bêt lāh sābîb*)«[1020]. Biblical Hebrew *ḥašmal* is a *hapax legomenon* and its interpretation has not been univocal: »amber« is only one of its current translations, the other one being »electron«[1021], and the same applies to its Greek counterpart in the Septuagint, ἤλεκτρον[1022]. As we will see below,

[1009] See Özgüç 1963, 14.
[1010] See, for example, Özgüç – Temizer 1993, especially 624.
[1011] See Kozal 2006, 198.
[1012] See Özgüç 1953, 73 pl. 58, 640, quoted in Pieniążek 2016, 52.
[1013] See Boehmer 1972, 232 pl. 98, nos. 2459–60.
[1014] However, it has been noted that the scarcity of the finds of amber in Near Eastern excavations may be due to the inherent difficulty in recognising it in the field, cf. these remarks in Reade 1987, 33 (quoted by Moorey 1999, 79): »The first time I encountered decayed amber [in Sasanian or Early Islamic graves] in northern Iraq, a light brown flaking powdery substance, I was inclined to suppose that it might be glass: decayed glass of *c.* 1400–1200 BC can look somewhat like this. Fortunately, on that occasion, I had a visitor who was familiar with amber from Scandinavian excavations and was able to identify mine, but I cannot help wondering how often comparable mistakes are made.«
[1015] Moorey 1999, 79 f. See also Todd 1985.
[1016] See Margueron 2014, 130.
[1017] See Pieniążek 2020, 123–125.
[1018] See Mazzoni 2006/2007, 28.
[1019] In addition to the already mentioned lion vessel, 90 beads of various shapes were found, forming the largest known collection of Late Bronze Age amber beads in the Near East, see Roßberger 2015, 75. 104. 137. 141. 172. 176. 214.
[1020] Translation based on Winitzer 2014, 169. Cf. *ḥašmal* in Ez 1, 4 and 8, 2. See also Aster 2014, 12.
[1021] See the survey in Noonan 2019, 106 f., who translates »amber«. One can also note interpretations that over the years have proved to be misleading, such as, e.g., the comparison of *ḥašmal* with the Akkadian name of colour and coloured stone *ḫašmānu*(*m*) and var., cf. the discussion of the Ugaritic attestation in Virolleaud 1940, 259 n. 1 (also Black 2001) and see van Soldt 1991, 344 (»red purple«). In general, see Landsberger 1967, 196 f. n. 2.
[1022] On this Greek term see the discussion in Deroy – Halleux 1974, including its occurrences in Homer.

this also applies to Akkadian *elmēšu*(*m*), from which Hebrew *ḥašmal* was borrowed. In turn, this implies a renewed investigation into the meaning and use of *sud^{r}-aĝ, the Sumerian equivalent of *elmēšu*(*m*). As for Hittite *ḫušt-*, its identification with »amber« still needs conclusive proof[1023].

4.2 THE WRITTEN DOCUMENTATION: ANATOLIA

In 1988, when introducing the written documentation from the Hittite capital Ḫattuša in the debate on ancient terms for »amber«, Anna Maria Polvani cautiously suggested this meaning[1024] for the (then as yet untranslated) Hittite substantive $^{(NA4)}$*ḫušt-*[1025], related to Luwian *ḫuišti-*[1026] and Hurrian *ḫušti*[1027]. The term *ḫušt-*, which is very rarely marked with the semantic classifier for »stone« NA_4, is documented in texts mainly dealing with religious rituals where it is drunk or burnt[1028]. Repeated a few years later[1029], Polvani's hypothesis was based on the general fact that, as later attested for instance by Pliny in his »Naturalis Historia«, amber may be used therapeutically, once powdered and dissolved in potions, and can be burnt, giving off a pleasant smell. The translation »amber« for $^{(NA4)}$*ḫušt-* was soon accepted by Jaan Puhvel[1030], who later, in an in-depth 1999 article, discussed connections with other terms of different languages including Akkadian *elmēšu*(*m*) and Sumerian *sud^{r}-aĝ (on which see below) and suggested an Indo-European etymology, i.e. **Hews-,* »to burn«[1031]. The identification of *ḫušt-* with amber has been considered possible by other scholars[1032]. However, in 2002 Volkert Haas put forward an alternative proposal, suggesting that this term rather refers to a sulphur-like substance because it would have the same magical properties as another material used in purification rites, i.e. *kipriti-*, a loanword in Hurrian from

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[1023] Discussions explicitly focused on the possible words for »amber« in Ancient Near Eastern texts include Todd 1985, Heltzer 1997, Chiodi 1999, Heltzer 1999, Puhvel 1999, Gestoso Singer 2008 and Gestoso Singer 2016.

[1024] Polvani 1988, 18–27 (»ambra?«), with literature.

[1025] See, e.g., Friedrich 1952–1954, 77 f.; Vieyra 1957, 100 (»substance [...] apparemment minérale«; Neu 1968, 150 n. 7 (»mineralische Substanz«); Haas – Wilhelm 1974, 44. 46 f. (»*ḫušt*-Stein«); Beckman 1978, 11 (»perhaps a mineral«); Haas – Thiel 1978, 343 (»mineralische Substanz«); Tischler 1978, 317 (»mineralische Substanz«, with further literature); Lebrun 1979, 159 (»pierre magique«); Laroche 1980, 116 (»nom de minéral«); Melchert 1981, 247 (*ḫust-*); Beckman 1983, 50 f. (»It is difficult to determine a specific meaning for *ḫušt*(*i*)-«); Haas 1984, 455 (»mineralische Substanz«).

[1026] Attested in cuneiform sources, see Laroche 1959, 47; Starke 1985, 222. 224. 229 f. 245, and HW² (2013) 783 (note that this term does not occur in the EMIRGAZI hieroglyphic inscription, see Michel 2015 with Hawkins 2019 and Cammarosano 2019, 323; cf. Hawkins – Morpurgo Davies 1993, 55 and Hawkins 1995, 88. 90. 94 f.).

[1027] See Puhvel 1999, 350 = Puhvel 2002, 263; Rieken 1999, 79 f., and Richter 2012, 175. 523 (with reference to *ḫuṯtr*, *ḫwṯtr* of the Ugaritic tablet in the cuneiform alphabetic script KTU 1.66 13, 28, 35, on which see Laroche 1980, 116).

[1028] As already stated by Beckman 1983, 50: »it must be kept in mind that this determinative also occurs with materials which we would not consider to be either stones or minerals«. On the use of NA_4 as a semantic classifier in cuneiform texts see in general Schuster – Brandis 2008, 8–12. See also the remarks about the use of na_4 with Akkadian *elmēšu*(*m*) below.

[1029] In Polvani 1994, 201 (»ambre?«).

[1030] Puhvel 1991, 411–413 (»Because of the root noun *hust-*, chances are that it is a native Hittite term, with *husti-* a hurrianized stem variant. If the meaning is indeed ›amber‹, it joins such various amber terms as Gk. *ἤλεκτρον* (cf. the solar epithet *ἠλέκτρων*), Lith. *giñtaras*, Balto-Finnic *helmi*, Germano-Latin *glēsum* (OE *glǣr*), and Latin *sūcinum*«). See also Richter 2012, 175 (»Lehnwort im Hurritischen«) and HW² (2013) 782 (»hurr. Lw.?«).

[1031] Puhvel 1999 (etymology on 350), and see also Puhvel 2003, 54.

[1032] See Hawkins 1995, 95 (»amber(?)«); de Martino 1998, 148 and n. 59–60 (»sostanza *ḫušti-*«, among the »resine fossili«); Tischler 2001, 57 (»mineralische Substanz, ›Bernstein‹?«); Morris 2001b, 432 (»amber appears in Hittite texts (as *hust-*) in connection with cleansing rituals«); Beal 2002, 207 (»amber(?)«); del Monte 2003, 173. 209 (»ambra$^{(?)}$«); Torri 2003, 109 (»la pietra *ḫušti* può essere interpretata come ›ambra‹«); Cultraro 2007, 55 (»Nei testi ittiti di contenuto rituale e religioso sono elencate numerose pietre dai poteri magici e l'ambra sembra essere ricordata in relazione a pratiche di purificazione«); Fuscagni 2007, 208 n. 78 (»ambra«); CHD Š/3 (2013) 432 (»amber(?)«); Mouton 2013, 61 (»ambre«); Schwemer 2013, 151 (»*ḫušt*-stone (amber?)«).

Akkadian *kibrītu*, »Sulphur«[1033]. A further alternative translation of *ḫušt-* refers to »something belonging to honey, wax of honey«[1034]. Actually, many scholars still prefer not to translate $^{(NA4)}$*ḫušt-*[1035]. It is to be stressed that there is no other candidate to denote »amber« in cuneiform texts from Anatolia.

A renewed investigation of the contexts where $^{(NA4)}$*ḫušt-* occurs, allows us to get a better idea of what this term denoted, even if a definitive conclusion on its exact meaning still remains impossible. All in all, as we will see, it turns out that »amber«, given its physical nature and its symbolic meaning, is the most probable translation of $^{(NA4)}$*ḫušt-*. However, one can suggest that, more specifically, the $^{(NA4)}$*ḫušt-* substance used in Hittite ritual practices for its therapeutic, purifying, and protective properties is probably better identified with the semi-fossilised product termed »copal« or »young amber« rather than with »(mature) amber«. Copal, which can barely be distinguished from mature amber with the naked eye[1036], seems in fact more suited to the uses described in Hittite texts because of its physical characteristics (mainly its solubility and melting point). In particular, when burnt, amber produces a steady flame, emitting black smoke, accompanied by a slightly acrid, burnt-resinous odour, whereas, when burnt, copal produces a sputtering flame with whitish smoke, giving off a mostly sweet, lemony odour with a resinous tinge. Furthermore, young amber was easily available in the geographical areas where the traditions with the rituals discussed below belong, i.e. the Syro-Levantine regions, where cedar and tamarisk were also endemic[1037]. In the present chapter, $^{(NA4)}$*ḫušt-* will be translated as »amber[?]« to assist the reader, keeping in mind all the remarks made earlier.

Considering the absence of references to *ḫušt-* in lexical lists, it is convenient to discuss firstly the texts which provide contextual information in some way akin to that in the learned texts where taxonomic principles are at work.

The almost complete Middle Hittite »Ritual of Ammiḫatna from Kizzuwatna against impurity« (CTH 471) documents *ḫušt-* as an ingredient in a therapeutic potion (*waššši-*) that the »ritual patron« (EN.SÍSKUR), i.e. the patient – a person in a consecrated state who has been given adulterated food or polluted substances to eat or drink – must take twice a day for seven days[1038]. The term *ḫušt-* is mentioned in two different paragraphs of this text which originated in Kizzuwatna, i.e. classical Cilicia. First it appears in the initial list of the *materia medica* prepared by the ritual practitioner (^{LÚ}AZU): »a little bit of lapis lazuli, a little bit of carnelian, a little bit of alabaster, and a little bit of amber[?], 14 *kappi*-vessels (with) germinated barley, a little bit of tamarisk (and) a little bit of cedar«[1039]. Then *ḫušt-* occurs in the description of the preparation of the mixture to

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[1033] See Haas 2002, 508–509 (»Die beiden Materien *kibriti-* [›Sulfur‹] und *ḫust-* sind ihrer Verwendungsweise zufolge von nahezu identischer magischer Qualität, so daß auch *hust-* als eine dem Schwefel gleichwertige Substanz gelten kann«) and Haas 2003, 237–240, who ranges $^{(NA4)}$*ḫušt-* among the »schwefelhaltigen Substanzen«, followed by Wegner 2004, 103 (»eine schwefelhaltige Substanz«); Strauß 2006, 110 f. 373 (»*ḫušt-*Schwefel«, »Schwefel«, with further discussion); Nowicki 2009, 184 (»hust sulphur«); Beckman 2014, 68 (»probably [some compound of] sulfur«); Marcuson 2016, 336 (»a purificatory substance called *ḫušt-*, perhaps sulfur«); and Beckman 2019, 41 (»sulfur[?]«).

[1034] See Ünal 1996, 50 and Ünal 2007, 242; also Çilingir Cesur 2020, 62 and n. 39 (»tütsü veya temizlik maddesi olarak kullanılan bir mineral veya madde, balmumu, kükürt, sülfür«).

[1035] See, e.g., Trémouille 2000, 164 and n. 205 (»una [pietra] *ḫušt-*«, quoting Polvani's suggestion); Collins 2003, 176 («a *ḫūšti-*stone«); Miller 2004, 293. 326 (»mineral substance«); Collins 2005, 31 (»*ḫušti-*stone«); Hoffner – Melchert 2008, 272 (»*ḫūšti-*material«); Görke 2010, 281–285 (»*ḫušt-*Materie«, with discussion); Feder 2011, 22. 30 f. (»*ḫušti* stone«); Hundley 2013, 319 (»*ḫusti-*mineral substance«, quoting Haas's interpretation); Dijkstra 2015, 65 (»*ḫušti* material«); Mouton 2016, 149. 291. 313 (»*hušta-* désigne une substance brûlée en fumigation«, quoting Polvani's suggestion); Soysal 2016, 422 (»mineral«); Görke – Kozal 2018, 1669 (»*ḫušti-*material«); Albanese 2020, 28 n. 16; 34 n. 50 (»pietra *ḫušti*«).

[1036] Copal is the intermediate state between modern resin and mature amber and may have an age of tens of thousands of years or more, see Poinar 1992, 6–8. 63 f. 235; Langenheim 2003; Solórzano-Kraemer et al. 2020.

[1037] See in general Poinar – Milki 2001, 76–84.

[1038] See Trémouille 2004, 291 f. and Strauß 2006, 140–144.

[1039] KBo V 2, I:37–39: ^{37}^{NA4}ZA.GÌN *te-pu* ^{NA4}GUG *te-pu* ^{NA4}AŠ.NU$_{11}$.GAL *te-pu* ^{38}*ḫu-u-uš-ti-iš-ša te-pu* 14 *kap-pí-iš* ŠE

be drunk by the patient before lunch: »The ritual practitioner takes 1 *kappi*-vessel (with) barley; he takes a little bit of lapis lazuli, carnelian (and) alabaster; he takes a little bit of amber[?], cedar, and tamarisk. He crushes them in the mortar and dissolves it in the ›water of purity‹. The patient steps in front of the Sun-god and drinks this medicine on an empty stomach«[1040]. Later, during the evening of that same day, while facing the Moon-god and eating (and thus on a full stomach), the patient has to drink the same potion freshly prepared by the ritual practitioner[1041]. Interestingly, the ingredients mixed together with *ḫušt-* in the »purified water« (*šeḫelliyaš watar*) are minerals, namely »lapis lazuli« (^{NA4}ZA.GÌN), »carnelian« (^{NA4}GUG), »alabaster« (^{NA4}AŠ.NU$_{11}$.GAL), and vegetables, namely »barley« (ŠE), »tamarisk« (^{GIŠ}ŠINIG), »cedar« (^{GIŠ}ERIN). One can note that the ingredients are divided into three groups: the »germinated barley« (ŠE *parā šiyatar*) is distinguished from the materials qualified by »stone«, NA$_4$ (lapis lazuli, carnelian, alabaster), as well as from the materials qualified by »wood, plant«, GIŠ (cedar, tamarisk). It is to be noted that in this text *ḫušt-* is not qualified by NA$_4$. If one compares the two lists of raw materials in the two paragraphs, one notes that this term is recorded together with the stones in the initial list of substances, while it rather occurs together with the plants as an ingredient in the actual recipe. One may assume that the first list depends on the place where *ḫušt-* was stored (together with other (semi-)precious stones and non-perishable substances, in the form of small solid pieces, i.e. pebbles, chunks, grains, slivers), while the sequence of the second list shows the different steps of the inclusion of the various mineral and vegetable ingredients inside the mortar for the preparation of the potion. All this could reflect a rudimentary awareness of the distinction between active ingredients (the stones) and excipients (the vegetables) in a medicine, *ḫušt-* occupying an intermediate position, possibly being used as a binding agent due to its resinous nature.

Another peculiar feature denoting *ḫušt-* is that it can be burnt for fumigation together with other substances. This appears in the passage of a Middle Hittite text preserved in copies of the Imperial period, that is the »Ritual of Ḫantitaššu from Ḫurma« (CTH 395.1.A)[1042], a female practitioner hailing from a city located in or near the north-eastern part of Kizzuwatna. It was performed, as stated in its *incipit*, »if the years of a human being, man or woman, are disturbed«, and addressed to the Sun-god and the GUL-*šeš*, Deities of Fate[1043]. Here *ḫušt-*, without the semantic classifier NA$_4$, »stone«, appears at the beginning of the ritual (§ 4) during the preparation of offerings on the roof of the house aimed to attract the Sun-god so that he helps the patient: »Seven thick loaves of fine wheat are placed on top of the soldiers' breads. Then (there is) one small thick bread for the Deities of Fate: it is placed on top of the soldiers' breads, but separately. In front of the table, a baked clay container is placed on the floor below. Embers are poured into it. Smoking is done with cedar, clarified butter, honey, (and) amber[?]«[1044]. Significant here is the association of

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pa-ra-a ši-ya-an-na-aš ^{39}^{GIŠ}ŠINIG *te-pu* ^{GIŠ}ERIN *te-pu*. See Strauß 2006, 222. 235; Kloekhorst 2008, 754; Mouton 2016, 290 f.

1040 KBo V 2, IV:20–26: ^{20}*nu 1 kap-pí-in* ŠE *da-a-i* ^{NA4}ZA.GÌN ^{NA4}GUG ^{NA4}AŠ.NU$_{11}$.GAL ^{21}*te-pu da-a-i ḫu-u-uš-ti-in* ^{GIŠ}ERIN ^{GIŠ}ŠINIG *te-pu* ^{22}*da-a-i na-at-ša-an A-NA* ^{DUG}*ku-uš-ku-uš-šu-ul-li* ^{23}*kat-ta ku-uš-ku-uš-zi ar-ḫa-ma-at ši-ḫi-il-li-ya-aš* ^{24}*ú-i-te-ni-it tar-na-i na-aš-ta* EN SÍSKUR ^{D}UTU-^{r}*ya*$^{?}$ ^{25}*me-na-aḫ-ḫa-an-da ti-i-e-*^{r}*ez-zi*$^{?}$ *nu* ^{r}*ke-e*$^{?}$ ^{r}*wa-aš-ši*$^{?}$ ^{26}*ta-an-ga-ra-an-za e-ku-zi*. See del Monte 2003, 170. 173; Strauß 2006, 231. 243; Kloekhorst 2008, 982 f.; Görke 2010, 284; Mouton 2016, 312 f.

1041 KBo V 2, IV: 37–42.

1042 On this ritual see the general remarks in Miller 2004, 447–452, with a resumé of the discussions on its cultural origin and rejection of a Hurrian or North Syrian provenance (followed, e.g., by Mouton 2016, 144).

1043 On the GUL-*šeš* deities see Waal 2019.

1044 KBo XI 14, I:15–19: ^{15}7 NINDA.GUR$_4$.RA ZÍZ TUR *nu-kán a-pu-u-uš-ša I-NA* NINDA.ÉRIN^{MEŠ} *da-a-i* ^{16}*nam-ma* 1 NINDA.GUR$_4$.RA TUR ^{D}*Gul-aš-ša-aš nu-kán a-pa-a-aš-ša* ^{17}*I-NA* NINDA.ÉRIN^{MEŠ} *ar-ḫa-ya-an ki-it-ta* ^{GIŠ}BANŠUR-*i-ma pí-ra-an* GAM ^{18}*ták-ni-i* GAL.GIR$_4$ *ki-it-ta nu-uš-ša-an* IZI *šu-uḫ-ḫa-an* ^{19}*nu* ^{GIŠ}ERIN Ì.NUN LÀL *ḫu-u-uš-za* {x} *ša-me-ši-ya-zi*. See A. Chrzanowska (ed.), hethiter.net/: CTH 395.1 (INTR 2016–03–23); Ünal 1996, 18. 28. 50 (also for the conjectural meaning of *ḫu-u-uš-za* as »wax of honey«); de Martino 1998, 148. 152 (»cedro, strutto, miele e ambra(?)«); CHD Š/1 (2002), 123; Görke 2010, 284 and n. 92; Mouton 2013, 61 (»Du bois de cèdre, du beurre, du miel et de l'ambre brûlent en guise de fumigation«); Mouton 2016, 148 f.

ḫušt- and cedar, already seen in the ritual discussed above and recurrent in further texts[1045]. Also, other Hittite texts show that the smell of the fumigated substances was functional, to attract the gods[1046]. Furthermore, such a function is well attested in the Mesopotamian world, where incense is burnt to attract the gods' attention to the sacrifice and to their meals, as shown, for example, and again with the Sun-god, in the »Standard Babylonian Epic of Gilgameš«[1047]. It is noteworthy that *ḫušt-* also appears in a fragment found at Ḫattuša and attributed to the »Hurrian version of the Gilgameš Epic« (CTH 341.II.4), where it occurs before the Hurrian term for »incense« (*aḫr-*) in a context which has been interpreted as referring to ritual fumigation[1048].

A further different use of *ḫušt-* is shown by several other ritual texts. It is defined by the verbal expression (*šer*) (*arḫa*) *waḫnu-*, which has been translated as »to swing«, »to turn (above and away)«, »to make something rotate (above)«, »to wave over«, »to whirl«. As a matter of fact, this rite is performed mainly with animals (different kinds of birds, among them eagles and hawks, and ovines), minerals, and organic substances (including *ḫušt-*). This set of ceremonial actions has been dubbed »Schwenkritus«[1049] and considered to be a purification rite. However, notwithstanding many studies – even including cultural comparisons such as that with the Biblical rite of Leviticus 23, 20[1050] – its precise connotation is still largely elusive. Some scholars think that the animals and minerals used in this rite were supposed to behave as absorbent materials helpful in removing the impurities that afflicted the patient[1051]. More recently it has been argued that »*šer arḫa waḫnu-* is not always intended to draw evil out into the object that is swung«[1052]. Other scholars suggest instead that the practice expressed by (*šer*) (*arḫa*) *waḫnu-* consists in the formation of a kind of magic circle around what must be purified, be it a person, a deity's statue, or a sacred building[1053]. In this type of ritual it is not made explicit whether *ḫušt-* is burned and fumigated or used in its solid state, but many examples show that *šer arḫa waḫnu-* can also be used to spread the substance's influence around a space in the same way as can be achieved with a censer.

As a meaningful example of the (*šer*) (*arḫa*) *waḫnu-* rite with the use of *ḫušt-*, one can mention first of all a fragmentary Middle Hittite »Birth ritual« (CTH 430.2), a composition concerned with post-parturition activities on behalf of a mother and child within the royal family, seemingly performed by a nurse as the chief ritual practitioner. In an initial paragraph (§ 3) of this text one reads: »[…] in [what]ever place I shall bring up [the child], […] the diviner and the augur give. […] amber[?] (s)he swings overhead repeatedly«[1054]. The following paragraphs of the text list other actions devoted to the determination of the fate of the child, along with a mouth-washing ceremony (§ 4), the changing of the mother's clothes (§ 6), the invocation of the Sun-goddess of the Earth (§ 9'), and a scapegoat ritual (§§ 10'–13'). It has been aptly stated

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1045 See de Martino 1998, 142 and, more generally, Görke 2017.

1046 See de Martino 1998, 152, with literature, and de Martino 2007.

1047 See George 2003, 459 (»Having suitably prepared herself, Ninsun goes up on to the roof of her temple, where she strews incense *[surqinnu]* before the sun god to attract his attention«), with reference to Tablet III, 43–45.

1048 According to Beckman 2019, 30 and 23: KUB XLVII 10, 13': […]-˹x˺-*an-ni ḫu-u-uš-ti a-aḫ-ra zu-up-pa*-[...], »burning of incense offerings«. The restoration *ḫuppanni-* has been suggested in Polvani 1988, 18; this passage has been read *ḫup*]*panni husti āḫra zuppa*[*ri*] in Puhvel 1991, 412, »huppanni, h., incense, torch«, and see Haas 2003, 239 n. 230; on Hurrian $^{(giš)}$*zup*(*p*)*ari* see the discussion in Richter 2012, 416, reporting interpretations such as »eine Zedernart« or »Fackel«. However, according to Bachvarova 2016, 72 n. 76, this fragment does not belong to the Hurrian »Gilgameš«.

1049 Discussions in Melchert 1981, 247 f.; Haas 2003, 75 f. 477–479; Strauß 2006, 72–76; Görke 2010, 281–285; Marcuson 2016, 331–337.

1050 Hoffner 1998, 87 f.; cf. Trémouille 1999, 284 f. and Trémouille 2000, 164.

1051 Haas 2003, 75; Strauß 2006, 72; Görke 2010, 281.

1052 Marcuson 2016, 336.

1053 Trémouille 1999, 285; Trémouille 2000, 164; Beal 2002, 207.

1054 KBo XVII 61 obv. 7–9: ^{7}[... *k*]*u-wa-pí an-da-an ša-al-la-nu-uš-ki-mi* ^{8}[…]-x ^{LÚ}AZU *Ù* ^{LÚ}MUŠEN.DÙ *pí-an-zi* ^{9}[...] *ḫu-u-uš-ta-an še-e-er ar-ḫa wa-aḫ-nu-uš-ki-iz-zi*. See Beckman 1983, 42 f. 50 f. F. Fuscagni (ed.), <hethiter.net/: CTH 430.2 (INTR 2013–01–02)> (01. 02. 2023), with further literature.

that »the emphasis in the preserved portions of the text is upon purification from both physical uncleanness and evil influences«[1055].

Another interesting case occurs in the long purification ritual called *itkalzi* (CTH 777). Some of its tablets come from Ḫattuša, whilst others have been found at Ortaköy, ancient Šapinuwa, one of the major Hittite religious and administrative centres, situated east of Ḫattuša. They belong to two different series: an original, lengthy Hurrian version comprising 22 tablets (performed for Tutḫaliya II and Tadu-Ḫepa in order to assure the well-being of the royal couple and the fertility of the queen), and a shorter Hurro-Hittite recension comprising only 10 tablets (performed for either a male or a female anonymous ritual patron)[1056]. In a passage in the tenth and last tablet of the shorter series, the ritual practitioner (^{LÚ}AZU) waves an eagle, a falcon, a *ḫapupi-* bird, amber[?], and a kid around the ritual patron[1057]. Then, the text continues distinguishing between a male or a female ritual patron: the former shoots an arrow with a bow, whereas the latter only puts her hand on the bow and the ritual practitioner shoots the arrow. Lastly, the ^{LÚ}AZU pours the water of purity onto the ritual patron and recites in Hurrian. It is interesting to note that this text has strong resemblances with the above-mentioned »Ritual of Ammiḫatna« (CTH 471), where *ḫušt-* appears as an ingredient in a therapeutic potion, so that scholars assume that both of these texts derive from a common ritual tradition of Hurrian/North Syrian origin[1058].

One of the Hittite texts with Hurrian recitations containing the swinging rite with the purificatory substance *ḫušt-*, is CTH 490, a ritual performed by an expert called Aštu, the Hurrian Old Woman, and devoted to the treatment of a bewitched patient[1059].

A similar use of the (*šer*) (*arḫa*) *waḫnu-* rite, but with recitations in Akkadian, not Hurrian, occurs in the second »babilili-Ritual« (CTH 718.2), one of the longer rituals found in Ḫattuša, known in two different and largely parallel redactions of the Imperial period. The main deity to whom this ritual is addressed is the Ištar-type goddess Pirinkir[1060]. It has been argued that CTH 718 is aimed at »the purification of a member of the royal family from the pollution of sin«[1061]. In this Hittite composition the incantations spoken by the priest are in Akkadian (actually Babylonian, *nu* ^{LÚ}*šankunis* ^{URU}*babilili kiššan memai*). In the initial part of CTH 718.2 one reads: »Furthermore, the priest […] and them [at] the river […] goes [… drum(?)] and *harps* […]. And these things […]. But when they(?) […], the priest [sets(?) …] down, [and he waves over the ritual patron] with amber[?]. The priest [speaks as follows] in Akkadian: ›Purify [and cleanse] the man! Purify his sins! Establish release (for him) [today]! I [have sent] the fish to [the sea] and the bird to the sky!‹«[1062]. It has been convincingly suggested that the Akkadian incantation was addressed to the purifying substance itself, that is *ḫušt-* (invoked because of its cathartic power), and that the function of the fish and bird should be that of carrying off

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[1055] Beckman 1983, 46.

[1056] For the transmission of the *itkalzi* ritual, its original recension and the derived »fill in the blanks« editions see de Martino 2016 and de Martino 2017.

[1057] KUB XXIX 8+ obv. II 6–8, *nam-ma* EN.SÍSKUR *IŠ-TU* TI$_8^{MUŠEN}$ ˹SUR$_{14}$.DÙ˺.[A^{MUŠEN}] *ḫa-pu-pí-it ḫu-uš-ti-it-ta* MÁŠ.TUR ˹x˺[...] *wa-aḫ-nu-an-zi*. See Haas 1984, 90; Haas 2003, 478 with n. 721. 723; Strauß 2006, 149–188; Mouton 2016, 320–333; Görke – Kozal 2018, 1669. For a detailed overview of the rites described in this tablet see de Martino 2017, 24 f.

[1058] See Taracha 2011, 281, and de Martino 2017, 24 f.

[1059] Unfortunately, so far, only the beginning of this ritual and parts of its third and fourth tablets have been recovered, see Görke 2010.

[1060] On this deity (and also Ištar and DINGIR GE$_6$) see Miller 2004, 363–396 and Beckman 2019, 3 f.

[1061] Beckman 2019, 5.

[1062] KUB XXXIX 78 I:9'–25': *[13']nam-ma* ^{LÚ}SANGA-*níš* […] *[14']na-at-kán* ID-[*i* …] *[15']i-ya-at-ta-ri* [.. ^{GIŠ}*ar-kam-mi*[?]] *[16']gal-gal-tu-u-ri-ya* […] *[17']nu a-pé-e-ya* […] *[18']ma-aḫ-ḫa-an-ma-at-ká*[*n* …] *[19']*˹^{LÚ}SANGA-*níš kat-ta d*[*a*[?]-*a-i*[?] *nu-kán A-NA* EN.SISKUR] *[20']ḫu-u-uš-ta-az* [*še-er ar-ḫa wa-aḫ-nu-uz-zi*] *[21']*˹^{LÚ}˺SANGA-*níš* ^{URU}*Bá-bi-l*[*i-li ki-iš-ša-an me-ma-i*] *[22']A-MI-LA Ú-UL-LI-IL$_5$* [*Ú-UB-BI-IB*] *[23']ḪI-IṬ-ṬÁ-TI-ŠU Ú-UL-L*[*I-IL$_5$ I-NA* UD.KAM *AN-NI-I*] *[24']DUḪ-TA ŠU-UK-NA* KU$_6$ *I-NA* [A.AB.BA] *[25']*MUŠEN *I-NA ŠA-ME-E Ú-U*[*K-KI-IŠ*], see Beckman 2019, 32. 41. 68 f.; also Miller 2004, 423–437; Strauß 2006, 195; and Schwemer 2013, 151 f.

the sins[1063]. Also, in other Babylonian incantations (including one dated to the first half of the 2nd mill. BC) fish and birds are used as vehicles to carry off and thus counteract evil, be it illness or witchcraft[1064].

The specific association of the goddess Ištar with this kind of rite in which *ḫušt-* was used is further shown by passages of the »Festival for the warlike Ištar/Šawuška from Šamuḫa« (CTH 712). Some tablets of this festival come from Ḫattuša, whilst recently, another has been found at Kayalıpınar, ancient Šamuḫa, north-east of the Hittite capital. In this text the object of the purification is not a common ritual patron, but the king himself: »The king comes out of the house of cultic ablution, with a chariot he goes to the temple of Šawuška of the Field. As soon as the king […] reaches the temple, the male diviners swing him with a *ḪURRI*-bird and with [am]ber[?]«[1065]. In the manuscript from Ḫattuša the »ritual practitioner« (LÚAZU) replaces the »male diviners« (LÚ.MEŠḪAL)[1066]. One can observe that, as in other cases, the ritual ablution of the king precedes the *waḫnu-* ritual. Furthermore, it seems meaningful that *ḫušt-* is used to purify him when he arrives at a temple[1067].

Also the queen was purified with this substance in another (*šer*) (*arḫa*) *waḫnu-* rite, performed during the »Winter festival for the goddess Ištar of Ninive« (CTH 715)[1068]. In this text one reads: »The queen arrives at the temple. The queen stands at the gate of the temple. The ritual practitioner swings amber[?] over her at the gate«[1069]. The text continues reporting that once the queen entered the temple to make offerings to Ištar, the ritual practitioner put some »cedar« (GIŠERIN) in her hands.

A further ritual documenting the importance of a goddess in the (*šer*) (*arḫa*) *waḫnu-* rite is the text designated »Ritual for establishing a new temple for the Deity of the Night« (CTH 481.A). The goddess name is spelled DINGIR GE_6 and her nature exhibits similarities with the above-mentioned Ištar-type goddess, Pirinkir. The purpose of this ritual is to evoke the deity to her original temple, calling her to »split« her divinity and to come also into a newly constructed temple, into which she is then evoked and celebrated in similar fashion[1070]. From § 27 of the almost fully preserved first tablet of this composition we learn that *ḫušt-* could also be swung over the statue of a deity: »They give to the deity to eat. Then they carry the *uliḫi-*[1071] into the house of the ritual patron with (the accompaniment of) a *harp* (and) a drum. And beneath her they scatter sourdough bread, crumbled cheese, and fruits. Then they swing amber[?] over the deity. Then they seat the deity in the storehouse«[1072]. It is interesting to note

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[1063] See Schwemer 2013, 151 f. and Beckman 2019, 68. On the importance of the incantations in order to understand better the (*šer*) (*arḫa*) *waḫnu-* rituals see the remarks in Marcuson 2016, 337.

[1064] See Wagensonner 2020a, with further references; also Ambos 2012, 99.

[1065] KpT 1.74 II:11'–12': *9'*LUGAL-*uš-*˹*kán*˺ ˹*IŠ*˺-*TU* É.DU$_{10}$.ÚS.SA *ú-iz-*˹*zi*˺ *ta-aš IŠ-TU* GIŠGIGIR *10'*˹*I-NA*˺ ˹É˺ *d IŠTAR* LÍL *pa-iz-zi ma-a-a*[*n* L]UGAL-*uš 11'* x-x(-)x-x ˹É˺.DINGIR-*LIM a-ri ta-an* LÚ.˹MEŠ˺ḪAL *IŠ-TU* MUŠEN *ḪUR-RI 12'* [NA$_4$?]*ḫu-uš*]-˹*ta-az*˺-*zi-ia wa-aḫ-nu-an-zi*, see Soysal 2019, 172 f. 178 (»*ḫušta*-Mineral«).

[1066] KUB LV 17:18'–21' (CTH 712.H): LUGAL-*uš-kán IŠ-TU* É.DU$_{10}$.ÚS.SA ˹*ú*˺-[*iz-zi* ...?] / ˹*ŠA*˺ *d IŠTAR* LÍL URU*Ša-mu*[1](PU)-*ḫa PA-N*[*I* …] / *[t]i-ia-*˹*zi*˺ *na-an* LÚ˹AZU˺ <*IŠ-TU*> ˹MUŠEN˺ [*ḪUR-RI*] / [*ḫu-u*]*š-*˹*ta*˺-*az-zi-ia wa-*˹*aḫ-nu*˺-[*zi*].

[1067] Cf. the similar passage in the fragment IBoT III 52, 1'–5' (CTH 670): [LUGAL-*uš IŠ-TU* É.D]U$_{10}$.ÚS.SA *ú-iz-z*[*i*] / [*n*]*a*[?]-˹*aš*˺ ˹*É*˺*ḫa*˺-*le-en-tu-u-aš ti-ia-z*[*i*] / [*n*]*a*[?]-*an* LÚAZU *IŠ-TU* MUŠEN *ḪUR-RI* / [*ḫ*]*u-uš-ti-it ú-e-te-na-az-zi-*˹*ia*˺ / [*wa-a*]*ḫ-nu-zi*.

[1068] Overviews in Wegner 2004, 15 and Görke – Mouton 2014, 120. 142.

[1069] KUB X 63 obv. 9–11: *9'*[*nu* MUNUS.LUGAL] *I-NA* É.DINGIR*LIM ú-iz-zi na-aš-kán I-NA* KÁ É.DINGIR*LIM 10'*[*pí-r*]*a-an ti-ya-zi nu-uš-ši-iš-ta* LÚAZU *11'ḫu*˺-*uš-ta-an še-er ar-ḫa wa-*˹*aḫ*˺-*nu-uz-zi*. See Vieyra 1957, 92. 99, and Wegner 2004, 164 f.

[1070] On this term, always attested in connection with evoking or moving a deity, see Miller 2004, 409–412 and Beckman 2019, 64 (»a cord or ball of wool«).

[1071] See Miller 2004, 259–311 with references to previous editions of the text.

[1072] KUB XXIX 4+ III:61–66: *61nu A-NA* DINGIR-*LIM a-da-an-na 62pí-an-zi nam-ma* SÍG*ú-li-ḫi-in I-NA* É EN SÍSKUR *63*GIŠ*ar-kam-mi-it gal-gal-tu-u-ri-it pé-e-da-an-zi 64nu-uš-ši* NINDA *EM-ṢU* GA.KIN.AG *pár-ša-a-an IN-BI*ḪI.A*-ya 65kat-ta-an iš-ḫu-u-wa-an-zi nam-ma* DINGIR-*LAM ḫu-u-uš-ti-it 66ar-ḫa wa-aḫ-nu-an-zi nam-ma* DINGIR-*LAM I-NA* É*A-BU-US-SÍ a-ši-ša-an-zi*; see Collins 2003, 176; Miller 2004, 293; and Mouton 2016, 366 f.

that the use of *ḫušt-* is attested on the day on which the ritual for the evocation of the new deity into the new temple is performed.

Another example of the use of *ḫušt-* swung over the statue of a deity occurs in the »Ritual of *purapši*-Priests Ammiḫatna, Tulbi and Mati for purification of the temple and the deity« (CTH 472), where one reads: »The deity is swung with an eagle, a falcon, a lamb, a kid, a *ḪURRI*-bird (and) amber[?] and then they purify the deity with ›water of purity‹«[1073]. This attestation provides the rare occurrence of the term *ḫušt-* spelled with the semantic classifier for »stone«, NA_4.

Furthermore, the texts prove that not only cult statues, but also temples were purified with this substance. This is shown by the »Kizzuwatna Ritual« (CTH 479), dating back to the 14th century BC. The ritual was performed over several days. Tablet KUB XXX 31+ records different rites to be performed in case someone had pronounced evil words against the king in the presence of the gods: »In the morning, however, on the 23rd day, one swings the temple of the Weather god, the temple of the goddess Ḫebat, (and) the temple of all the gods with an eagle, a hawk, a *ḫapupi*-bird, a *ḪURRI*-bird, (and) amber[?]. One purifies with pure water«[1074]. The ceremony was performed in Cilicia, at Kizzuwatna and Adaniya, places of residence of the deities that had to be pacified. The purification of a deity and his temple with the *ḫušt-* used in the swinging rite is also attested in the fragmentary ritual CTH 491[1075].

A last and more complex example of a purification rite using *ḫušt-* is found in the »Ritual of Allaiturahḫi from Mukiš« (CTH 780), a text of which two different versions have come down to us, the shorter one (CTH 780.I) almost entirely in Hurrian, the longer one (CTH 780.II) almost entirely in Hittite[1076]. A passage in KUB XXVII 29+ I:45–51 and parallels runs as follows: »They clean out the tent (^{GIŠ}ZA.LAM.GAR) in which the Old Woman treated the ritual patron; they sprinkle it and swing *ḫuppanni*-stone and amber[?] (^{NA4}*ḫuppanni ḫuštanna waḫnuwanzi*) in it and discard them at the doorway. The Old Woman takes the (consecrated) water which remains in the baked clay container and consecrates the house, the inner chambers and the courtyard (with it)«[1077]. Immediately afterwards, the ^{NA4}*ḫuppanni*-stone[1078] and *ḫušt-* are used in a ritual of the (*šer*) (*arḫa*) *waḫnu-* kind, performed by the female assistants called $^{MUNUS.MEŠ}$SUḪUR.LÁL and intended to cleanse the ritual patron in the house of cultic ablution[1079]. In a previous tablet of the same »Ritual of Allaiturahḫi« it had been specified that the materials called ^{NA4}*ḫuppanni-* and *ḫušt-* come from Nineveh[1080]. It is difficult to deduce whether the two paired substances have a similar or complementary function in the ritual. The presence of the semantic classifier for »stone« NA_4 only for *ḫuppanni-* makes the second hypothesis more likely. The important role played by *ḫušt-* in this ritual is also confirmed by an unfortunately fragmentary, but very peculiar, simile, in which it is said that »as the amber[?] is strong, so he can be strong«[1081]. Probably »strong,

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[1073] KBo XXIII 1+ obv. II:2–5: [2]*[nu]* DINGIR-*LAM IŠ-TU* $TI_8^{MUŠEN}$ SUR_{14}.DÙ.A^{MUŠEN} $SILA_4$ MÁŠ.TUR [3]MUŠEN *ḪUR-RI* ^{NA4}*ḫu-uš-ti-it wa-aḫ-nu-wa-an-zi* [4]EGIR-*an-da-ma* DINGIR-*LAM še-ḫe-el-li-ia-aš* [5]*ú-e-te-ni-it šu-up-pí-ia-aḫ-ḫa-an-zi* (the same text is repeated in rev. II:20–24, ^{NA4}*ḫu-uš-ti-it* in lacuna), see Lebrun 1979, 143. 151. 159; Polvani 1988, 21; R. Strauß (ed.), hethiter.net/: CTH 472 (INTR 2014–02–19).

[1074] On KUB XXX 31+ IV:37–39 ([36]*lu-uk-kat-ta*-[*ma*] UD.23.KAM É.^{D}IM É.^{D}Ḫé-pát [37]É.DINGIR^{MEŠ}-*ia ḫu-u-ma-an-da IŠ-TU* Á^{MUŠEN} SUR_{14}.DÙ.A^{MUŠEN} [38]*ḫa-pu-pí-it* MUŠEN *ḪUR-RI ḫu-uš-ti-it-ta* [39]*wa-aḫ-nu-wa-an-zi še-ḫé-el-li-ia-az ú-i-te-na-az* [40]*šu-up-pí-ia-aḫ-ḫa-an-zi*), see A. Ünal (ed.), hethiter.net/: CTH 479.2.1 (Expl. A, 28.03.2017). See also Albanese 2020, 28 f. n. 16.

[1075] See Strauß 2006, 327–358, and F. Fuscagni (ed.), hethiter.net/: CTH 491.3 (TRde 05.02.2013).

[1076] Overviews in Haas – Wegner 1988, 122–143; Miller 2005, with literature; Mouton 2016, 421–431; also Marcuson 2016, *passim*.

[1077] CHD Š/4 (2019) 629; also Haas – Wegner 1988, 128 f.

[1078] This term has been interpreted as, generically, a mineral substance in Polvani 1988, 18 and Tischler 2001, 54, but as »eine schwefelhaltige Substanz« in Haas 2003, 237–240; see also Richter 2012, 164.

[1079] See Haas – Wegner 1988, 129 and Polvani 1988, 21 f.; also Marcuson 2016, 336.

[1080] Following Haas – Wegner 1988, 56; Haas 2003, 238; differently, CHD P (1997) 14; see also HW² (2013) 782.

[1081] KBo XII 85+ rev. II:8–9, [8]*ḫu-uš-ti-iš* GIM-*an* KALAG.G[A ...] [9]KALAG.GA-*aš e-eš-du*, see Haas – Wegner 1988, 132 and Torri 2003, 109.

powerful, mighty« (KALAG.GA) refers to the efficacity of this substance in ritual practices of a medico-magical nature. Because many comparative similes used in Hittite magic can be traced back to empirical observations, one could assume that the power of amber could also refer to its electrostatic properties, i.e. its attractive power: as is well-known, amber can acquire an electric charge by contact and separation or friction with other materials, like wool[1082]. This fits very well with the general principle of sympathetic magic used in Hittite ritual practices.

4.3 THE WRITTEN DOCUMENTATION: MESOPOTAMIA

Turning our attention to Mesopotamia, a survey of the terms identified as amber over the last 140 years or so may be of some use. In 1880 Jules Oppert suggested that Ezekiel's *ḫašmal* should be translated »amber« (namely, »ambre jaune«), suspecting that it was a Phoenician word[1083]. In 1885 Heinrich Zimmern translated Akkadian *elmēšu*(*m*) as »Diamant«[1084]. In 1923 Paul Haupt identified Biblical Hebrew *ḫašmal* with Akkadian *elmēšu*(*m*), translating both as »electrum«[1085]. In 1936 Reginald Campbell Thompson discussed *elmēšu*(*m*), suggesting the translation »brass«[1086]. In 1957 Adam Falkenstein reviewed all the occurrences of Sumerian *sud^{r}-aĝ known to him[1087], indicating a few cases in which this term refers to a »konkreter Stoff«, and many cases, mainly from literary texts, which are to be understood »mit einem abgewandelten Bedeutungsansatz«: for the former use he adopted the translation »Meteor […], was dann für das Metall auf einen besonders glänzenden Meteoriten führt«, while for the latter »lassen sich die Belege für den Glanz der Venus, des Mondes und der Göttin Aja als Vergleiche mit dem Glanz eines Meteors auffassen«, thus »Licht, Glanz, […] ›glänzend‹«; also, for its linguistic analysis, he explained that »sù-ud-ága ist gewiß zusammengesetzt. Da das erste Element kaum mit sud = *hamāṭu* ›brennen‹ erklärt werden darf, bleibt kaum eine andere Möglichkeit als sud ›fern‹, was bei ursprünglicher Verwendung von sù-du-ága zur Bezeichnung eines Meteors nicht so abliegend erscheint. Für ága wage ich keinen Vorschlag«. In 1958 the entry in the »Chicago Assyrian Dictionary« (CAD) s. v. *elmešu* (*ellimešu, ilmešu*), »(a precious stone)«, most probably written by Leo Oppenheim, included the following comment: »The passages from lit.[erary] and especially from Sum.[erian] […] texts show clearly that *elmešu* (Sum. sud-ág […]) refers to a precious stone of characteristic sparkle and brilliancy. […] The fact that *elmešu* appears only rarely with the determinative NA_4 and that it is not listed in Hh. XVI among the stones but in Hh. XI among dyes of mineral origin, after frit and similar substances, indicates that the *e.*-stone had a characteristic color, which is also borne out by the use of *elmeštu*, q. v. [›(a grass)‹], referring to plants bearing flowers of this color. Since no econ. text ever mentions the *e.*-stone and even the personal name Elmešu becomes very rare after the O[ld]B[abylonian] period, the word must be taken as referring to a quasi-mythical precious stone of great brilliancy and with a color which one tried to imitate with dyes […] In this peculiar quality, *elmešu* may well be connected with Hebr. *ḫašmal* [*sic*] which likewise appears only in similes referring to the extraordinary sheen of a quasi-mythical stone. […] [in the Irra epic *elmešu*] may refer to trees bearing *e.*-colored flowers«[1088]. In 1961 Wolfram von Soden included in his »Akkadische Handwörterbuch« (AHw) the entry »*elmēšu*(*m*)*, ellemēšum,* ass. **e/*

[1082] For the significance of amber's power of attraction in classical antiquity see Caley – Richards 1956, 51. 67 f. 110–113, and 116–118 on Theophrastus' »On Stones«.

[1083] Oppert 1880.

[1084] Zimmern 1885, 104.

[1085] Haupt 1923, 117 f., followed by Lewy 1949, 174; see also Civil 1964, 8 and n. 10.

[1086] Thompson 1936, 76–79, followed by Driver 1951, 61.

[1087] Falkenstein 1957, where, on p. 304, the following spellings are listed: »sud-ága (neusumerisch, altbabylonisch, kassitisch und später), sud_x-ága (sud_x = BU) (neusumerisch), sù-du-ága (so meist altbabylonisch und später), su_x-du-ága (su_x = BU) (altbabylonisch), sù-ud-ág-gá (jung) und in jungen Texten su-da-ága«. In the following pages many, but not all the passages quoted by Falkenstein will be used.

[1088] CAD E (1958) 107 f.

ilmašu (he. *ḥallāmīš* trockenes, hartes Gestein) wohl ein kostbarer, gelbscheinender Stein«[1089]. The same year, reviewing that »AHw« fascicule, Eduard Dhorme remarked that »pour *elmêšu* […] le sens de ›vermeil‹ nous semble confirmé par les noms propres *Elmešum*, féminin *Elmeštum* ›Vermeille‹. L'hébreu *hallamiš* a plutôt le sens de ›silex‹«[1090]. In 1964 Miguel Civil reviewed again the occurrences of Sumerian *sud^{r}-aĝ (considered a foreign word) from the late 3rd millennium cuneiform sources onwards, and, not mentioning Haupt's proposal, suggested »tentatively a meaning ›electrum‹«, defined as »alloys as well as native argentiferous gold ore with 20 to 50 per cent of silver«, adding however that »a change of meaning, or a loss of concrete meaning, in later periods, is quite possible; it must be noted […] that with the evolution of gold metallurgy the use of electrum became progressively more rare, and this evolution is reflected in the words for electrum in some languages, cf. for instance the semantic changes of Egyptian *ḏ‘m* or Greek *ἤλεκτροσ/ον*. This seems to have been also the fate of sù-(du/ud)-ág and *elmešu*«[1091]. A turning point in the scholarly discussion on these topics was marked by the study Benno Landsberger devoted in 1967, at the very end of his career, to Akkadian *elmēšu*(*m*): here, also giving a resumé of previous interpretations[1092], he showed why this term, as well as Biblical Hebrew *ḥašmal*, must be translated as »amber«, against *inter alia* his own previous views. In 1969, independently, Claus Wilcke translated sud-rá-ág as »Bernstein«[1093]. Landsberger's skirmish with Oppenheim on this topic, implied by how the 1958 entry *elmešu* of the »Chicago Assyrian Dictionnary« had been written and published[1094], continued in 1970 when the latter wrote that »the interpretation of *elmēšu* and its Sumerian correspondences sù.ud.ág.gá, etc., as rock crystal or any other crystalline mineral suitable for ornaments, decoration and small objects, fits all the passages assembled sub *elmešu* in the CAD and AHw«[1095]. In 1977 the Estonian philosopher, poet, and folklorist Uku Masing argued that Akkadian *elmēšu*(*m*) can be related to modern Estonian *helmes*, »bead« < »amber«; this suggestion, written in Estonian, obviously escaped the Assyriological community until when, between 1997 and 1999, Michael Heltzer revived it[1096]. In 1991 Daniel Bodi reviewed *ḥašmal*, ἤλεκτρον, *elmēšu*(*m*), and *sud^{r}-aĝ, concluding that »apparently the controversy whether *elmēšu* originally represented a metal or a stone cannot be settled because of the rather ambiguous textual evidence. In certain texts sud-ága = *elmēšu* appears to represent a metal, while in other texts it refers to amber stone. This ambiguity continues in Greek and Latin terminology as well: *ἤλεκτρον*/*electrum*, being both a metal (alloy of silver and gold) and amber stone«, an opinion which is still considered correct by some scholars[1097]. However, independently, in 1992

1089 AHw (1961) 205.

1090 Dhorme 1961, 161.

1091 Civil 1964, 8 and n. 10; on p. 7 Civil wrote that »I am planning to publish soon a detailed study on sù-(du)-ág (*elmešu*)«, but unfortunately he never did so.

1092 Landsberger 1967, 190–198, esp. 196–198 with n. 2.

1093 Wilcke 1969, 138.

1094 See Landsberger 1967, 191 (»In der Tat habe ich, als 1957 besagter Artikel des CAD vorbereitet wurde, die Bestimmung des *elmešu* als Bernstein dem Herausgeber [*scil.* Leo Oppenheim] eindeutig vorgeschlagen und begründet; er hat aber, durch bittere Erfahrungen gewitzigt, Vorsicht walten lassen, wobei wohl die […] ›anachronistischen Auslegungen‹ entscheidend waren. In meinem dem CAD vorgelegten Entwurf revozierte ich auch die von mir Falkenstein (zitiert CAD) suggerierten Bedeutungen ›Metall‹, bzw. ›Meteor‹. Inzwischen hat aber Civil, JNES 23,7 die Deutung als Metall wiederaufgenommen.«), showing the relevance of the »amber incident« in his last years of life. On Landsberger and Oppenheim working together at the »Chicago Assyrian Dictionary« see Reiner 2002. Also note that Landsberger's solution eliminates other proposals existing in literature, including for instance those in Bottéro 1949a, 19; Bottéro 1949b, 145. 157, and Cassin 1980–1983, 217 f.

1095 Oppenheim 1970, 16 n. 31.

1096 Masing 1977, and see Helzter 1997 and Heltzer 1999; also Parpola 1997, CV n. 248–249; Puhvel 1999, 348 f.; Nissinen 2015, 94; Warburton 2019, 26; Noonan 2019, 107.

1097 Bodi 1991, 82–94 (quotation on p. 90). Cf. Aster 2014, 12 n. 10 (who, quoting CAD E [1958], thinks that »the question of whether *elmešu* in Akkadian is a stone, a type of amber, or a metal, has not been decisively resolved; it seems to be a metal in some Akkadian texts and a stone in others«), and Amzallag 2015, 89 and n. 34 (who thinks that »probably *ḥašmal* evokes a metal«, on the grounds of Driver 1951).

Peter Kingsley reviewed *ḫašmal*, ἤλεκτρον, and *elmēšu*(*m*), and rightly confirmed Landsberger's conclusion[1098]. Confirming only in part his conclusion (»Die Deutung von *elmēšu* als Bernstein ist unabweisbar.«), in her 1997 discussion of the difficult Sumerian term sud-gan Karine Reiter briefly mentioned *sud^{r}-aĝ, rightly refusing their equation, but took the latter as a possible designation of a metal which would be used »als Schmuckelement oder i. S. v. ›glänzend, strahlend‹« when in literary texts it occurs besides gemstones and metals[1099]. In 2000 the »Concise Dictionary of Akkadian« translated »*elmēšu*(*m*)*, elli/emēšum*, Ass. *e/ilmušu, e/ilmiši*« as »(a valuable stone, phps.) ›amber‹«[1100]. In 2009 Catherine Mittermayer summarised the current understanding of *elmēšu*(*m*) and *sud^{r}-aĝ: the former has a concrete meaning (amber), the latter can also be translated figuratively (lustre, used as an epithet of a deity)[1101]. In 2012 Manfred Krebernik discussed the feminine divine name ^{d}Sud-ág, interpreted as »›goldgelber Glanz‹ bzw. ›goldgelb glänzendes Gestein/Metall‹«[1102]. The spellings »sud-ra$_2$-aŋ$_2$; sud-aŋ$_2$; su-da-aŋ$_2$; an-su$_{13}$-ŋa$_2$-ḫa-ra; su$_3$-ud-aŋ$_2$« in the entry *sudaŋ of the »Electronic Pennsylvania Sumerian Dictionary« (ePSD-2) are currently interpreted as »a precious metal or material (possibly amber); (to be) shiny«[1103].

The only actual candidates known to us for denoting »amber« in Akkadian and Sumerian are the substantives *elmēšu*(*m*) and *sud^{r}-aĝ respectively[1104]. Chronologically, *sud^{r}-aĝ is already attested in the middle of the 3rd millennium BC; the older available attestation of *elmēšu*(*m*) dates back to the beginning of the 2nd millennium BC, but it can be assumed that, like its Sumerian counterpart, it actually belonged to the lexicon of the Semitophone groups populating the Near East already in the Early Bronze Age. The occurrences of these two terms can be organised into two groups. The first includes those that refer to a concrete material, the second those that refer to a visual effect. Importantly, until now neither *elmēšu*(*m*) nor *sud^{r}-aĝ are attested in administrative cuneiform texts, which are counted in tens of thousands. However, this does not mean that in practice the circulation of amber was non-existent in the ancient Near East; rather, this rare and often exotic material must have been among those very rarely recorded in economic documents, which never cover the full spectrum of available goods and transactions carried out.

The starting point in the discussion of *elmēšu*(*m*) and *sud^{r}-aĝ in context is the evidence of the lexical lists, and more generally of the learned texts produced for internal uses of the scribal milieus.

Lexical lists of the 1st millennium BC show that Sumerian *sud^{r}-aĝ corresponds to Akkadian *elmēšu*(*m*), see the equivalence sud^{ud}-ág-gá = *el-me-šú* in line 304 of Ura = *ḫubullu* XI, a tablet

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1098 Kingsley 1992.

1099 Reiter 1999, 328 f. n. 110–111; 330 n. 116.

1100 CDA^{2} (2000) 70.

1101 Mittermayer 2009, 225 f.: »… neben dieser konkreten Bedeutung [of *elmēšu*(*m*)] kann sud-ra$_2$-aĝ$_2$ im übertragenen Sinn auch mit ›helles Licht, Glanz‹ übersetzt und unter anderem als Epithet einer Gottheit verwendet werden. Da sud-ra$_2$-aĝ$_2$ in ELA nie als Handelsgut auftaucht, wird hier eine Übersetzung mit ›Glanz, Schein‹ vorgezogen. Der Begriff ist in Z. 41 auf ^{na4}za–gin$_3$ duru$_5$ bezogen, in Z. 483 auf ku$_3$-si$_{22}$ und ku$_3$-babbar. Beachte, dass erst vom ›Glanz, Schein‹ des Lapislazuli die Rede ist, wenn er aus den Blöcken herausgearbeitet$^{?}$ ist (Z. 40).«

1102 Krebernik 2012.

1103 Online at <http://oracc.museum.upenn.edu/epsd2/> (accessed on 02. 02. 2020).

1104 In spite of the opinion held by some scholars, the stone ^{na4}SAG.KAL = *sankallu*(*m*) is not »amber«, see, e.g., CDA^{2} (2000) 316. Furthermore, an interpretation »ambre jaune« of ^{na4}algames = *algamišu* was argued by van Dijk 1983, 119 f. for the passage in lines 2 f. of the late 3rd-mill. incantation VS 10 190 = van Dijk – Geller 2003, 76 f., interpreted as »le pin(!?) laissa couler la résine sur la terre: la pierre algamiš se forma« in van Dijk 1978, 201 n. 25; however, this passage has then been differently interpreted (»Das ist Wacholder! In die Erde war er eingepflanzt! Auf dem Gestein algameš ist er aus sich selbst gewachsen!«, Rudik 2011, 407–410; see also Heimpel 1987, 50 n. 91) so that this stone remains currently unidentified, see PSD A/3 (1998) 171; CDA^{2} (2000) 12; Civil 2008, 71 (a dark stone); Schuster-Brandis 2008, 393 f. and n. 587; Del Olmo Lete – Sanmartín 2015, 52; ePSD2, s. v. algameš. Also note that in the early 2nd-mill. Sumerian hymn »Išbi-Erra B«, Segment E, l. 8, a reading »lú-sù-ud-ág« (so van Dijk 1978, 198 f. 201 f.) must be abandoned, see Michalowski 1989, 8 and n. 41; also Steinkeller 1988, 197 n. 2; Vanstiphout 1989/1990, 55 and n. 25; and ETCSL (2006) 2.5.1.2.

including terms for skins, glues, pastes, minerals, metals, copper and copper objects[1105]. Considering the meaning of the terms recorded in lines 289–330, the contextual position of the entry in line 304 looks important. It appears that *sud^{r}-aĝ = *elmēšu* occurs at the meeting-point of a first group with metals and other hard materials (including tin, iron, glass, frit, slags, lead; lines 289–303) with a second group with soft substances (including antimony, alum, gypsum, orpiment,$^{?}$ kinds of silt and dregs, sulphur, algae; lines 305–330) which precedes the section with copper items (lines 331 ff.)[1106]. The common feature of these two parts may be that, in nature, all the mentioned items can normally be found on the ground in the form of pieces, individual stones and rocks, small blocks, slags, and lumps. This is confirmed by the earlier attestation of sud$_4$-rá-ág/sud-rá-ág in lines 148 f. of the monolingual (Sumerian) forerunners of Ura = *ḫubullu* XI, dated to the first half of the 2nd millennium BC, after kinds of coloured frit and before yellow pastes and sulphur (lines 144–158)[1107]. It indicates that the use of *sud^{r}-aĝ to denote »amber« dates back at least to the Middle Bronze Age, and this makes it possible that such use was even more ancient. One can note that precious materials obtained through mining activities, such as gold, silver, and lapis lazuli, do not occur in these textual contexts. In addition, considering further evidence gathered below, most likely the equivalence *sud^{r}-aĝ = *elmēšu*(*m*) belongs to the beginning of the soft and coloured substances rather than to the end of the hard metals and minerals, so that here a translation »amber« seems contextually preferable to »electrum«[1108]. The same applies to the (as yet not fully published) 1st-millennium BC pharmacological lexical series uruanna = *maštakal* and related texts, where the equivalence $^{(ú)}$sud^{ud}-ág-gá = *elmušu* occurs three times in similar contexts[1109].

The semantically liminal position of *sud^{r}-aĝ = *elmēšu*(*m*) noted above also appears in older learned texts[1110]. In the »Susa Practical Vocabulary« = Scheil 1921, 51–71 (end of the

[1105] See Falkenstein 1957, 304, and Landsberger 1959, 139.

[1106] These entries are: [289]nagga = *annaku*, »tin«; [290]an-bar = *parzillu*, »iron«; [291]an-ta-sur-ra = »(a stone)«; [292]an-zaḫ = *anzaḫḫu*, »(a kind of glass)«; [293]an-zaḫ-babbar = *ḫuluḫḫu*, »light frit«; [294]an-zaḫ-gikki = *kutpû*, »dark frit, slag«; [295]an-zaḫ-lù = *ḫuḫû*, »slag, clinker«; [296]KUG.GAN = *lulû*, »slag (?)«; [297–298]KUG.GAN-gikki / [x-n]a$_4$ = *lulmû/ŠU*, »dark slag (?)«; [299]a-gar$_5$ = *abāru*, »lead«; [300–302][x]-a-gar$_5$ = *ḫumīr abāri*, »lump of lead (?)«; [303][x]-a-gar$_5$ = *erru abāri*, »(a lead-based salve)«; [304]sud^{ud}-ág-gá = *elmēšu*; [305–307]šim-bi-zi-da = *šimbizidû*, = *egû* = *amamû*, »antimony paste, kohl, eye cosmetic«; [308]šim-bi-zi-da-sig$_7$-sig$_7$ = *asḫur*, »(a kind of mineral)«; [309]šim-kù-sig$_{17}$ = *šīpu*, »(a yellow paste)«; [310]šim-na$_4$-saḫar = *lēru*, »(a light yellow paste)«; [311]im-saḫar-babbar-kur-ra = *annuḫaru*, »(a light mineral similar to alum)«; [312]im-saḫar-gikki-kur-ra = *qitmu*, »(a dark paste)«; [313]im-saḫar-na$_4$-kur-ra = *aban gabû*, »alum«; [314]im-babbar = *gaṣṣu*, »gypsum«; [315]im-dara$_4$ = *ḫāpu*, »(a dark earth)«; [316]im-sa$_5$ = *šaršarru*, »red paste«; [317–318]im-gùn-gùn-nu, im-sig$_7$-sig$_7$ = *da'mātu*, »(a dark-yellow paste)«; [319]im-kù-sig$_{17}$ = *illūr pānī*, »rouge (for facial make-up)«; [320]im-kal = *kalû*, »(a yellow mineral paste, perhaps) orpiment«; [321]im-gá-li-gug = *kalgukku*, »(a red mineral paste)«; [322]im-gú = *qadūtu*, »silt; dregs, lees«; [323]im-gú-din-na = *qadūt šikari*, »beer-dregs«; [324]im-gú-en-na = *qadūt šikāni*, »(a kind of silt)«; [325]im-gú-a-ab-ba = *qadūt tāmtim*, »sea-silt«; [326]im-gú-íd-da = *qadūt nâri*, »river-silt«; [327]piš$_{10}$-^{d}íd-lú-ru-gú = *kibrītu*, »sulphur«; [328]úḫ-^{d}íd-lú-ru-gú = *ruttītu*, »(a kind of sulphur)«; [329]á-lá-íd-da = *šikin nâri*, »river-silt«; [330]KA-a-ab-ba = *imbû tâmtim*, ~ »algae, scum«; [331]uruda = *erû*, »copper«. See Landsberger 1959, 138–141.

[1107] These entries are: [144]nagga, »tin«; [145]an-zaḫ, »(a kind of glass)«; [146]an-zaḫ-gikki, »dark frit, slag«; [147][an-zaḫ]-babbar, »light frit«; [148–149]sud$_4$-rá-ág, sud-rá-ág, »amber«; [150]šim-bi-zi-da, »antimony paste«; [151]šim-kù-sig$_{17}$, »(a yellow paste)«; [152–153]šim-i-rin$_5$'-na, [šim-si]g$_7$-sig$_7$, »(kinds of mineral)«; [154][šim-na$_4$]-saḫar, »(a light-yellow paste)«; [155][piš$_{10}$-^{d}íd-lú]-ru'-gú, »sulphur«; [156]a-gar$_5$, »lead«; [157]im-[…], »(a kind of earthy material)«; [158]uruda, »copper« (*SLT* 191(+)89 I:14f. // UM 29-16-391 + N-5056 obv. II), see Landsberger 1959, 222 f.; also CAD E (1958) 107, and Civil 1964, 8.

[1108] Following Landsberger 1967, 192 f., followed by Winitzer 2014, 169.

[1109] See CAD E (1958) 107 (»preceded by *šimbizidû* and *guḫlu*«, »among paints«, »at the end of an enumeration of metals«).

[1110] A puzzling case is šu-gùn-^{r}gùn-nu$^{?}$ = *el-le-me-šum* in line 19 in the Old Babylonian mixed vocabulary OBGT XV = CT 41 pl. 46 = MSL IV, 124 f. (from Sippar [?]. On this text see in general Wagensonner 2020b, 56 n. 32). This equivalence, with an unhelpful lexical context (it occurs between terms denoting »[rear] lock of hair« and »[an illness]«), is included in the entry *elmēšu*(*m*) of the two Akkadian dictionaries (CAD E [1958] 107, and AHw [1961] 205; also CDA^{2} [2000] 70), but it has also been translated as »meteorite« (MSL IV [1956] 125, in a chapter by Richard Hallock and Benno Landsberger reflecting the latter's previous interpretation). Both šu-gùn-gùn-nu and *ellemēšu* are without parallels, and probably they do not belong here (cf. the two footnotes in Landsberger 1967, 197, and von Soden 1967, 298).

3rd mill. BC, late Old Akkadian or Early Old Babylonian) lines I:18'f. read: 10 gín an / 1 gín sud_4-ág, »10 shekels of iron; 1 shekel of amber«[1111]. These entries occur after a section dealing with much larger amounts of metals – gold, silver, copper, tin, bronze, counted in minas and not in shekels – and before that dealing with fabrics. An important piece of information – i.e. the use of the semantic classifier na_4, »stone«, before *elmēšum* – is given by a slightly later text, the Old Assyrian »Kanesh Practical Vocabulary *2*«, Kt n/k 1697 = Çecen – Erol 2018, 56–58 (Kültepe, 19th cent. BC), whose lines 31–32 read: 7 ma-na / ^{na4}*el-me-šum*[1112], »seven minas of amber«, thus around 3,5 kg. This text, akin to the »Susa Practical Vocabulary« mentioned above, includes a long initial section with »calculations of exchange rates of metals and stones« (their prices are given in silver or copper), followed by shorter sections dealing with jars (dug), fabrics (túg) and animal hides (kuš)[1113]. In the initial section, first precious metals are listed: »gold« (kù-sig_{17}), »bronze« (zabar), »copper« (uruda), and »tin« (nagga). Then, precious stones follow: »carnelian« (^{na4}gug), »agate« (^{na4}nír)[1114], »lapis lazuli« (^{na4}za:gìn), »chlorite« (^{na4}duḫ-šu)[1115], and »amber« (^{na4}*el-me-šum*)[1116]. The list continues with »iron« (*bar-zi-lúm*), »borax (?)« (su_{13}-gan)[1117], and »lead« (a-SIG_7). This textual part ends with »wool of goat« and »ordinary wool« (siki ud_5 and siki gen) followed by »tin« (nagga) again and by (bronze) »nails« (*sa-am-ru-a-tum*)[1118].

[1111] See Scheil 1921, 52; Falkenstein 1957, 304 (»Zweifellos ein konkreter Stoff ist sud-ága«); and Landsberger 1967, 193. Malayeri 2014, 169, who reads sud-ág(a) (the correct reading in Dercksen 2019, 22, su_{13}-ág), restores an<-na>, i.e. nagga, »tin«, misspelled. However, looking at Scheil's copy, this solution is unlikely: the scribe, a teacher who was inscribing a prism to be used in a school, clearly wrote AN just at the right edge of the line (cf. the different position of AN and NA in the sure nagga of I:9'), so that AN is hardly a mistake. Also considering the low amounts in shekels of the two terms in I:18'–19', one wonders if »amber« is not preceded by something rarer than tin. If so, the interpretation by Vaiman 1982, 35, of »AN« as »Eisen« looks convincing (either as a byform of KUG-AN or as an<-bar>, written in ligature), considering that iron is textually and archaeologically attested already in 3rd-mill. sources (»iron«, read an, also for Dercksen 2019, 22 n. 1).

[1112] Çeçen – Erol 2018, 57.

[1113] See Dercksen 2019, 21, who compares this text with the contemporary »Kanesh Practical Vocabulary 1«, published in 1993 by Karl Kecher in the Ankara volume in honour of Nimet Özgüç, and with the slightly earlier »Susa Practical Vocabulary«, published in 1921 by Jean-Vincent Scheil, see above.

[1114] »Onyx« (*ḫulālu*) for Dercksen 2019, 21.

[1115] On ^{na4}duḫ-šu, variant spelling of ^{na4}duḫ-ši-a, as »chlorite«, typically from Iran, see Steinkeller 2006, 3–7, accepted e.g. in Schuster-Brandis 2008, 407–409.

[1116] See Çecen – Erol 2018, 59 and 62, and Dercksen 2019, 21 (in both cases *elmēšum* is translated as »amber«).

[1117] See Dercksen 2019, 21: »Sugan (written sù-gan, su-gan in Old Akkadian and Ur III texts) is an unidentified substance that was added to bronze without causing a change in weight. E. Pernicka suggested that it was borax […] (OA 23, 18). The writing with BU instead of sù or su is further only attested in two Old Babylonian (mid 19th c.) texts from the Sîn-kāšid palace in Uruk (see Reiter 1999, 332); the substance does not appear to occur in any later document. Sugan was more expensive than copper, see also H. Waetzoldt, OA 23, 17.« Cf. Civil 1964, 7: »sù-(du/ud)-ág and sù-gan of Ur III texts […] are both two different rendering of the same (foreign) word«, but see the discussions of sù-/su-GAN and borax in: Waetzoldt – Bachmann 1984; Michalowski 1988, 160 n. 11; Bjorkman 1993, 17 n. 86; and Sallaberger 1999, 321 f.; also ePSD2 s. v. su-GAN, sù-GAN, »a material used in metallurgy: borax?; electrum«. Furthermore, see Landsberger 1967, 192 f. n. 3.

[1118] These general remarks on this part of the »Kanesh Practical Vocabulary 2« deserve to be quoted in full: »The selected goods, quantities, and prices tell us about this text as a didactic tool. It includes the logograms for gold, silver, tin, bronze, and copper, but uses unfamiliar qualities of gold and some archaic sign forms as well as a few rare goods, preferably in phantastic quantities unlikely to have ever reached an O[ld] A[ssyrian] merchant: 7 minas of *elmešum* [cf. CAD E 108: ›no econ. text ever mentions the *e.*-stone‹], or 8 minas of iron. *The Practical Vocabulary of Susa* lists these two items as well, but in realistic quantities, 10 sh. of iron (an) and 1 sh. of *elmešum* (su_{13}-ág). The quantities seem to be chosen for arithmetical purposes; the number 105 occurs four times and 155 once. Some of the prices are plausible and lapis lazuli at 1 sh. of silver per 2¾ sh. approaches 2⅔ (ICK 2, 274) and the ratio in VS 26, 12:4–6, slightly less than 2 (purchase in Assur). On the other hand, the prices for tin (10, 4½ , and 2½ sh. per sh. of silver) are too high to refer to prices in 19th-c. Assur (ranging from 17–12), but could fit sale prices in Anatolia (ranging from 10–4); 2½ is unattested and makes it doubtful whether these tin prices reflect OA practice. The bronze objects are valued per piece and their weight is specified (possibly to confuse the pupil): *samrutum* of 12 sh. at 29 sh. of copper, *samālum*-cups of 18 sh. at 45, cups of 18 sh. at 45 and 51, cups of 20 sh.

Sometime later, two Old Babylonian mathematical texts – i.e. YBC 4669 = MKT III pl. 3 (from Kish [?])[1119] and YBC 5022 = May 2018, 261 f. (from Larsa [?])[1120] – include the following datum in lines 25–28[1121]: »2,15 sheets of gold (*ruqqum ša ḫurāṣim*, spelled kù-sig$_{17}$), 4 sheets of silver (*ruqqum ša kaspim*, spelled kù:babbar), 2,24 sheets of tin (*ruqqum ša annakim*, spelled nagga), 2,8 sheets of amber (*ruqqum ša elmēšim*, spelled sud-ág)«[1122]. Around one thousand years later, in the mineralogical lexical series *abnu šikinšu*, source D = K.4751 (7th cent. BC), lines 1'–2' read: »[The stone whose appearance is like …], this [stone], ^{na4}*antasu*[*rrû*] [is its name.]. [The stone whose appearance is like …], this stone, amber (^{na4}*el-me-šum*) is its name«[1123], another case in which *elmēšum* is classified as a na$_4$ substance.

The association of $^{(na4)}$*elmēšu*(*m*) = *sud^{r}-aĝ with precious stones and metals of various kinds occurs in several literary texts where gods and kings are praised. In them, these spellings refer to either amber, an amber hue, or the visual effect they produce. Concrete references range from objects and artefacts to landscape elements such as earth and sky.

As for the association of $^{(na4)}$*elmēšu*(*m*) = *sud^{r}-aĝ with precious stones, the lines 11'–20' of the bilingual Sumerian-Akkadian »Insignienbeschwörungen« = Ambos 2013, 212–223 (7th cent. BC), run as follows: »Large stones, large stones, stones, exulting in abundance, great for the flesh of the gods! Eye-shaped agate (^{na4}nír-igi/*ḫulāl īni*), serpentine (^{na4}nír-muš-gír/*mušš̄āru*), agate (^{na4}nír/*ḫulālu*), carnelian (^{na4}gug/*sāndu*), lapis lazuli (^{na4}za-gìn-na/*uqnû*), chlorite (^{na4}duḫ-ši-a/*dušû*), *šu-ba*-stone/exquisite stone (^{na4}šuba/*abnu nisiqti*), amber (sud^{ud}-ág/*el-me-šú*), perfect *antasurrû* (an-ta-sur-ra šu-du$_7$-a/*antasurrû šuklulu*), stones whose knob is bordered with gold! To make (these stones) suitable for the pure breast of the king, Kusu, the chief priest of Enlil, purified them, made them shining!«[1124]. The poor condition of the available cuneiform sources do not allow us to be certain that this is also the case for lines 2–3 of the much earlier Sumerian disputation poem »Tree and Reed« (Ur III times), meaning perhaps »In the wide Earth precious metals (kug) and lapis lazuli (^{na4}za-gìn) were filling the surface; (Earth) adorned herself with chlorite (^{na4}duḫ-šu), agate (^{na4}nír), carnelian (^{na4}gug) (and) amber$^{?}$ (sud-rá-ág)«[1125]; in fact, the cuneiform text of the various

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at 60. No evidence exists to compare these data with real prices. […]. All these features indicate that this part of the text was meant as an exercise in making calculations and writing (rare) logograms. The text may represent a scribal tradition developed during the late third millennium to which also the vocabulary from Susa belongs.« (Dercksen 2019, 22).

[1119] So Høyrup 1996, 51.

[1120] Friberg 2000, 160 f. On YBC 5022 see Robson 1999, 202–204.

[1121] Regarding the figures before »sheet« in the following translation see Civil 1964, 7 no. 9: »the number preceding *ruqqu* is misinterpreted in *CAD* s. *elmešu* as the number of objects, while it must be taken as a mathematical ›coefficient‹«; also CAD R (1999) 418 (each number »is the coefficient used for calculating«) and May 2018. Cf. CAD E (1958) 107.

[1122] See Lewy 1949, 164 (*ruqqum* as »metal sheet«, *elmēšum* as »electrum«); Kilmer 1960, 292 n. 3 (»›sheet‹ of metal«), Civil 1964, 7 f. and n. 9 (*ruqqum* as »›[metal] sheets‹ or the like«, *elmēšum* as, tentatively, »electrum«); Landsberger 1967, 193; CAD R (1999) 418 (*ruqqum* as »hammered metal«, *elmēšum* untranslated). Cf. Reiter 1999, 329 n. 110 (possibly a metal), and May 2018, 261 (»a sheet of SU_3.AG_2-metal«) and no. 54, with previous literature.

[1123] See Landsberger 1967, 196; Horowitz 1992, 117 f., and Schuster-Brandis 2008, 32. 38. As for ^{na4}*antasurrû*, its identification is considered unclear in CDA² (2000) 19, »(a precious stone or metal)«; Schuster-Brandis 2008, 395 »Das Material is nicht identifiziert«; and ePSD2, »a precious metal or stone«. See however Landsberger 1967, 196: »Was wir für suddu–ág = *elmešu* in Abrede gestellt haben, müssen wir für antasurra zugeben: es ist erstens ein dem *e.* (nach uns, ›electrum I‹) engst verwandter Stein, anderseits ein Metall (nach uns, ›electrum II‹)«; and Ambos 2013, 221 »Elektron?«; also George 1993, 68: É-an-ta-sur-ra as »House which Twinkles from Heaven«.

[1124] See Ambos 2013, 220 f. (»Bernstein$^{?}$, vollendetes Elektron$^{?}$«); also Landsberger 1967, 191. One of the stones of the Hebrew high priest's breastplate recorded in Exodus 28 is *taršîš* (Ex 28, 20; also 39, 13), probably corresponding to λιγύριον of the Septuagint: the latter is interpreted as »(a kind of) amber«, but the identification of *taršîš*, possibly a substantive from a root **ršš* meaning »to glow«, remains uncertain (discussion in Harrell et al. 2017, 25–27, who tend towards its identification with amber).

[1125] Reading [k]i bar dagal-e kug ^{na4}za-gìn-bi bar-ba àm-mi-íb-si / $^{[n]a4}$esi ^{na4}nír ^{na4}gug sud-rá-ág-gá šu-tag ba-ni-in-dug$_4$ following van Dijk 1964/1965, 54 f. (»La vaste Te[rre] attacha à son corps des ornements de métal précieux et de lapis; elle se para de diorite, de calcédoine, de cornaline [et] d'*elmēšu*«) and Wilcke 2007, 20 (»Die weite [Erde]

manuscripts is not yet fully established, so that this translation, and particularly with regard to »amber«, must remain tentative.

As for the association of $^{(na4)}$*elmēšu*(*m*) = *sud^{r}-aĝ with precious stones and metals, an extraordinary literary text written in Sumerian, but likely composed at Nippur in a Semitophone milieu during the late Old Babylonian period, illustrates the connection of *sud^{r}-aĝ with the goddess Inanna/Ištar, Venus. The composition today called »Message of Lu-dingira to his mother« = Civil 1964, 2–5, is known from various duplicates, those from Ugarit and Ḫattuša including remnants of translations into Akkadian and Hittite. Its lines 22–31 describe the second sign the son gives to the royal courier so that the latter can recognise the mother of the former: »My mother [her name, of course not by chance, is Šāt-Ištar, ›She-of-Ištar‹] is (like) an amber-coloured glimmer on the horizon (sud-rá-ág-gin$_7$ an-úr-ra), (coloured) like (the coat of) a doe in the mountains (lu-lim ḫur-sag-gá), (because) she is the Morning Star (shining even) at noon (as Evening Star)! (She wears ornaments made in) precious carnelian (^{na4}gug-kal-la) (and) chlorite (^{na4}duḫ-ši-a) from Marḫaši, a prize for a king's *daughter*[?], lavishly endowed with charm! (She wears) a seal of agate (^{na4}kišib nír-ra), an ornament like that of the Sun-god! (She wears) a tin bracelet (ḫar nagga), a ring (šu-gur) of an-ta-sur-ra-stone, (and) grains of bright gold (and) silver (kù-sig$_{17}$ kù-babbar zalag-ga) (in) a long beaded band, worn around the neck! (She is like) an alabaster statuette (^{d}lama ^{na4}giš-nu$_{11}$-gal), placed on a pedestal of lapis lazuli (ki-gal ^{na4}za-gìn), (within) a living trinket (box) of ivory (dìm-ma zú tìl-la), with limbs filled with charm!«[1126]. It is reasonable to think that Lú-dingira is poetically describing an alabaster statuette of the beautiful goddess Ištar, richly adorned with amber, carnelian, chlorite, agate, tin, an-ta-sur-ra-stone, gold, and silver, which was part of a bric-à-brac displayed in a stationary cupboard made of ivory (in the son's eyes, his mother Šāt-Ištar and divine Ištar overlap)[1127]. Furthermore, one can suggest that Lú-dingira made reference to how »Venus« as the Evening Star can actually appear at dusk when the sky begins to turn dark blue, and also that, in doing

bedeckte ihren Körper mit Silber und Lapislazuli, / Schmückte sich mit Diorit, Achat[?], Karneol und Bernstein«) and 46, with this annotation on 19: »Die Erde schmückt sich festlich für den Himmel mit Silber und Halbedelsteinen, dazu auch mit Diorit/Gabbro. Es geht deutlich um Farben, sicher vor allem um Blütenpracht: Weiß (Silber), Blau (Lapis), Schwarz (Diorit), Rot (Karneol) und Gelb (Bernstein). Auch wenn der Gedanke an Brautschmuck nahe liegt – es geht hier nicht um eine Götterhochzeit. Das erweist die Grammatik. Der Himmel ist hier Person, d. h., der Himmelsgott An, nicht die gleich benannte Sache Himmel. Die Erde (ki) aber erscheint als Sache; der Name der Erdgöttin Uraš wird gar nicht genannt.« Also Sjöberg 2002, 244 adopts the same cuneiform composite text. However, Rubio 2013, 9 with n. 19 and 21, reports a different composite text (»partly based on M. Civil's unpublished score«) of the line 3, where accordingly sud-rá-ág-gá is not interpreted as »amber« or the like, but rather becomes an adjective »shining« said of »carnelian«: ki kal-kal ^{na4}nír ^{na4}gug sud-rá-ág-gá šu-tag ba-ni-in-dug$_4$, »The loftiest ground became adorned with *ḫulālu*-stones and shining carnelian«. On »Tree and Reed«, still unpublished, see the overview in Jiménez 2017, 20 f.

[1126] Translation adapted from Civil 1964, 3: »My mother is like a bright light on the horizon, a doe in the mountains, a morning star (shining even) at noon«; Nougayrol 1968, 315: »Ma mère, comme la lumière de l'horizon, est un cerf de montagne. Une étoile du matin (brillant encore) en plein midi«; Goodnick Westenholz 1992, 384: »My mother is (like) electrum on the horizon, a doe in the mountains, a morning star (shining even) at noon«; ETCSL 5.5.01 (2006): »My mother is like the bright light {in the sky} {(1 ms. has instead:) on the horizon}, a doe on the hillsides. She is the morning star, {shining even at noon-time} {(1 ms. has instead:) providing plenty of light}«; and Gadotti 2010, 120: »My mother is the heavenly brightness, a mountain doe, a morning star, shining even at midday«. See also Landsberger 1967, 194. About lu-lim of line 23 see Gadotti 2010, 122; the existence of an astral body called ^{mul}lu-lim (on which see Horowitz 2005, 166) »may have influenced the imagery of *Ludingira to his Mother*« according to Peterson 2007, 111 n. 523 (»red deer star«). On dìm of line 30 as a small and composite piece of art cf. the remarks in Cavigneaux – al-Rawi 1995, 38 f. (»bibelot«). One can also note that, unfortunately, in the fragmentary 13th-cent. BC sources from Ugarit (RS 25.421, trilingual Sumerian-Akkadian-Hittite) and Ḫattuša (KUB 4.97, bilingual Akkadian-Hittite, CTH 315C) of the »Message of Lu-dingira to his mother«, the Hittite term corresponding to sud-rá-ág and *elmēšu* is lost (on these sources see Nougayrol 1968; Laroche 1968; Puhvel 1996, 61 f.; Kämmerer 1998, 164–168; Arnaud 2007, text 50; Klinger 2010, 324–328; Viano 2016, 256–265).

[1127] See Gadotti 2011, 202.

so, he used an *a capite ad calcem* arrangement[1128], from the head, to which the heavenly skyline over the mountains alludes, to the feet, to which the pedestal alludes. If so, the crucial point is the colour of the mantle of the doe, amber-coloured indeed[1129], and one can think that the son speaks of the colour of his mother's hair, which in the composite doll depicting her was made of amber.

Interestingly, *sud^{r}-aĝ is further used in another literary Sumerian composition masterfully composed by Lu-dingira. It is »An Elegy on the Death of Nannaya« = Kramer 1960, 52–55 = Sjöberg 1983, from which we learn that Nannaya, Lu-dingira's father, was struck by an illness that would eventually kill him. Reporting this, on line 4 Lu-dingira poetically remembers: »(Precious for me as) rare amber (sud-ág kal-la) found in a distant foreign land (kur sud-da pàd-da), he was stricken with illness«[1130]. The personal name of the father, spelled ^{d}Nanna-*a*, clearly indicates his identification with the Moon-god Nanna. It appears that all Lu-dingira's close relatives had Akkadian names referring to the astral luminosity proper of Venus, the moon, and the aurora: besides his mother Šāt-Ištar and his father Nannaya (both associated with the amber-coloured glimmer), his wife depicted as the ideal wife[1131], whose death is mourned in »An Elegy on the Death of Nawirtum« (ETCSL 5.5.3), in fact bears a name, Nawirtum, meaning »Brightness«[1132], which should actually refer to Aya, the ideal divine wife (if so, this virtually makes Lu-dingira the equivalent of the Sun-god Šamaš)[1133]. One can also note that the Akkadian gloss of a part of line 4 of »An Elegy on the Death of Nannaya« may offer supplementary, and significant, information on the origin of the mentioned amber: Sumerian kur sud-da, »in a distant foreign land«, is glossed *i-na tu-qá-ar ša-di-i, ina tuqār šadî*[1134]*,* so that these expressions are possibly to be cumulatively interpreted as »in sediments of a desolate land«, thinking of the literary use of kur = *šadû*(*m*), »open country, steppeland, desert«, to denote in general faraway empty regions.

There are several other attestations of *elmēšu*(*m*) and *sud^{r}-aĝ in literary Akkadian or Sumerian texts that illustrate the use of amber in decorations of various artefacts or in the production of cult objects.

Considering the Akkadian texts, in the »Standard Babylonian Epic of Gilgameš« (7th cent. BC) there is a passage in which amber (*elmēšu*) is mentioned in the description of a phantasmagoric chariot: »The lady Ištar looked covetously on the beauty of Gilgameš: ›Come, Gilgameš, you be the bridegroom! Grant me your fruits, I insist! You shall be my husband and I will be your wife! Let me harness for you a chariot of lapis lazuli and gold (*lušaṣmidka narkabti uqnî u ḫurāṣi*), whose wheels are gold, amber its horns (*ša magarrūša ḫurāṣamma elmēšu qarnāša*). You shall have in harness ›storm-lions‹, huge mules. Come into our house with scents of cedar! When you

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[1128] On the *a capite ad calcem* arrangement in cuneiform texts see in general Bonechi – Catagnoti 2020, 154 n. 13, with literature.

[1129] On this specific topic see further below the discussion of the »Prayer to Marduk and personal gods«.

[1130] The translations in Kramer 1960, 58 (»The precious brilliant [*sic*], found [only] in remote mountains, had become ill«) and ETCSL (2006) 5.5.2 (»He, precious brilliance found in a distant mountain [?], was stricken with illness«) have trivialised this clear reference to a rare item coming from distant lands, which, by contrast, did not escape Landsberger 1967, 191, who convincingly included it in the paragraph »Die Kostbarkeit (Seltenheit) des *elmešu*«.

[1131] See Gadotti 2014, 28. 51 n. 11.

[1132] See Löhnert 2016, 51 f. Furthermore, line 53 of this poem reads: UL X A IGI-mu sud-ág kal-la-mu me-àm ga-mu-ri-in-pad. It has been translated as »Where now is my …, my precious brilliant! I would cry out to you« (Kramer 1960, 64) and »Where is my …, my precious brilliance? I would call upon you!« (ETCSL 5.5.3). This nostalgic cry by Lu-dingira follows and precedes similar desperate questions, such as »Where is that which brightens the … face, my noble counsel?« and »Where are my sweet songs which make the heart rejoice?«.

[1133] For the Early Dynastic Mari goddess ^{d}MÙŠ.ZA.ZA, actually a form of Ištar, the interpretation *Šube$^{\prime}$ītum, »She of the *šuba*-stone«, seems preferable to *Nawirtum, and see the remarks by Gianni Marchesi in Marchesi – Marchetti 2011, 228 f.

[1134] Cf. Kramer 1960, 69; AHw (1974) 1366 s. v. *tug/qāru*(*m*), »eine Ablagerung?«; Sjöberg 1983, 319 (with conjectures on the precise environmental referent of this unparalleled expression); CDA^{2} (2000) 408 s. v. *tugāru*(*m*)*, tuqāru*, »deposited material, deposition?«; CAD T (2006) 480 s. v. *tugāru* (*tuqāru*), »(mng. uncertain)«; George 2013, 89.

come into our house, doorway and throne shall kiss your feet!‹« (tablet VI, 6–15)[1135]. The poet ironically plays with the stormy character of Ištar[1136], adolescent sister of the Sun-god and therefore sister-in-law of the Aurora-goddess: paradoxically, the chariot she promises as a nuptial gift to the solar hero Gilgameš – but normally gifts are given by the groom to the bride – imitates that of the Sun-god (besides the mules, gold and lapis lazuli allude to him), while the peaceful house looks like that ruled by Aurora. As for the »horns« of this chariot, probably they belong to its forepart[1137]. If so, such an anterior position within the complex morphology of the solar vehicle suggests that by mentioning amber, the poet, who occupies the position of one who looks at the eastern horizon, is alluding to the aurora (i.e. to the goddess Aya) which precedes the rising of the sun (her husband Šamaš) to which the gold alludes, the lapis lazuli being instead an allusion to the night in the background from where the two gods are coming[1138]. It can be added that this occurrence of *elmēšu* in the »Standard Babylonian Epic of Gilgameš« clearly implies that amber was considered very precious. As for this feature, one can incidentally recall here the following peculiar statement in line 23 of the »Righteous Sufferer's Prayer to Nabû« STT 65 = SAA 3 12 (Sultantepe, 7th cent. BC): »I do not see …; death *eludes* me like amber (*mūtu kî el-me-še irtuqqanni*)«[1139]. This passage remains unclear, but given its moral tone, it may once again imply the preciousness of the amber.

Evidence for the use of amber as a material used for cult objects connected with the main gods is abundant in Akkadian cuneiform texts of the 1st millennium BC. An attestation of *elmēšu* in connection with Ištar occurs in line 21' of the »Address by Shalmaneser III to the goddess Mullissu« KAR 98, a text in which an Assyrian king of the beginning of the second half of the 9th century shows his devotion to the great goddess of Arbela: »I (the king) fixed a star of shining amber (*kakkabtu el-me-ši namri*) resting on the top (of the refurbished harp of the temple)«[1140]. Later, the lines 9–12 of the »Babylonian Hymn to the god Erra« AO 17642 = Nougayrol 1947, 39–41 (Nippur, around 400 BC) mention *elmēšu* in a description of the cult statue of the Lord of the Underworld: »its upper cheeks are like daylight of amber (*kīma urri el-me-šú usuk*[*kāšu*]),

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[1135] See the edition of the passage and its discussion in George 2003, 618 f. and 830 (»The material *elmešu* can be a precious metal and in such usage is usually translated ›electrum‹, but it is also known to be a rare, semi-mythical stone and I have opted for that. This stone is known for its bright colour»). Previously, *elmēšu* here meant »electrum«, e.g. for CAD M/1 (1977) 33; CAD Q (1982) 139.

[1136] See Foster 1987, 34.

[1137] See the discussion in Durand 1983, 281–283; also Dalley 1989, 129 n. 52.

[1138] On this latter point see the discussion in Alaura – Bonechi 2012, 20 and n. 81, with literature.

[1139] Untranslated in Lambert 1959, 131; then, see Livingstone 1989, 22 (»I do not see …; death eludes me like precious *electrum*«); CAD R (1999) 267 (»death has eluded me like electrum[?]«); Foster 2005, 699 (»I have gone everywhere for a mother, she has shrunk from me and is clawing at me. Death has tantalized me like a precious stone. I constantly go up to the roof to jump off, but my life is too precious, it turns me back«). The association of *elmēšu* with *mūtu*, »death«, and *rêqu*(*m*)*, ruāqu*(*m*), »to be distant, go far off; to get out of reach, escape someone«, is unparalleled to our knowledge. However, it is reminiscent of another precious thing, i.e. *kaspum*, »silver«, associated with *ruāqum*, »to become lost (said of money, valuables)« (see CAD R [1999] 267, and Kogan 2006, 201), in the expression *kaspum mādum irtuqqanni*, »quite a bit of my money has been lost«, attested in line 20 of the extraordinarily dramatic Old Assyrian letter BIN 4 32, written by the merchant Pūšu-kēn. Its complete passage in lines 17–21 (to be considered with the general remarks of Veenhof 1987, 62 and 74 n. 74 in the background) reads: »Two or three of my *tamkāru*'s, on whom I am dependent, were foolish so that I was deprived of a lot of silver. This is not the right moment to disclose their names to you« for Dercksen 1999, 85; »Among the selling agents on whom I depend there are two or three unwise ones, so that I have lost much silver, but it is not expedient to reveal their names to you« for Veenhof 1999, 62 n. 30; »Deux ou trois de mes agents-*tamkārum* dont je dépends n'ont pas de bon sens. Une grande quantité d'argent m'a échappé. Il n'est (toutefois) pas convenable vous révéler leurs noms!« for Michel 2001, 309; »For my agents on whom I depend, of whom two or three have little sense, a lot of money is out of reach. It is not proper for me to mention their names to you« for Larsen 2015, 225; see also Stratford 2017, 210. Considering its figurative language, perhaps a (to us unknown) proverbial expression of bitter tone is quoted in the »Righteous Sufferer's Prayer to Nabû«.

[1140] Following MacGinnis 2014, 110. Cf. CAD E (1958), 107, and Foster 2005, 783 (»a brilliant gem, shining like a star«).

its lower cheeks flash constantly like lightning (*kīma birqi ittanabriq lētāšu*), the upper cheeks of Erra are amber (*ša* ^{d}Nergal *el-me-šú usukkā*[*šu*]), its lower cheeks flash constantly like lightning«[1141]. However, more often *elmēšu* occurs in texts directly or indirectly focused on Marduk, the supreme Babylonian god of magic and wisdom, water and vegetation, and judgement. Three passages of the »Poem of Erra and Išum« (possibly datable to the 8th cent. BC) run respectively as follows: »I put the *mēšu*-tree (and) the amber (*el-me-ši*) elsewhere, and showed no one where« (I 148; the god Marduk is speaking about his own cult statue)[1142], »Clear amber (*el-me-šu ebba*) [from] its [pl]ace shall I bring up« (I 167; Erra is speaking, in fragmentary context)[1143], and »O woe, Babylon, that I suspended like a cylinder seal (made) of amber on the neck of the Sky-god Anum! (*ša kīma kunukki el-mi-šu addûšu ina tikki* ^{d}*Anim*)« (IV 43; Marduk is speaking)[1144]. The latter passage is *inter alia* important because it informs about the existence of small, but very precious, sacred objects made in amber where written texts may be carved, a feature on which see further below. Some time later, in lines 30–32 of the mystical commentary KAR 307 = SAA 3 39[1145], a text written by the Assyrian healer Kiṣir-Aššur (7th cent. BC), one reads: »The middle heaven of *saggilmud*-stone is of the Igigi gods. Bēl (i.e. Marduk) sits there in a high temple on a dais of lapis lazuli and has made a lamp of amber (^{giš}*buṣin* ^{na4}*el-me-ši*) shine there«[1146]. And the oracle SAA 9 1.6 (7th cent. BC) reports in lines III 23'–29' that: »I (Marduk) keep watch in a golden chamber in the middle of heaven, I let a lamp of amber (*nūr ša il-me-ši*) shine in front of Esarhaddon, king of Assyria. I guard him like the crown of my own head«[1147]. A less clear statement occurs in the »Prayer to Marduk and personal gods« IV R² 59/2 (7th cent. BC), lines 57''–59'': »Make me as resplendent as a gold thread! That I may be as precious before you (Marduk) as a doe (?) of amber (*kî lulīmti el-me-ši*)! Drive away evil, protect my life!«[1148]. The Akkadian word

[1141] See CAD E (1958) 107; Bodi 1991, 94 and n. 59; CAD U/W (2010) 243 (with the good solution *ki-ma ur-ri* instead of »*ki-ma* IB-ḪU« of the *editio princeps*) and 284.

[1142] Translation adapted from CAD E (1958) 107 (»I changed the place where [grow] the mes-trees [bearing] *e.* and did not show anybody«, followed by Bodi 1991, 92); Cagni 1969, 74 f. (»lo cambiai il posto dell'albero-*mēsu* [e] dell'[ambra-]*elmēšu* e non lo rivelai a nessuno«); CAD N/1 (1980) 169 (»I put *mēsu* wood and *elmēsu* stone elsewhere and will not reveal them to anybody«); Müller 1994, 789 (»Das *mesu*-Holz und den *elmeschu*-Stein brachte ich an einen anderen Ort und habe ihn niemandem gezeigt [Ein kostbarer, gelblicher Stein, vielleicht Bernstein]«); Foster 2005, 888 and n. 3 (»I removed the wood and the gemstone«, noting that »The original depends upon a word-play in *mēsu* (a tree) and *elmēšu* (a gemstone). The meaning is that the specific materials used to make the image are no longer to be had«). See also Cagni 1969, 192 f.

[1143] Translation following Foster 2005, 888. Cf. CAD E (1958) 107 (»*el-me-šu ebba ša* [*te*]*-ri-šú elâ*[*šu*]), not accepted in Cagni 1969, 74 f. (»La lucente [ambra-]*elmešu* … del suo … farò? scendere …«), 198 and n. 168. Also cf. Bodi 1991, 93, and Müller 1994, 789 f.

[1144] See CAD E (1958) 107 (»O woe, Babylon! which I put on the neck of Anu like a cylinder seal (made) of *e.*-stone«, followed by Bodi 1991, 93 f.); Cagni 1969, 108 f. (»Ah Babilonia, che come un sigillo di ambra-*elmēšu* io avevo appeso al collo di Anum«) and 229; Müller 1994, 794 (»Ach Babylon, das ich wie ein Siegel von *elmeschu*-Stein um Anu's Hals legte. [Ein kostbarer, gelblicher Stein, vielleicht Bernstein]«); Foster 2005, 903 (»Alas for Babylon, that I suspended like a gemstone silver on the neck of the sky!«); CAD T (2006) 402 (»Babylon which I placed on Anu's neck like a cylinder seal of *elmešu*-stone«); also Wisnom 2019, 3 and n. 4. Falkenstein 1957, 304 mentions this passage in the framework of his understanding of *sud^{r}-aĝ as a designation of a meteoric metal.

[1145] Basic data on this text in Arbøll 2020, 135. 184. 209. 304 f.

[1146] See Parpola 1997, CV n. 248–249; Nissinen 2003, 107 f.; Annus 2016, 83 n. 131; and Thavapalan 2020, 281 n. 1062; also CAD E (1958) 107; Livinsgtone 1989, 100 (»lamp of *electrum*«), followed by Rochberg 2009, 67; Horowitz 1998, 1 f. (»*elmešu*-stone«); and Popović 2017, 10–12. Cf. CAD B (1965) 349, »he made it shine within with *b.*-glass and crystal«; Oppenheim 1970, 16 and n. 31 (»crystal«, »rock crystal«).

[1147] See CAD E (1958) 107; Hecker 1984, 58; Parpola 1997, 7; Nissinen 2003, 107; Gabbay 2015, 160.

[1148] See Oshima 2011, 284. 291 (»Brighten me like flax of gold. Like a *jewel* of *elmēšu*-stone, let me be precious to your eyes. Drive away evil, protect my life!«); also Landsberger 1967, 191 (»möge ich in deinen Augen so kostbar sein wie (eine Perle) aus *e.* in Granatapfel-Gestalt«); Seux 1976, 211 (»Fais-moi briller comme un fil d'or, que je te sois précieux comme un bijou [?] d'ambre; Repousse mon mal, protège mon souffle«); and van der Toorn 1985, 145 (»as a *lulimtu* made of *elmešu*-stone«). The identification as »doe« of the word spelled *lu-lim-ti*, thus *lulīmtu*, feminine of *lulīmu*, »red deer, stag«, is conjectural, but cf. above the discussion of the passage with the doe in »Message of Lu-dingira to his mother«. On this term see AHw (1965) 562 s. v. *lulimtu*, »ein Kleinod?« (compared with the plant

for amber, spelled *ˀíl*ˀ*-me-šú*, also occurs in a very fragmentary passage in line 4 of the »Late Babylonian Commentary on ›Marduk's Address to the Demons‹« (2nd half of the 5th cent. BC or later)[1149]. Some centuries later, in the extraordinary »Marduk's Eulogy of the Elder Brother of Eumuša« BM 32655 = Jursa – Debourse 2017, 90 (Babylon, 2nd cent. BC or later), the closing text, written on the lower edge, is: »A total number of 30 lines (of cuneiform text) is on the clay tablet and the amber (ˀimˀ-dub *u* ^{na4r}*el-me-šú*ˀ) of the Elder Brother of Eumuša«[1150], confirming that cuneiform texts could be carved on amber, as suggested by the above-mentioned passage with the cylinder seal of the »Poem of Erra and Išum«.

Considering the Sumerian texts, in lines 20–23 of the hymn to the god Enlil »Ur-Namma B« the founder of the Ur III kingdom (2112–2095 BC) speaks of his magnificent architectural works at the Ekur temple of this god in Nippur: »The shepherd Ur-Namma made the lofty Ekur grow high in Duranki. He made it to be wondered by the multitude of people. He decorated the archivolts of the Lofty Gate, the Great Gate, the Gate of Peace, the Ḫursaĝ-galama, and the Gate of Perpetual Grain Supplies with amber and refined silver (sud-rá-ág kug-me-a)«[1151].

A different group of texts mention *sudʳ-aĝ immediately after ^{na4}za-gìn, »lapis lazuli«. In these cases it is reasonable to translate this syntagm as »lapis lazuli (with) amber-coloured inclusions«, making reference to the variety of this prized blue stone with gold-coloured pyrite flecks. The copy, written during the first half of the 2nd millennium, of a Sumerian inscription of the Ur III king Šu-Sin (»Šu-Sin 9«), commemorating an event that happened in 2030 BC, includes a passage in which this ruler is credited with having decorated a cult boat of the gods Enlil and Ninlil with the precious stones ^{na4}nír (»agate«), ^{na4}gug (»carnelian«), and ^{na4}za-gìn (»lapis lazuli«), which are said to be respectively sag-kal (»precious [and] selected«), gi-rin (»reddish«), and sud-ág, a qualification commonly translated as »bright«[1152], but more likely referring to amber-coloured inclusions. In the Sumerian hymn »Išme-Dagan A+V« king Išme-Dagan of Isin (1953–1935 BC) praises in lines 287–292 the magnif-

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name *lulumtu*); CAD L (1973) 241 s. v. *lulimtu*, »mng. uncertain […]. Possibly an ornament, perhaps in the shape of a deer«; CDA² (2000) 185 s. v. *lulimtu*, »(a jewel)?«.

1149 See Geller 2016, 396 f.

1150 See Jursa – Debourse 2017, 90 f. also Jursa – Debourse 2020, 270. É-umuš-a was the name of Marduk's sanctuary in his Babylon temple called É-sag-íla (George 1993, 156), while »Elder Brother (^{lú}šeš-gal)« refers to the main priest of the New Year festival. In the light of the mention of a cylinder seal in amber in the »Poem of Erra and Išum« discussed above, these remarks on the end of »Marduk's Eulogy of the Elder Brother of Eumuša« deserve to be quoted in full: »The colophon states that the present text was written not only on the clay tablet which we are reading, but also on the *elmešu*-stone of the Elder Brother of Eumuša. *elmešu* is a word with an esoteric meaning. It seems to denote some sort of yellow translucent stone and has therefore been associated with amber […]. The material plays a part in Mesopotamian cosmology as one of the building materials of the Heavens [KAR 307 (…)]. *elmešu* is also related to the Hebrew word *ḥašmal* which is a hapax legomenon in the book of Ezekiel [Ez 1, 4. 27; 8, 2 (…)]. The biblical passage in which it occurs seems to have been strongly influenced by a Mesopotamian context, as can be seen, i.a., in its points of contact with KAR 307 […]. In Ezekiel's vision of God it is said that ›upward from what had the appearance of his waist I saw as it were *gleaming metal*‹ [Ez 1, 27, ESV]. The question of wherefore this stone was used [in the context of the New Year's festival] remains. Perhaps it was part of the priestly attire worn during the ritual, and thus one might think of the *ḥōšen*, a pectoral plate decorated with precious stones worn by the Jewish High Priest according to Exodus 28. Another option, more closely linked to Ezekiel's vision, is that the stone was hung on the cult statue. We know that inscribed objects were sometimes worn by cult statues [e.g. a cylinder seal containing a land grant as attire of (the goddess) Uṣur-amāssu (…)]« (Céline Debourse in: Jursa – Debourse 2017, 94).

1151 »Ur-Namma B« 20–23: ^{20}sipad ^{d}Ur-^{d}Namma-ke$_4$ É-kur maḫ Dur-an-ki-a-ka an-šè mi-ni-in-mú ^{21}u$_6$ di-bi-šè ùg šár-ra-ba ši-im-ma-gub ^{22}ká maḫ ká gal ká silim-ma ḫur-sag-galam-ma á še nu-kud-da ^{23}sud-rá-ág kug-me-a sig$_7$-igi-ba še-er-ka-an mu-ni-in-dug$_4$; this translation of sud-rá-ág kug-me-a follows Wilcke 1969, 138 (»Mit Bernstein and geläutertem Silber schmückte er ihre [der Tore] ›Brauen‹«), and Jacobsen 1990, 44* (»He decorated their archivolts with amber and fine silver«); differently, »with splendent metal (and) pure silver he adorned their ›brow‹« in Castellino 1959, 109; »He decorated their lintels with *electrum* (and) purified silver« in Klein 1989, 51; »He made glittering the eyebrow-shaped arches of (list of the buildings), by covering them with refined silver« in ETCSL [2006] 2.4.1.2. Also cf. Falkenstein 1957, 304. On É-kur and Dur-an-ki see George 1993, 116 and 80.

1152 Civil 1967, 33, and Frayne 1997, 318.

icent throne for the god Enlil and his spouse Ninlil he had built and decorated in the part of Enlil's Ekur temple at Nippur called Enamtila (on this abode see also below), probably a bedroom: »I, Išme-Dagan, son of Dagan, stood the throne for Enlil my master on a dais … of seven storms, decorated in a masterly and highly skilled manner with eye-shaped agate (^{na4}nir$_7$-igi), ^{na4}*šuba*-stone, (and) amber-coloured lapis lazuli (^{na4}za-gìn sud-rá-ág), and I seated Enlil there with my lady Ninlil«[1153]. A further occurrence of this syntagm za-gìn sud-ág is likely to be found in a very difficult earlier text, probably to be dated to the Early Dynastic period but known to us through two school copies written at Nippur at the end of the 3rd millennium BC. In fragmentary context, its *incipit* includes this passage: za-gìn sud-ág-ba (ISET 1 211 I:4) // ˹za˺-gìn sud-ág (ISET 1 212 I:3)[1154]. In the *editio princeps* the *incipit* has been tentatively translated as »May …, the far away mountain land, bring to you lapis lazuli and sù-ág, (products) that are characteristic of (or: an ornament of) (this) mountain land«[1155], unfortunately with an unclear geographic reference. However, it is certain that in the ancient Near East lapis lazuli arrived from the mountains of Afghanistan, from which amber could hardly have come. Therefore, more likely za-gìn sud-ág means »lapis lazuli with amber-coloured inclusions«, thinking of a specific precious stone different from za-gìn-duru$_5$, which this text says originated from another eastern land, Tukriš[1156]. Two passages of the epic tale known as »Enmerkar and the Lord of Aratta« (attested in manuscripts of the 1st half of the 2nd mill., but narrating events of roughly one thousand years before) are worthy of being quoted here. The former occurs in lines 38–41: »My sister! Inanna! For Uruk, gold and silver shall be masterly worked for me (in Aratta) and the bright lapis lazuli (^{na4}za-gìn-duru$_5$) [cut] from the ashlars. […] amber-coloured glimmer of the bright lapis lazuli (sud-rá-ág ^{na4}za-gìn-duru$_5$) […]«[1157]; the latter occurs in lines 481–485: »(Then) when (Inanna) comes – the mountain of precious metals and lapis lazuli (kur kug ^{na4}za-gìn) has been gathered for him like heaped up reeds – they shall heap up its gold, s[ilve]r] (and) amber-coloured <lapis lazuli> (kù-sig$_{17}$ k[ù-babba]ar sud-rá-ág-bi) for Inanna, the Lady of Eanna, in the courtyard of Aratta«[1158]. In these passages *sud^{r}-aĝ – hardly amber here, given the eastern setting of Aratta – is said of kinds of

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[1153] »Išme-Dagan A+V« 287–292, *287* ^{d}Iš-me-^{d}Da-gan dumu ^{d}Da-gan-na-me-en *288*^{giš}gu-za barag mir 7 gar-a za DI$^{?}$ GAG$^{?}$-a ^{na4}nir$_7$-igi-bi $^{[na4]r}$šuba$^{\rceil}$-ke$_4^{?}$ *289*^{na4}za-gìn sud-rá-ág-gá šu tag-ga *290*kíg gal-le-eš šu kug-zu maḫ *291*^{d}En-líl lugal-mu-ra ḫu-mu-na-gub *292*nin-mu ^{d}Nin-líl-da ^{d}En-líl ḫu-mu-un-da-tuš (»translucent lapis lazuli« and not »lapislazuli and amber« in ETCSL [2006] 2.5.4.1). On Enamtila and sex see Michalowski 1989, 81.

[1154] Michalowski 1988, 157.

[1155] Michalowski 1988, 163, with discussion on pp. 159 f.

[1156] In Michalowski 1988, 158 and 163 f. za-gìn-A is read za-gìn-a and translated »lapis«. On $^{(na4)}$za-gìn-duru$_5$ see CDA^2 (2000) 443, »(a kind of) lapis lazuli«, and ePSD2, »lapis«; it means »light blue, turquoise vitreous material« for Thavapalan 2020, 355–366.

[1157] *38*Nin-mu ^{d}Inanna Unug^{ki}-˹šè$^{?}$˺ *39*kù-sig$_{17}$ kù-babbar ḫa-ma-an-galam-e *40*^{na4}za-gìn-duru$_5$ lagab-ta […] *41*sud-rá-ág ^{na4}za-gìn-˹duru$_5$˺ ˹x˺ […] ˹x˺ ˹x˺, »My sister, let Aratta [reading Aratta^{ki}] for Unug artfully work gold and silver for my sake! [Let them cut for my sake] polished lapis lazuli from its block; [let them *work* for my sake] the translucent smooth lapis lazuli« for Vantisphout 2003, 58 f.; »My sister, let Aratta fashion gold and silver skilfully on my behalf for Unug. Let them cut the flawless lapis lazuli from the blocks, let them … the translucence of the flawless lapis lazuli … build a holy mountain in Unug« for ETCSL (2006) 1.8.2.3; »Meine Schwester! Innana! Für Uruk soll man mir (in Arata) Gold und Silber meisterlich verarbeiten und den hellen Lapislazuli aus den Quadern [*schneiden*]. […] *Glanz* des hellen Lapislazuli […]« for Mittermayer 2009, 116 f. and 225 f.. However, for Landsberger 1967, 191 f. »zum Tempelbau werden verwendet: Gold, Silber, Lapislazuli und *e.*« (cf. Falkenstein 1957, 304 as »Metallname«).

[1158] *481*Du-a-nu kur kug ^{na4}za-gìn-na *482*gi níg dub-ba-gin$_7$ gú ḫu-mu-na-ab-gar *483*kù-sig$_{17}$ k[ù-babba]ar sud-rá-ág-bi *484*^{d}Inanna nin É-an-na-ra *485*kisal Arat[ta^{ki}-k]a gur$_7$-šè ḫu-mu-un-dub-dub-bu, »At his coming, the holy mound of lapis lazuli shall humble itself before him like a crushed reed. They shall amass shining gold and silver for Inana of the Eana in the courtyard of Aratta in great piles« for Vantisphout 2003, 82–85; »As he goes, let the mountain of bright lapis lazuli humble itself before him like a crushed reed. And let them heap up its shining gold and silver in the courtyard of Aratta for Inana the lady of E-ana« for ETCSL (2006) 1.8.2.3; »(Dann) soll er, wenn (Innana) kommt, – der Berg der Edelmetalle und des Lapislazuli ist für ihn (ja bereits) wie aufgehäuftes Rohr zusammengetragen worden –, den *Glanz* von Gold und [Silb]er für Innana, die Herrin des Eana, im Hof von Arata haufenweise aufschütten« for Mittermayer 2009, 142 f. and 225 f.. See Landsberger 1967, 191 f. (cf. Falkenstein 1957, 304 as »Metallname«). On Eanna, George 1993, 67 f.

lapis lazuli, and it likely refers to the amber-coloured glimmering of these precious stones illuminated by a dim light »when Inanna comes«, i.e. when Venus shines in the dark sky.

The passages collected so far show amber not only as a valuable and highly esteemed material, from which precious objects and decorations were made, but also as a connoted texture of a specific variety of lapis lazuli. Further occurrences of *elmēšu*(*m*) and *sud^{r}-áĝ enrich the documentary framework, indicating their use to refer to a colour, or more precisely to a hue. An unexpected use of *elmēšu* occurs in the scientific record in one of the Babylonian »Astronomical Diaries«, BM 45998 + BM 46049 = Sachs – Hunger 1996, 290 f. (end of the 1st mill. BC, event of 122 BC), if, as convincingly argued, obv. 11' is to be interpreted as follows: »[…] setting of the moon, a rainbow whose glows were (like) amber (^{d}TIR.AN.NA *šá zīmūšu*(MÚŠ^{meš}-*šú*) *elmēšu*(SUD<.ÁG>)) [stretched] from the north to the south side […]«[1159]. Probably here reference is made to the yellowish-pinkish colour of an extraordinary aurora borealis seen in Mesopotamia. Another reference to an amber tint of the sky should be found in a much earlier text, evidently imploring rain clouds in a period of drought that affected Southern Mesopotamia. It is the Sumerian »Prayer to An for Rīm-Sîn« = UET VI 102 = Steible 1975, 6 (king Rīm-Sîn of Larsa reigned between 1822 and 1763 BC), whose line 23 runs as follows: »may (the Sky-god An) open for you the amber-coloured nipples of the sky (ubur an sud-ág) so that the rain of the sky shall rain for you!«[1160].

These chromatic references may be compared with what is said, for the earth and not for the sky, in another text written in Sumerian, the »Debate between Grain and Sheep« (its older manuscript dates back to around 1800 BC), whose lines 71–73 read: »Grain called out to Sheep: ›Sister, I am your better; I take precedence over you. I am the glory of the amber hue (sud-rá-ág) of the Land!‹[1161]. The same should apply to lines 251–252 of the already mentioned, and more or less contemporary, Sumerian hymn »Išme-Dagan A+V«, where the king of Isin reveres the god Enlil saying: »I (Enlil) am gold dust, I am lapis lazuli in its lode, like amber (sud-rá-ág) I brighten over the Land (of Sumer)«[1162]. In this connection it is important to recall that Enlil was not an atmospheric god, but rather a terrestrial deity[1163].

All these attestations in various ways refer to the materiality of *sud^{r}-aĝ = *elmēšu*(*m*), defining a valuable glimmering stone and the related yellowish-pinkish hue. Other occurrences of

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[1159] This translation is suggested in Mitsuma – Hayakawa 2019, 48.

[1160] Translation of this passage of »Rim-Sin C« (ubur an sud-ág gál ḫu-mu-ra-ab-taka$_4$ šeg$_x$(IM.A) an-na ḫu-mu-ra-ab-šèg) adapted from Steible 1975, 6 f. 21 f. (»Die Zitzen des leuchtenden Himmels möge er dir öffnen [und] Regenwasser vom Himmel für dich regnen lassen!«); Charpin 1986, 275–277 (»Qu'il ouvre les seins du ciel éclatant, qu'il fasse pleuvoir pour toi les nuages de pluie!«); Horowitz 1998, 262 f. (»May he open the teat of the *elmēšu* heaven, may he make the rain of heaven rain down«, »Because sud.áĝa = *elmēšu* […], the surface of the heavens appears to be made of *elmešu*-stone, and rain water may be stored in reservoirs above»); ETCSL (2006) 2.6.9.3 (»May he open for you the breasts of the brilliant heavens, and cause the rain to rain for you«); Brisch 2007, 200 f. (»He shall open for you the teats of the shining heavens so that the rain of heavens shall rain for you«); and Gabbay 2015, 159 (none of them exploits the chromatic connotation).

[1161] ETCSL (2006) 5.3.2: ^{71}^{d}Ézina-e u$_8$-ra gù mu-un-na-ˀdéˀ-[e] ^{72}nin$_9$ dub-sag-zu-me-en igi-šè ma-ra-ab-gub-bé-en ^{73}sud-rá-ág kalam-ma-ka giri$_{17}$-zal-bi-me-en, »I am the glory of the lights of the Land«, and Mittermayer 2019, 221, »Von den Lichtern des Landes bin ich die Prächtigst«, but see Landsberger 1967, 192 »es ist die sumerische Ceres (nicht der personifizierte Sommer), die sich rühmt, der *e.* des Landes zu sein, was natürlich auf die goldgelbe Farbe des reifen Getreides anspielt«.

[1162] »Išme-Dagan A+V« 251 f., kù-sig$_{17}$ saḫar-ba-me-en ^{na4}za-gìn kur-ba-me-en / sud-rá-ág-gin$_7$ kalam-ma gír-gír-me-en, »wie ein … blitze ich im Lande Sumer auf« in Falkenstein 1957, 305; »I flash over the country like light« in CAD E (1958) 108; »I light the Land like a lamp« in ETCSL (2006) 2.5.4.01.

[1163] As for the negation of the atmospheric nature of Enlil, see the evidence provided in Steinkeller 1999, 114 n. 36, with literature, where Enlil is *inter alia* compared with terrestrial gods as Dagan and Aššur. Enlil's main epitet was kur gal, »great mountain«, his Nippur temple was called Ekur, »House (which is a) Mountain«, his wife was called Ninḫursaĝa, »Lady-of-the-Mountain-Range(s)« (see Steinkeller 2019, 11–13), and his son Ninurta was a warlike farmer god. Note that amber is also associated with other members of Enlil's household, his daughter Ninimma and his minister Nuska, a Firelight-god. Perhaps Enlil was originally a *numen loci*.

these two terms directly refer to gods, in the sense that they are used as their designations or in descriptions of their specific properties. Their meaning clearly derives from the aforementioned luminous and chromatic properties of that stone.

The Old Babylonian forerunner of the lexical series An = *Anum*, TCL 15 168, documents ^{d}Sud-ág as an epithet of Aya (^{d}*A-a*), »Aurora«, wife of the god Šamaš (^{d}Utu), »Sun« (her Sumerian name was Šerda)[1164]. Much later, this surfaces again in two bilingual (Sumerian and Akkadian) religious texts from Assur (7th cent. BC). One is the fragmentary prayer VS 24 31 = Maul 1991, 71 f., to the wife of the Moon-god Sîn, i.e. the goddess Ningal, where their son Šamaš and his wife Aya are invoked on rev. 2'–3': »Oh Šamaš, young hero, […]! Oh Aya (^{d}Sud^{ud}-ág), bride of the Egišnugal-temple, […]!«[1165]. The other, and much more informative, text, is the »Compendium of Ḫulbazizi incantations« = Ebeling 1953, 361–379 = LKA 77, another text written by the Assyrian healer Kiṣir-Aššur[1166], a long part of which includes invocations to the Moon-god Sîn, to his wife Ningal, to their son Šamaš the Sun-god, and to his wife Aya the Aurora goddess (obv. II:25-III:21). The latter invocation occurs in obv. III:13–21: »For the life of the Aurora goddess (^{d}Sud^{ud}-ág/[^{d}*A-a*]), his (of the Sun-god) beloved principal spouse, lady of the Underworld and of the Cultivated Land, she who is supreme at the Foundation-of-the-(Solar-)Mountain, veiled princess, queen of the Ebabbar-temple!«[1167]. Depicted as the mistress of the lower and upper regions (*bēlet erṣēti u mēšreti*), i.e. of the netherworld as well as of the land inhabited by mankind, »Aurora« is the female ruler of the »White-House« (*šarrat Ebabbara*), i.e. of the underworld residence of the solar divine couple. Her greatness appears twice. First, at dawn, when she manifests her luminosity at the base of the eastern side of the mountain from which her husband rises (*ina išid šadî šūturat*). Secondly, during twilight, when the Sun-god comes back home and his wife's luminosity appears again in the west at the opening of the home's doors, but in a lower tonality, as if she were veiled (*rubātu pussuntu*), the veil being not only peculiar to the bride, but also to the night[1168]. It is probably in this latter capacity that Šerda/Aya is called ^{d}Sud^{ud}-ág, that is very likely *Elmēšum*, this divine epithet, »Amber«, saying something of the peculiar way in which the goddess glimmers, radiating a low and warm glow at dusk (more on this below in the discussion of the personal names).

Šerda/Aya, i.e. »Aurora«, also called ^{d}Sud^{ud}-ág, is not the only goddess often associated with *sud^{r}-aĝ, the other one being her sister-in-law Inanna/Ištar, »Venus«[1169], in both her aspects of Morning Star and Evening Star. This is shown by line 42 of the Sumerian hymn »Šulgi X«, where the Ur III emperor Šulgi (2094–2047 BC) praises this goddess as »the lady, the amber-coloured glimmer (sud-rá-ág) of the sky«[1170]. In the hymn »Iddin-Dagan A«, king Iddin-Dagan of Isin (1974–1954 BC) praises the goddess in this way: »I shall greet the great lady of heaven, Inanna! I shall greet the holy torch who fills the heavens, the amber-coloured glimmer (sud-rá-ág), Inanna,

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[1164] Falkenstein 1957, 305; Powell 1989, 450 with n. 31; and 453; Richter 1999, 301 and n. 1216; Krebernik 2012 (»›goldgelber Glanz‹ bzw. ›goldgelb glänzendes Gestein/Metall‹ [akk. *elmēšu*]«); also Alaura – Bonechi 2012, 34 n. 154.

[1165] ˹ur˺-sag šul ^{d}U[tu ...] // *qar-rad eṭ-lu* [*Šamaš …*], ^{d}Sud^{ud}-ág é-[gi$_4$-a É-giš-nu$_{11}$-gal ...] // ^{d}*A-a kal-lat* É-[MIN …]. See Maul 1991, 71 f. On É-giš-nu$_{11}$-gal, »House of alabaster«, George 1993, 114.

[1166] Basic data on this text in Arbøll 2020, 183. 206 with n. 77; 309.

[1167] Reading ^{13}zi ^{d}Sud^{ud}-ág // [*ni-iš* ^{d}*A-a*] $^{14–15}$nidlam^{l}(GAL$_4$.GÌŠ.NIN) ki-ág-gá-a-ni // [*ḫi-ir-tú / na-ram-ti-šú*] $^{16–17}$nin kur-g[a-… ki …] // *be-let er-ṣe-ti* [*u*] *me-reš-ti* $^{18–19}$[...] // *ša ina i-šid* kur-*i* / *šu-tu-rat* $^{20–21}$[égir sag-túg-dul-la ...] // *ru-ba-tú pu-su-un-tú / šar-rat* É-babbar-ra (restoration of the Sumerian text on line 20 based on the same expression in rev. I:18, and see CAD P [2005] 537). Cf. Ebeling 1953, 369 f. (»Beim Leben der *Aja*, seiner geliebten Erstgemahlin, der Herrin der Erde [und] der Pflanzung, die im Grunde des Berges gewaltig groß ist, der Fürstin, der Verschleierten, Königin von *Ebabbara*«). On É-babbar see George 1993, 70.

[1168] Cf. the Old Babylonian »Prayer to the Gods of the Night« line 9, »Night draws a veil« (*pussumat mušītum*), Foster 2005, 207.

[1169] A first analysis of the relevant occurrences in Falkenstein 1957, 305.

[1170] ETCSL (2006) 2.4.2.24, nin sud-rá-ág an-na (»The lady, the light of heaven«). See van Dijk 1954, 86 f. (»La Dame, la lumière du ciel«); Klein 1981, 338 f. 151 (»The queen, the luminary of heaven«); Gadotti 2010, 122 (»The lady, the heavenly brightness«).

her who shines like daylight, the great lady of heaven, Inanna!«[1171]. The religious text »Dumuzid-Inanna P« includes in segment C line 31 a praise of the dwelling called Enamtila, lit. »House-of-Life« – likely the bedroom where Inanna and her husband Dumuzid enjoy their love – in which the goddess herself is defined as »amber-coloured glimmer« (sud-rá-ág)[1172]. This same motif also occurs in the *incipit* of the 7th-century BC bilingual (Emesal Sumerian/Akkadian) »Eršema-prayer 42« = Gabbay 2015, 150–157, whose forerunner was included, one thousand years before, in the Old Babylonian syllabic Sumerian *balag*-prayer VS 2 4 = Gabbay 2015, 302 f.: »(Seen) from earth, in the sky you are the amber-coloured glimmer (sud$^{da/ud}$-ág) glowing (mú) like fire!« (Sumerian)//»You are the light of the sky (*nūr šamê*), glowing (*napāḫum*) like fire on the earth!« (Akkadian)[1173]. Importantly, in »Eršema-prayer 42« the Akkadian equivalent of Sumerian *sud^{r}-aĝ is not *elmēšu*(*m*), »amber«, but rather *nūru*(*m*), »light«, also »shine, gleam (of stones)«.

One can note that the visual effect referred to by Sumerian *sud^{r}-aĝ was used, around 2000 BC, in reference to several astral gods, as shown by a perusal of the occurrences of this substantive in the Sumerian literary texts published in the »Electronic Text Corpus of Sumerian Literature«. Not unexpectedly, among them there are relatives of both Šerda/Aya, »Aurora«, and Inanna/Ištar, »Venus«. They are Inanna's brothers Utu/Šamaš, »Sun« (Aurora's husband), probably when he is setting (»Utu B« line 12[1174] and cf. the 1st-mill. bilingual prayer BA 10/1, 82 no. 8 // UVB 15 p. 36)[1175], and Numušda (»Temple Hymns« line 397)[1176], as well as Inanna's father, Nannar, the Moon-god (»Nanna C« line 39; »Nanna L« lines 8. 16; »A Hymn to Nanna« line 3; »Temple Hymns« line 159; »Ibbi-Suʾen D« line 3; »Ibbi-Suʾen E« line 13; »Gungunum B« segment C line 3)[1177], also in his manifestation as the gibbous moon called Dilim-babbar (»Ibbi-Suʾen C« lines 1. 6. 66)[1178]. However, the »amber-coloured glimmer« that sud-rá-ág refers to was also apt to describe further gods, who were not astral but related to other physical elements. They are fire, as in the case of Enlil's minister Nuska, the Firelight-god praised for being his *sud^{r}-aĝ (»Nuska B« lines 7. 19)[1179]; earth, as in the case of Enlil's daughter Ninimma (»Ninimma A« segment B

[1171] ETCSL (2006) 2.5.3.1 lines 3–6: [3][nin] gal an-na [d]Inanna-ra silim-ma ga-na-ab-bé-en [4]izi-gar kug an-e si-a-ra [5]sud-rá-ág [d]Inanna-ra ud-gin$_7$ zalag-ge-ra [6]nin gal an-na [d]Inanna-ra silim-ma ga-na-ab-bé-en. See also Bergmann 1964, 4 (»Dem Himmelslicht [Inan]na, der sonnengleich leuchtenden, der großen Himmelsherrin Inanna will ich ›Heil‹ zurufen!«); Römer 1965, 128. 136. 151; Gabbay 2015, 160 (»the light [lit.: amber]«).

[1172] ETCSL (2006) 4.08.16 takes sud-rá-ág of the expression sud-rá-ág ki u$_6$ di kalam-ma-[kam] as a reference to É-nam-ti-la (on which see George 1993, 130 f.), but see Sefati 1998, 226 and 235, where the possibility that sud-rá-ág rather refers to Inanna is taken into account. On Enamtila in this passage see Ceccarelli 2019, 156 n. 84; see also the discussion of »Išme-Dagan A+V« above.

[1173] Reading [1]an sud^{da}-ág[1] zi-gi-ge$_6$-en (Balag), and [1]an sud^{ud}-ág izi-gin$_7$ mú ki-ta ši-in-ga-me-en-ne // *nūr šamê ša kīma išāti ina māti napḫat attima* (Eršema). Translation adapted from Gabbay 2015, 157 (»[*Seen*] from earth, you are the shining heaven glowing like fire! Akk.: You are the light of heaven, glowing like fire on earth!«) and 159 f. See also Bergmann 1964, 4; CAD E (1957), 108; Falkenstein 1957, 306; Landsberger 1967, 194; CAD N/2 (1980) 370; Cohen 1981, 131–135.

[1174] ETCSL (2006) 4.32.2, line 12: sud-á-ág è-a su-lim-ma gùn-ʿàmʾ, »radiating light, he is iridescent radiance!« (likely with reference to the sun setting on the western horizon).

[1175] See CAD E (1957) 198, Landsberger 1967, 194, and CAD Š/1 (1989) 464 as for ki-a sud^{ud}-ág-gá // *nūr šaplāti*, »amber-coloured glimmer // light of the lower regions«, with definite reference to the sun setting on the western horizon.

[1176] ETCSL (2006) 4.80.1, sud-rá-ág in fragmentary context (»shining … an object of admiration«). On Numušda see Cavigneaux – Krebernik 2001b and Peterson 2014, 291–293.

[1177] ETCSL (2006) 4.13.03 (»Nanna C«); 4.13.12 (»Nanna L«); 4.13.a (»A Hymn to Nanna«); 4.80.1 (»Temple Hymns«); 2.4.5.4 (»Ibbi–Suʾen D«); 2.4.5.5 (»Ibbi-Suʾen E«); 2.6.2.a (»Gungunum B«). See Falkenstein 1957, 305.

[1178] ETCSL (2006) 2.4.5.3. On Dilim-babbar see Steinkeller 2016.

[1179] ETCSL (2006) 4.29.2: [7]sud-rá-ág ʿsipadʾ zid [d]En-líl-lá-me-an, »You are the light of the good shepherd Enlil«; [19][x] ʿxʾ zalag-ga sud-rá-ág-bi-me-en, »You are the light of the shining …«. See also Kramer 1954, 172 n. 8 (sud-rá-ág as »precious stone«), and Falkenstein 1957, 305 (untranslated, but with a reading [7]sud-rá-ág sukkal zid [d]En-líl-lá-me-an). On the god Nuska, Streck 2001.

line 5?)[1180]; and water, as in the cases of Enki, the Eridug deity of the subterranean fresh waters and wisdom (»Šulgi Hymn to Enki« line 40), and Nanše, goddess of marshes, fish, birds, and also dream interpreter (»Nanše and the Birds« line 15)[1181].

Lastly, it is important to recall that both *sudʳ-aĝ and *elmēšu*(*m*) also occur as proper names (in anthroponymy, toponymy, and theonymy).

On the Sumerian side, in the Lagaš administrative texts of the reign of Urukagina (middle of the 24th cent. BC) one finds the masculine personal names Sud-ág (Nik 1 92 obv. I:3) and Ur-Sud-ág (TSA 7 obv. VI:5), variant Ur-ˀSudˀ-ágᵏⁱ* (DP 40 obv. III:8)[1182]. The classifier KI in the personal name Ur-ˀSudˀ-ágᵏⁱ is important since it confirms that, at the time of Urukagina, there existed in the Lagaš kingdom a place called Sud-ág. It is also documented in DP 159 obv. III:2[1183], in a sequence of toponyms including the immediately preceding É-babbar (lit. »White-House«, the name of the Sippar and Larsa temples of the Sun-god Utu/Šamaš), so that for both a reference to the solar theology has been suggested[1184]. There is also a personal name spelled É-sud-ág in several administrative texts from Šuruppak and É-sud$_4$-ág in an ED IIIb tablet from Adab[1185], which confirms both the topographical nature of this *sudʳ-aĝ and the semantic affinity of *sudʳ-aĝ and babbar as designations of colours and/or hues. It is then reasonable to think that a much older divine epithet including *sudʳ-aĝ refers to a place related to the goddesses Šerda/Aya, »Aurora«, or, less likely, Inanna/Ištar, »Venus«. It is *Nin-Sudʳ-aĝ, »Lady-of-Sudʳ-aĝ«, spelled ᵈNin-sud$_4$-ág in the »Große Götterliste« from Šuruppak SF 1 (end of the 1st half of the 3rd mill. BC), obv. IV:17, and later attested as [ᵈ]Nin-sudᵘᵈ-ágᴵ in the peculiar list of gods TH 80.112 from Amorite Mari (1st half of the 18th cent. BC) and as ᵈNin-<sud->ág-gá in the late theological list from Nineveh (7th cent. BC) K.4339 = CT 25 9 ff., I:20[1186]. The same should apply to the rarer, and masculine, divine name ᵈEn-sud-ág, attested in an Ur III tablet from Umma (end of the 2nd mill. BC)[1187]. Furthermore, a cylinder seal shows that Lugal-sud-ág was the personal name of a scribe who lived at

[1180] ETCSL 4.21.1, sud-ˀráˀˀ-[ág] ˀkárˀ-kár èš maḫ ˀsiˀˀ-[(x-)-me-en], »you are the shining light which fills the exalted sanctuary«. On Ninimma see Focke 2000.

[1181] As for Enki see this passage of the Old Babylonian copy of a text composed at the end of the 21st cent. BC: lugal-mu sud-rá-ág-Eriduᵏⁱ-ga (Cohen 2005, 75 f.), »my king, amber-coloured glimmer of Eridu«; cf. the personal name Lugal-sud-ág below. As for Nanše see Veldhuis 2004, 118 f., ᵈNanše sud-rá-ág-gá-e A […] ᵈA-nun-na dingir-gal-[gal-e-ne-ke$_4$], »Nanše, the shining, the […] of the Anuna, the great gods«, and ETCSL (2006) 4.14.3 (on Nanše, Veldhuis 2004, 17–29). Possibly the amber hue was appropriate for describing the appearance of fresh or brackish water masses of Southern Mesopotamia under specific circumstances.

[1182] On these two personal names see Selz 1989, 309; Foxvog 2001/2002, 177; Foxvog 2011, 81 and n. 98; Meyer-Laurin 2011, 66. As for the spelling with KI of *Ur-Sudʳ-aĝ in *DP* 40, see the photograph of this tablet in the »Cuneiform Digital Library Initiative«, online at <https://cdli.ucla.edu/search/search_results.php?SearchMode=Text&ObjectID=P220690>.

[1183] Deimel 1932, 708 *ad* 48 (»ein Ort bei Lagaš«, compared with the divine names *Sudʳ-aĝ = Aya); Falkenstein 1966, 31 (place name); Edzard et al. 1977, 147 (»Tempelname?«); Rosengarten 1960, 176 (place name); Selz 1995, 252; Foxvog 2011, 81 and n. 98 (reference to the goddess Aya, the personal name Sud-ág meaning »[He of] Electrum [or Amber]«); Meyer-Laurin 2011, 66 (»ein Tempel«, with *sudʳ-aĝ taken as »helles Licht«). On DP 159 see Rosengarten 1960, 171–202; Beld 2002, 193 f. and n. 90; Prentice 2010, 176 f.

[1184] See Powell 1989, 453 and George 1993, 70 f. (»shrine of Šamaš at Girsu«). On the complicated issue of the divine owner of the Lagaš temple called É-babbar see Selz 1995, 243 f., who follows Falkenstein 1966, 31 n. 3 in thinking that he rather was Ningirsu, who is not a Sun-god (but see the remarks in Heimpel 1986, 136 f.). Further note that in Nik 1 92 the names of the two »overseers« (ugula) are Ur-É-bábbar and Sud-ág.

[1185] See Pomponio 1987, 91 (Šuruppak); Gelb et al. 1991, 96–99 (Adab, read »É-sír-ág«); Andersson 2012, 174 n. 1022.

[1186] See Cavigneaux – Krebernik 2001a; also Krebernik 1986, 171. 200; and Mander 1986, 80. 94 (Šuruppak); Lambert 1985, 183. 188 (Mari and Šuruppak, but his statement »In the second millennium Sudag is a name of Aya apparently going back to Sud, goddess of Šuruppak« is unwarrented, see on the goddess Sud Krebernik – Lisman 2020, 143, with literature); Powell 1989, 453 (Šuruppak, Nineveh); and Andersson 2012, 174 n. 1022 (Šuruppak). Note however that, at the time of Šulgi, the goddess Inanna is called nin sud-rá-ág an-na, see the aforementioned Sumerian hymn »Šulgi X« line 15.

[1187] See Falkenstein 1957, 305; Powell 1989, 453 with n. 44.

the time of the Akkadian empire (24th–23rd cent. BC)[1188].

On the Akkadian side, cuneiform texts from Mesopotamia (but not only there) show the widespread diffusion of the personal names *Elmēšum* and *Elmēštum* in the first half of the 2nd millennium BC[1189]. They were borne by men and women who mainly, and probably not by chance, inhabited the regions of the two Mesopotamian seats of the cult of the Sun-god Šamaš and his wife Aya, i.e those of Larsa and above all Sippar[1190]. Since *Elmēšum* (spelled ^{d}Sud-ág) was an epithet of Aya, »Aurora«, one can surmise that these personal names reflect devotion to an Akkadian goddess who was very popular at the time. It has been observed that the Old Babylonian anthroponymy includes pairs of masculine and feminine personal names such as *Duḫšûm // Duḫšātum* (< *duḫšûm*, »chlorite«), *Uqnûm // Uqnītum* (< *uqnûm*, »lapis lazuli«) and, indeed, *Elmēšum // Elmēštum*, which refer to names of precious stones[1191]. This makes it unlikely that the feminine personal name *Elmēšum* is to be explained by the substantive attested as *elmeštum* in Old Babylonian, *elmeltu* in Middle Assyrian, and *elmessu* in Neo-Assyrian, which designates a kind of grass, likely a weed[1192].

In general, as for the Mesopotamian masculine and feminine personal names Sud-ág and *Elmēšum/Elmēštum*, analogies with the Greek feminine personal name Ἠλέκτρα[1193] come to mind, onomastically and semantically.

[1188] As shown by his inscribed cylinder seal, see Boehmer 1965, fig. 90, and Edzard 1968–1969, 14. See Andersson 2012, 174 with n. 1022 (»The lugal is brilliant«, quoting the same name in the »OB list of lugal-PNN, UET 7 77 ii' 4'«). Cf. the expression lugal-mu sud-ág in the »Šulgi Hymn to Enki« mentioned above.

[1189] See CAD E (1958) 107 and Landsberger 1967, 192. In Babylonia the masculine personal name *Elmēšum* continued to be used down into the 1st mill. BC, see its occurrence in TMH 2 211, a Neo-Babylonian text.

[1190] The database ARCHIBAB (accessed on 02. 11. 2020) includes 45 occurrences of men called Elmēšum (the name is spelled *El-me*(*-e*)*-šum, Il-me-šum, Il-mi-šu*). We are aware of the following attestations: AbB 12 77 and 125; AbB 13 77, 78, 198; ABPh 136; CT 2 pl. 12 = AbB 2 81; CT 6 p. 28b = AbB 2 112; CT 8 7b; CT 48 116; CT 52 = ABb 7 37; CT 52 = ABb 7 97; CUA 71 = Goetze 1957, 26 f.; CUA 85 = Goetze 1957, 33; CUSAS 29 181; Edubba 1 13; JCSSS 2 87; MHET II/2 287; MHET II/5 667; MHET II/6 912 and 915; OECT 13 279; OECT 15 15; Riftin 28; TCL 10 112; TCL 18 105 = AbB 14 159; TEBA 5; TEBA 6; TEBA 7; TEBA 8; TEBA 9; TEBA 10; TEBA 11; TIM 2 = AbB 8 78; TMH 10 1a and 1b; UCLMA 0–1857 = A. J. Marchant, Old Babylonian Tablets from Larsa in the Lowie Museum of Anthropology (Diss. University of Berkeley 1990) 141–149; UET 5 242; UET 5 485; VAT 6676 = Klengel 1970, 124 f.; VS 7 56 = Imgula 2 58; VS 18 18; VS 22 11 = Klengel 1983, 14; VS 22 16; VS 22 41 = Klengel 1983, 36 f.; VS NF 13 6 and 36 (see van Koppen 2003/2004, 389); YOS 8 6; YOS 8 52; YOS 12 290; YOS 13 5, 26, 31, 112, 169, 203 = Wilcke 1982, 468–471. 325. 352. 388. 392. 499. 503; Goetze 1957, text no. 34; Goetze 1963, 84; Mayer 2005, 319 f.; Rositani 2009, 50 f. 67; Veenhof 2003, 314. On women called Elmēšum, discussed in Charpin 2016, with literature, see, e.g., BM 80964; CT 45 58; MHET I/1 64; OECT 8 21; TCL 1 229 and 230; YOS 2 = AbB 9 15; YOS 2 = AbB 9 117; YOS 13 325 = Dalley 1980, 64–65; further note lady *Il-mi-šu* in the »Tigunani Prism« = Salvini 1996 from Southeastern Türkiye, middle of the 16th cent. BC, see Zadok 1999/2000, 356. On men called Elmēštum (the name is spelled *El-me-eš-tum*) see e.g. YOS 2 117 = AbB 9 117 (»exceptionally« in CAD E [1958] 107). On women called Elmēštum see, e.g., AbB 9 117 and 144; MHET I/1 63; MHET II/6 427 and 889; UET 5 242; YOS 12 245; de Boer et al. 2012/2013, text no. 4; Goetze 1948, text no. 21.

[1191] Charpin 2014, 25 (»elmešum une pierre précieuse brillante«).

[1192] So CAD E (1958) 107 (»most likely a grass weed with *elmessu*-colored flowers«); see also AHw (1965) 205, »eine Gras-Art«, where *elmeštu* it is considered the feminine of *elmēšu*(*m*), followed by CDA², 70. Its occurrences are mainly limited to 1st-mill. lexical lists, where, as *šaddaru*, it corresponds to Sumerian ^{ú}šalambi and ^{ú}ŠE.ŠEŠ. However, *elmeltu* occurs in a dramatic passage of a Middle Assyrian letter (BATSH 4, 2: 15–21) describing the catastrophic consequences of the passage of grasshoppers, after which the inhabitants of a city were reduced to eating weeds, which confirms that this plant had no value: »$^{15–16}$(About) what my lord wrote to me: ›Why did Aššukanaean troops not go after them (Karkemišean fugitives)?‹ $^{16–17}$The grasshopper has eaten their harvest! They have eaten the *elmeltu*-grass thereafter! $^{18–21}$There is nobody in the city! (Only) fifty Kassites, hostages or captives, and 50 Subareans, hostages, live in the city! There is no one for the garrison of the city!«, see Llop 2012, 295 (»*elmeltu*-grass«), and see also Llop 2009/2010, 17. Cancik-Kirschbaum 1996, 201 f. takes instead *elmeltu* as a word denoting »chickpea(s species)«, followed for instance by Jakob 2003, 316, by Rients de Boer in de Boer et al. 2012/2013, 182, and by Jeffers 2017, 163 and n. 39.

[1193] On which see Deroy – Halleux 1974, 51 f.

4.4 CONCLUDING REMARKS

Summarising the results of this investigation into Hittite *ḫušt-*, »amber[?]«/»copal[?]«, Akkadian *elmēšu*(*m*), »amber« (spelled syllabically, but also indicated by the Sumerogram SUD.ÁG and variants), and Sumerian *sud^{r}-aĝ, »amber-coloured glimmer«, it would seem that these terms occur in cuneiform texts spanning the very end of the 3rd millennium to around 100 BC, and are distributed over the cultural areas of Hittite, Hurrian, Assyrian, Babylonian, and Sumerian. However, amber has not been recognised in the Late Bronze Age texts recovered from sites in the northern Levant such as Qatna, Alalakh, and Ugarit, where instead there is archaeological evidence for it, and in general it is not recorded in the administrative documentation. Therefore, one may surmise that the available written and material evidence is not a faithful reflection of the actual situation, and that amber, copal, and similar resinous substances – sought after for their therapeutic virtues, decorative qualities, and symbolic value – circulated from the Levant to Mesopotamia and Anatolia in quantities that were anything but modest. This circulation, probably already in place in the Early Bronze Age, must have depended on fluctuations in long-distance trade.

Noteworthy is the following evident asymmetry: in Assyro-Babylonian and Anatolian scribal milieus, spellings such as ^{na4}*elmēšu*(*m*) and ^{NA4}*ḫušt-*, rare but existing, clearly connote these two terms as belonging to the class of materials indicated by the semantic classifier NA_4, »stone« in the sense of a substance available in small blocks; however, NA_4 never occurs with Sumerian sud-rá-ág = *sud^{r}-aĝ. This suggests that the latter term originally did not belong to the semantic field of stones, but rather to that of light (»yellowish-pinkish glimmer«) or more likely to that of colour and hue (»yellowish-pinkish colour«, »amber hue«). The precise correspondence of *sud^{r}-aĝ with ^{na4}*elmēšu*(*m*) was due to the early use of the Sumerian term (decided by Semitophone scribes) as a Sumerogram, indicating that the glimmering stone had a yellow-pinkish hue. This fits very well with the properties of amber.

Moreover, in learned texts in which *ḫušt-* and/or *elmēšu*(*m*) are recorded together with other materials, both often appear in a liminal position, either between stones and plants or between metals and softer substances. Even today, taxonomic discrepancies are evidence of the difficulties in classifying amber.

Even if the contexts analysed are not homogeneous, and include lexical lists, magico-medical rituals, and literary texts of religious and epic content, nonetheless both *ḫušt-* and *elmēšu*(*m*), as well as *sud^{r}-aĝ, always have a positive connotation: from time to time, they are useful ingredients in therapeutic mixtures, elements of prophylactic procedures, and parts of artistic decorations for statuettes, furniture, and architecture. They also deal with conceptualisations related to deities, including many goddesses. All these features occur in a general framework where recovery of health, richness, renewal, and good luck play a central role.

The present investigation of the terms that in the cuneiform Hittite, Akkadian and Sumerian sources could refer to »amber« is, of course, of indirect interest for the ambers of the Artemision at Ephesos. However, in our opinion its relevance is not negligeable.

Spatially, the cuneiform texts that have been discussed in the previous pages come either from the same land mass to which Ephesos belongs, i.e. Asia Minor, or from more oriental but contiguous and connected lands, i.e. the Syro-Mesopotamian regions located immediately east of the Mediterranean. If we take the lands west of Ephesos as terms of comparison, Hittite Anatolia corresponds to Greece proper and Syro-Mesopotamia to Magna Graecia, both as distances and (at least in the 1st half of the 1st mill. BC) as contacts.

From a chronological point of view, it is true that many cuneiform attestations substantially predate the age of the Artemision, being traceable as early as the Bronze Age (3rd and 2nd mill. BC), but many others are datable to the first half of the 1st millennium BC, thus in phase with the archaeological findings at Ephesos discussed in this book. This is not surprising, given the enormous time depth of cuneiform. However, the millennia-old traditions that persisted in the written records of the Near Eastern Iron Age certainly have considerable importance in discussions con-

cerning the references to amber not only in the Old Testament, but also in Greek written sources, beginning with the »Iliad«.

More generally, it is important to recall that the record of Ephesos in cuneiform sources is highly probable, although the identification of Apasa, the capital of Arzawa documented in Late Bronze Hittite texts with the city of the Artemision is still debated[1194]. Later, in the first half of the 1st millennium BC, Ephesos was probably a central place in a very wide world that by now stretched from the Baltic to Egypt and from the western Mediterranean to Mesopotamia. The impression of sophisticated foreignness within the Graeco-Roman world that the iconography and theology of Artemis of Ephesos indubitably transmit solicits the comparison with the documentations of the Near East that Alessandro Naso has opportunely asked us to undertake. The extraordinary opportunity that cuneiform texts provide to critically test the linguistic-philological and archaeological backgrounds of Biblical *ḥašmal* and Greek ἤλεκτρον certainly enriches the discussion of the general topic »amber in antiquity«. It also enhances the Artemision at Ephesos as a place of extraordinary finds within the increasingly emerging perspective of considering the late cuneiform Near East as the core of a polycentric and multicultural Greater Ancient Near East.

4.5 ADDENDUM

Since the completion of our work (end of 2020), new relevant information on *sud^{r}-aĝ has been provided in two recently published works devoted to literary texts as well as administrative documents.

As for the literary texts, the Sumerian glossary by Pascal Attinger[1195] includes the entries sud-áĝ$_2$, su$_3$-ud(-da)-aĝ$_2$, su-da-aĝ$_2$, »brillant« (p. 943), and sud-ra-aĝ$_2$, sud-aĝ$_2$, »un métal precieux«, »le brillant« or »brillant«, »éclat (du lapis lazuli clair)«, »lumière, luminaire« (p. 943), also found in sud-ra$_2$-aĝ- mu$_2$-mu$_2$, »faire croître (sa) lumière (le dieu de la lune)« (p. 737), and perhaps in sud-ra$_2$-aĝ$_2$ KARA$_2$.KARA$_2$, »dispenser de la lumière, briller« (p. 598). Additional earlier discussions of *sud^{r}-aĝ can be found in two articles by Ake W. Sjöberg[1196]. In the latter work, he published and studied[1197] a Sumerian hymn to the Nippur warlike farmer god Ninurta, son of Enlil and husband of the healing goddess Gula, known today as »Ninurta A«. Line 11 of that hymn runs as follows: gidri kug-an sud-ág šu-na gál-[la-àm]. This passage has been translated as »He (i.e., Ninurta) holds in his hand a scepter of shining kuan-metal« (by Sjöberg) and »He holds in his hand a sceptre of shining precious metal« (in ETCSL 4.27.01)[1198]. The precious metal called kug-an has not yet been identified, but on the grounds of its Akkadian equivalent *amūtu*(*m*), *amuttum*, an identification with meteoric iron is plausible[1199]. Accordingly, the passage in line 11 of »Ninurta A« may be translated »(Ninurta) holds in his hand a sceptre of amber-coloured meteoric iron«. This is therefore to be added to the other instances of *sud^{r}-aĝ said of precious materials in contexts dealing with pieces of figurative art.

As for the administrative texts, in his 2021 in-depth analysis of »Kanesh Practical Vocabulary 2«,

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[1194] See Hawkins 2009, 76, and Gander 2017a, 269 f.: Gander 2017b; Hawkins 2020, 342; Gander 2022, 350 f.: and de Martino 2023, 82–84.

[1195] Attinger 2021, 598. 737. 943. See also the 2023 revised edition of Attinger's »Glossaire« (accessed 22. 11. 2023) 778. 954. 1226.

[1196] Sjöberg 1970/1971, 163 f., and Sjöberg 1973, 119.

[1197] Sjöberg 1973, 116–121.

[1198] See also Giusfredi 2017, 13 (»he holds in his hand a scepter of shining(?) k.-metal«).

[1199] On the Sumerian term see ePSD2, s. v. kugan, »a metal«; on the Akkadian one see, e.g., CDA² (2000) 16, and de Ridder – Sassmannshausen 2021, 61 and n. 20, with literature. Furthermore, in the bilingual, Sumerian-Akkadian, royal inscription of Rimuš king of Agade (his reign is conventionally dated to 2278–2270 BC) today known as »Rimuš 18«, a »statue« (alan/DÙL) made of AN-NA/KUG.AN is mentioned, see Frayne 1993, 68 (»meteoric iron«); Woods 2008, 142 (»meteoric iron[?]«); and G. Marchesi in: Marchesi – Marchetti 2011, 180 (»meteoric iron«), together with the remarks in Foster 1997, 59 and n. 8; and Goodnick Westenholz 1998, 46 n. 8.

Jan Gerrit Dercksen has discussed again the lines where *elmēšum* occurs, translating it as »amber(?)«, noting that it »does not occur as a commodity in O[ld]A[ssyrian] texts«, and adding that »small quantities of this material […] are attested in three administrative texts from Larsa dating to Rim-Sîn 1«. This welcome reference to tablets published by Karljürgen Gabriel Feuerherm in his 2004 Toronto dissertation[1200] is very important because, for the first time, the actual circulation of *elmēšum* appears in early administrative records (late 19th cent. BC) from Southern Mesopotamia, where the Sumerogram $sud_{(4)}$-ág is used to refer to this material (note that in texts of the same period and provenance, the masculine personal name *Elmēšum* is written syllabically either as *el-me-šum* or as *el-me-šu-um*). The recorded quantities are small, but not insignificant: 15 shekels (that is 124.5 g) in YBC 05244, more than 10 shekels (more than 83 g) in YBC 05291, and an unknown quantity in YBC 05271[1201]. In any case, our previous statement on the lack of evidence for *elmēšu*(*m*) // *sud^{r}-aĝ in cuneiform administrative texts must be revised. Moreover, the possibility that more records of the cuneiform terms which potentially refer to »amber« will surface, in the future, within the crucial administrative documentation (where one can expect to find traces of material activities including trade in amber) should definitely be taken into account.

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[1200] Dercksen 2021, 223 (»it is thought to be amber, but other identifications have been proposed«).
[1201] Feuerherm 2004, 99. 110 f., and 106, with discussion on 100 f., where the translation »electrum« is adopted.

5 AMBER FINDS FROM THE ARTEMISION AT EPHESOS: CONCLUDING REMARKS

5.1 AMBER IN ANCIENT GREEK LITERARY SOURCES

Already in antiquity several writers mention amber as an exotic material, remarking on its properties and origins. The Greek word ἤλεκτρον means both amber and the gold-silver alloy, so one has to check every passage to understand the meaning in each separate case. In the Homeric poems ἤλεκτρον is already used as meaning amber: the description in the »Odyssey« of a skilled Phoenician worker wishing to sell a necklace of gold and amber has been thoroughly discussed since the time of W. Helbig[1202]. Recently S. Rausch devoted a systematic study to the images of the north in the Greek literature from Homer to late Hellenism and he assumed that no established images of the north existed in ancient Greece. The critical review by Rausch included an accurate collection of the ancient Greek literature and a review of the statements of modern scholars. In the broader context of his research, Rausch also examined closely the passages in Greek literature with the word ἤλεκτρον meaning amber. According to Rausch, in the 7th to 5th centuries BC amber was not seen as a secured northern import, as claimed by some modern scholars, but the place of origin of the amber and the connected Eridanos river were located in several regions in the north (Hesiod, Choirilos), west (Aischylos, Euripides »Hyppolitos‹), and east (Euripides »Phaethon«, Ktesias)[1203]. Rausch concluded that for ancient Greeks in the 7th to 5th centuries BC, amber was a substance of unknown origin and a mythical product. The Greek representations of the north changed considerably in the course of the centuries, and in the Hellenistic era a new image of the north was coined. According to the passages of the Greek literature critically analysed by Rausch, in that broader context the place of origin of the amber was also definitively connected to the north in the 4th century BC through the travels of Pytheas of Massalia and the geographer Timaeus's knowledge[1204]. Further details regarding the properties assigned to the fossil resin in antiquity included the salutary ones, but depend on literary traditions after the 7th century BC. Therefore, they were probably unfamiliar to those offering the amber objects found in the Artemision of Ephesos.

5.2 MODERN STUDIES ON AMBER

The first modern studies about the topic »amber in antiquity« were written by single scholars as general introductions to clarify the precious substance's meaning, value and distribution routes. The ›classic‹ article by J. M. de Navarro on the different distribution routes of the fossil resin developed in the Bronze and Iron Ages deserves particular mention[1205]. In the following years, the growing interest in amber stimulated the appearance of the first museum catalogues on amber collections[1206]. Several

[1202] The main comments on the Homeric passage (Hom. Od. 15, 459) are Helbig 1887, 20; Wenskus 1985, 93; Rausch 2013, 34. 254 T29; Psoma 2020.

[1203] Ancient literary sources on amber have been collected and commented by Mastrocinque 1991a, 11–55; D'Ercole 2008, 19–28; Orsini 2010, 235–276; Rausch 2013, 32–35 collected and reviewed ancient Greek sources about amber from Homer to Euripides with special attention to the geographical provenance and to the origin of the amber in the Greek literature (Rausch 2013, 251 T17; 254 T29; 257 T37; 272 T113; 273 T124; 282 T168).

[1204] Post-classical literary sources about amber have also been collected and discussed by Magnani 2002, 222–233.

[1205] de Navarro 1925. The existence of amber routes in pre-Roman time has been now evaluated with nuanced positions by T. Stöllner (Stöllner 2004) and A. Palavestra (Palavestra 2007).

[1206] Siviero 1955 (Naples, Archaeological Museum); Strong 1966 (London, British Museum).

conference proceedings were devoted to the topic and 1982 marked the beginning of a series of periodic scientific meetings focusing on amber[1207]. The many exhibitions on amber, with catalogues that usually contain up-to-date overviews and also include unpublished finds played an important role[1208]. The latest museum catalogues, such as those of the Bibliothéque Nationale and the Louvre in Paris and the Getty Museum in Malibu, are devoted to figured items[1209]. From the 1990s onwards, detailed studies and research about the finds from single sites have been carried out, and ensured the identification of the peculiarities of several workshops in different countries. Several scholars stressed the central role played during the Early Iron Age in the Mediterranean basin by Italian workshops and the influence they had on other production centres, as will be clarified (below, chap. 5.3).

Some Mediterranean contexts dated to the 7th to the 6th century BC emerge as particularly rich and meaningful for their amber finds (pl. 26, 2): tomb VI in Satricum (province of Latina) in Latium vetus dated to 650–640 BC and yielded more than 500 figured ambers of high quality, assigned by D. Waarsenburg to a carver from Rhodes[1210]. The 8,377 pieces from Novi Pazar (Serbia), dated to the late 6th to the early 5th century BC, have been stylistically connected to finds from Southern Italy and attributed by A. Palavestra to a single princely grave, with some difficulty, owing to the lack of information about the related excavations[1211]. Both scholars stressed the active role of amber workshops in the Italian peninsula – where carvers of different origins were active[1212] – the two researchers highlighted the influence they had on other districts, with D. Waarsenburg positing the Aegean area and A. Palavestra pointing to the Balkans. Among unpublished finds, one has to stress the astonishingly rich female grave, known as »tomba della Regina«, at Numana (province of Ancona), dated to 520–500 BC, which has yielded approx. 3,000 amber ornaments, already mentioned (above, chap. 2.4). Its edition will shed new light on the princely female graves in the Mediterranean in the late 6th century BC[1213]. Pre-Roman amber ornaments from Central Europe have been collected and reviewed[1214].

5.3 THE ROLE OF THE ITALIAN PENINSULA IN AMBER MANUFACTURING IN PRE-ROMAN TIMES

Recent research by P. Bellintani pointed out that the beginning of Italian leadership in amber manufacturing dates back at least to the Late Bronze Age and the 12th century BC, according to the chronology of 11 unfinished beads of Tiryns type identified at Campestrin di Grignano Polesine (province of Rovigo) near Frattesina di Fratta Polesine in the Po Valley in Veneto. The unfinished pieces belong to the remains of a Late Bronze Age amber workshop, and include other workshop residues[1215].

1207 Studi 1975; Baltic 1985; Conference 1–5; see also Cellarosi et al. 2016.; Negroni Catacchio – Gallo 2021. Detailed bibliographies about amber in archaeology are furnished by H. Hughes-Brock in: Conference 4, 236–257 (1993–2003) and in: Conference 5, 304–351 (2000–2005).

1208 Venice 1978; Verucchio 1994; Ganzelewski – Slotta 1996; Magie 2005 (and Zürich 2010 as editio minor); Palavestra – Krstić 2006; Nava – Salerno 2007; Arancio – Massimi 2012.

1209 D'Ercole 2008 (Paris, Bibliothèque Nationale); D'Ercole 2013 (Paris, Louvre) and Causey 2019 (Malibu, J. P. Getty Museum).

1210 Waarsenburg 1995, 404–455 provided an accurate review of the literature about amber in pre-Roman Italy.

1211 Palavestra – Krstić 2006, 93–286.

1212 See now Rocco 2020.

1213 Some significant female grave groups from Italy and the Aegean have been illustrated in Princesses 2012: for the grave Chiaromonte 325, now dated to the late 8th–early 7th cent. BC (Bianco 2020, 111 figs. 17–20), see S. Bianco in: Princesses 2012, 326–335 (dated to the 1st half of the 7th cent. BC).

1214 Stahl 2006 (until the La Tène period) and Nüsse 2011 (from the La Tène period onwards) collected and discussed Central European amber finds.

1215 Bellintani et al. 2019 and Salzani et al. 2020 for preliminary reports about the settlement of Campestrin; Bellintani et al. 2015, 422–426, Bellintani 2016 and Bellintani et al. 2021 for the analysis of the amber from Campestrin; and for a broad view about the amber trade in the Late Bronze Age inculding the beads of Tiryns type in the Mediterranean.

Laboratory analysis has played a significant role in identifying the provenance of the raw amber used in the archaeological items. The late Curt Werner Beck (1927–2008) developed laboratory analyses to determine the amber's provenance and successfully applied infrared spectroscopy (Fourier transform infrared spectroscopy, FTIR). Without doubt Beck remained the world leading authority in amber studies for over 50 years, and he founded the Amber Research Laboratory at Vassar College in Poughkeepsie, where it is still housed today[1216]. The high level of succinic acid in Baltic amber, already proved by previous laboratory studies carried out using different methods, has been confirmed by FTIR analysis and allows us to call it succinite. By contrast, the variety of amber from Sicily contains less succinic acid than Baltic amber and is thus called simetite from the Simeto river, where this type of amber originates[1217].

Succinite was largely exchanged, travelling from the Baltic area through several routes as early as the 2nd millennium BC: it has been identified as the material of 41 amber beads found on the south-west coast of Türkiye at Uluburun in a shipwreck dated by dendrochronology to 1364 ± 15–26 BC (Late Helladic III A)[1218].

Although simetite from Sicily was already used during the Copper Age in the Italian peninsula at Laterza (province of Taranto) and later at Cesena (province of Forlì-Cesena)[1219], in Italy Baltic amber had a longer history and is so far attested in several pile-dwellings in Northern Italy in the second phase of the Early Bronze Age, during the first half of the 2nd millennium BC (ca. 1800–1650 BC)[1220]. A single bead of Baltic amber found in the settlement of Villaggio delle Macine near Albano (province of Rome) is dated to the early phase of the Medium Bronze Age (Ital. *BM 1*, ca. 1650–1550 BC) and allows us to extend the distribution area of succinite in the Medium Bronze Age to Central Italy[1221]. The fossil resin used at Campestrin is of Baltic origin, and was used locally to make beads of the Tiryns type in the Late Bronze Age (12th cent. BC) – so for the moment Campestrin can claim to be the earliest known working site of Baltic amber in the Central Mediterranean, and the origin of Tiryns type amber beads, mostly concentrated in Northern Italy (pl. 27)[1222].

The laboratory analysis provided evidence of the contemporary use in the same site in the Italian peninsula of both Baltic and non-Baltic amber, where the latter's origin remains unidentified; this is attested by samples from the Early Iron Age settlement at Poggiomarino in northern Campania (province of Naples) analysed by DRIFT (diffuse reflectance infrared Fourier transform spectroscopy). The same is suspected for samples from Sardinian sites[1223].

1216 See the database <https://pages.vassar.edu/> (accessed on 19. 06. 2020).

1217 A detailed overview of the different sources of amber in Europe and their peculiarities has been provided by the contributions of several scholars in Ganzelewski – Slotta 1996, 77–382.

1218 Pulak 2005, 82. 588–589; Stöllner 2005, 466 f.

1219 Beck 1971 and Beck – Hartnett 1993 for the FTIR analyses of the amber samples from Laterza, actually dated to the Copper Age (M. L. Nava – A. Salerno in: Ambre 2007, 82 f.); Miari et al. 2017, 301–303 n. 10 for an amber bead from grave 1 at Gattolino (Cesena, province of Forlì-Cesena); Miari – Benazzi 2018, 11 f. M. Miari (Soprintendenza Archeologia Belle Arti e Paesaggio per la Città metropolitana di Bologna e le province di Modena, Reggio Emilia e Ferrara, Bologna) kindly informed me that a radiometric date to 3619 ± 45 cal BP 2σ 2140–1880 (95.4 %) BC, has been obtained for grave 1 at Gattolino, i.e. in the Early Bronze Age.

1220 Bellintani 2016, 278 f.; Angelini – Bellintani 2017.

1221 The amber bead from the Villaggio delle Macine has been published by Bellintani et al. 2007.

1222 Bellintani 2016, 281 f. stressed the role of Campestrin. Archaeologists named the ›Tiryns shape‹ a particular form of cylindrical bead with a raised ring in the middle and an axial hole because it was first identified in the hoard deposed at Tiryns. The distribution map of the amber beads of Tiryns shape in the Mediterranean, provided in Naso 2019, fig. 1 (here pl. 27) also includes amber beads of Allumiere types, which are coeval. On the beads of Tiryns shape see recently Harding 2020, 16 f. and Bellintani et al. 2021.

1223 The results of the DRIFT analysis of samples from Poggiomarino are published by Bellintani – Angelini 2012 and the possibilities of local working have been explored by Cesarano – Bellintani 2012. Amber samples from Sardinia have been analysed by Bellintani et al. 2012; Lo Schiavo – D'Oriano 2018, 132 f. give further literature. The provenience of the non-Baltic amber analysed at Poggiomarino is as yet not further identified. In Sicily the use of both local simetite and imported succinite is documented (Cultraro 2010).

The Adriatic basin provided the natural terminus of the resin fossil's trade routes linking the Baltic area to the Mediterranean; its coasts played a leading role in amber carving and in the redistribution of the raw substance. The amber workshops on the Adriatic side of the Italian peninsula show a tendency to shift from north to south over time: the Late Bronze Age manufacturing at Campestrin is located in Veneto, in the Po Valley, near the central hub of Frattesina di Fratta Polesine, where Baltic amber was available, as well as Near Eastern raw materials such as ivory and ostrich eggs[1224]. By contrast, in the late 9th to the early 8th century BC, in the Early Iron Age, Verucchio in Romagna became the main amber-working centre. Its flourishing ended ca. 650 BC but was strongly connected to its role as the terminal of the Adriatic trade routes, and as a redistribution centre for amber in Central Italy, including the routes bound for the Tyrrhenian regions[1225]. After 650 BC, the leading role in amber working along the Adriatic was taken by the region of Picenum, an area corresponding to the southern part of modern-day Marche, where an essential amber-working centre was established at Belmonte Piceno in the Tenna Valley[1226]. Amber workshops active in the Italian peninsula in the Adriatic area, at Belmonte Piceno and Numana, influenced Slovenia's amber production at Novo mesto and in Serbia at Novi Pazar in the 7th and 6th centuries BC[1227].

From the eastern Italian coast, amber was further redistributed to other districts in Italy. In Central Italy, particular attention was soon devoted to figured artefacts; early specimens dating from the late 8th century BC onwards have been found in Etruscan funerary interments at Vetulonia and Veii and elsewhere in Ager Faliscus and Latium vetus; this is attested by tomb VI in Satricum, mentioned earlier[1228]. Both northern and southern Campania yielded rich funerary interments also comprising elaborate female amber ornaments[1229]. In Southern Italy, amber was remarkably popular among the Oenotrians in modern-day Northern Calabria at Macchiabate, near Francavilla Marittima[1230], and particularly in south-western Basilicata. Here, cemeteries have yielded an impressive amount of amber and opulent parures of suspended ornaments belonging to rich female interments, mostly dated between the late 8th and early 6th centuries BC[1231]. In Apulia, amber was mainly used during the Bronze and Iron Ages and from the 7th century BC onwards (pl. 28, 1)[1232]. In Northern Italy, amber jewels were widespread in Veneto's eastern region and its

[1224] Bietti Sestieri et al. 2019, with previous literature, deals with various aspects of the handcraft production in Frattesina. Harding 2020 stressed the role of Frattesina in the European prehistory, and Cardarelli 2021 the position of Frattesina in the Italian peninsula. Cwaliński – Czebreszuk 2020 analysed the contacts between western and eastern shores of the Adriatic during the Bronze Age.

[1225] For the cultural sequence of Verucchio see von Eles – Pacciarelli 2018, and for the handcraft production, see Bentini et al. 2020, both with literature. The scanty number of Eastern Mediterranean imports and, in contrast, the abundance of Central European products in Verucchio are a consequence of the trade relations based on amber. The decline of Verucchio after 650 BC is the reason for the scarce redistribution of raw amber in Etruria, and Latium vetus, where graves after that date are generally less rich in amber finds than before.

[1226] On Picenian figured amber see Warden 1994. For non-figured amber from Picenum see Negroni Catacchio 2003. The main amber finds from Belmonte Piceno are discussed by Weidig 2021, 79–90: above, chap. 2.6.

[1227] Križ 2017 for Novo mesto; Palavestra – Krstić 2006 for Novi Pazar and other Balkan sites.

[1228] Figured amber sculptures from Italy have been collected by N. Negroni Catacchio: see Negroni Catacchio et al. 2006. Amber sculptures from Veii and Vetulonia have been commented on by Pagnini 2006, with literature. Further finds from Veii are published in D'Ercole 2013, 31–35. See also Negroni Catacchio-Gallo 2021, 236–249.

[1229] A detailed overview of amber finds from Campania is available in Ambre 2007, 185–231; further finds of female ornaments from Calatia in Northern Campania indicate active local workshops (Laforgia 2016, 41–57).

[1230] The excavations carried out at Francavilla Marittima explored several tomb groups, partly published by P. Zancani Montuoro (Zancani Montuoro 1976, Zancani Montuoro 1978, Zancani Montuoro 1984). A complete perspective of this important site, including also further finds, will be available in the new publication being prepared by F. Quondam (Quondam [forthcoming]).

[1231] Magie 2005 and Bottini 2007 for the amber finds from Basilicata, with particular attention to necklaces and girdles. Macrì 2009 and Bianco – Preite 2014 reviewed the main Oenotrian cemeteries in Basilicata and furnished literature. Overviews on single cemeteries: Tagliente 1989 and S. Bianco in: Princesses 2012, 337 f. (Alianello); Russo Tagliente 1992; Bottini et al. 2018 and Bianco 2020 (Chiaromonte); Bianco 2011 and Bianco 2012 (Guardia Perticara).

[1232] Tunzi Sisto 2006 published the Bronze Age amber finds from Trinitapoli; Montanaro 2012, 31–58 listed the amber finds in Apulia dated from the 7th–4th cent. BC.

western districts, in the Golasecca culture area, particularly in the 7th to 5th centuries BC[1233]. The main Mediterranean islands of Sicily and Sardinia yielded amber finds dating to pre-Roman times[1234].

One can conclude that for quite a long time an actual *ambermania* dominated several pre-Roman Italian regions[1235]. A subsequent decrease in amber artefacts has been noted for the late 6th century BC in contexts in Etruria and Latium. J. Bouzek believes this might be due to the threat posed to the amber trade routes by such peoples as the Scythians and Celts. Trade routes in all regions north of the Alps were affected in ways which were so significant that only a few Baltic amber goods actually reached the Mediterranean shores[1236].

5.4 AMBER FINDS IN THE AEGEAN IN THE EARLY IRON AGE

In the late 8th to the early 7th century BC skilled carvers with different origins (Syrian [?], Phoenician [?]) ›discovered‹ amber in Italy and they immediately appreciated and worked it, as the Bernardini ivories from Praeneste show (above, chap. 2.6). Can one presume that as a consequence of this awareness, amber as a raw material spread to the Eastern Mediterranean? And that skilled carvers travelled together with it?

It is generally believed that amber was popular in the Greek world, as a votive offering in sanctuaries (pl. 28, 2) and in funerary interments in tombs (pl. 28, 3), and more frequently employed during the Geometric than in the Archaic period.

The following tables show data about the contexts and quantities of amber finds in the Greek world, including North Africa and excluding Magna Graecia and Sicily, to provide an updated general framework for the finds from Ephesos[1237].

In the Greek world, amber was not very common, either as a votive offering or as part of a funerary interment, and did not reach the popularity it enjoyed in the Italian peninsula. Some years ago, it was observed that the amber contents of the Satricum tomb VI outnumbered the entire Greek amber record[1238]. This observation is still valid, if we do not count the finds at Ephesos; also, over time, new discoveries have increased the total amount of ambers from Greece, the Ionian finds from Miletos providing a particularly exceptional case. A similar observation can be made regarding the amber finds from the Artemision, if compared with the amber finds from other Greek sanctuaries: the Artemision yielded more carved amber than all Greek sanctuaries put together. But the finds from Ephesos are outstanding not only for their quantity but also for their quality. The significant number of finds at the sanctuary of Athena at Lindos does not seem to correspond to any quality of artistry, although ambers are only summarily described and a new publication would seem necessary. Figured amber carvings, represented at Ephesos by only a few pieces, are very rare in Greece, as T. J. Dunbabin observed[1239], because, generally speaking, ancient Greeks preferred to carve ivory rather than amber[1240].

1233 On amber in Veneto in the Iron Age, see M. de Min in: Ambre 2007, 112–115. For amber jewels in the Golasecca culture area, see Panero 2017 with literature and de Marinis 2017, 221–226.

1234 See the aforementioned literature.

1235 The best overview of amber finds in the Italian peninsula during the Bronze and Early Iron Age is the catalogue of the exhibition Ambre 2007.

1236 Bouzek 1992, 367, followed by Waarsenburg 1995, 405. The hypothesis needs an appropriate testing.

1237 Previous lists have been compiled by Dunbabin 1962, 520; Strong 1966, 23; Kilian-Dirlmeier 2002, 274–275, Liste 33 (devoted exclusively to sanctuaries).

1238 Waarsenburg 1995, 428 n. 1118.

1239 Dunbabin 1962, 522 n. 5.

1240 The rarity of amber finds in the Aegean, and the Near East was not correctly assessed: for a long time, the amber statuette representing an Assyrian king (Boston, Museum of Fine Arts, inv. 38.196) was classified as authentic, until it was identified as a modern forgery by O. W. Muscarella (Muscarella 2000, 177).

Table 6 a Amber finds from Greek sanctuaries in the Aegean and North Africa

Site	Literature	Typology	Quantity
1 Ephesos	this volume	figures, beads, pendants, inlays, fibulae	659
2 Lindos, Athena	Blinkenberg 1931, 109–113	beads, inlays, fibulae, pendants	212
3 Miletos, Aphrodite	unpublished	beads, spacers	ca. 150
4 Perachora, Hera	Dunbabin 1962, 520–525	beads, fibulae, scarabs	54
5 Sparta, Artemis	Dawkins 1929, 386	beads, inlays, fibulae, pendants	ca. 50
6 Crete, Idaean Cave	Sakellarakis 1988, 184–187	beads	47
7 Aetos	Heurtley – Robertson 1948, 117	beads	46
8 Kithnos, Apollo + Artemis	Mazarakis Ainian 2019, 106	beads	37
9 Chios, Harbour sanctuary	Boardman 1967, 238–240	beads, inlays, pendant	ca. 34
10 Philia, Athena Itonia	Kilian-Dirlmeier 2002, 271	beads, inlays, fibulae, pendants	18
11 Chios, Kato Phanai	Lamb 1934/1935, 154 f.	beads, inlays, fibulae	ca. 16
12 Eretria, Apollo	Huber 2003, 83. 86	beads, inlays	12
13 Pherai, Artemis Enodia	Kilian 1975, 204	fibulae	7
14 Cyrene, Artemis	Pernier 1931, 202 fig. 26	inlays	more than 4
15 Delos, Artemis + Hera	Deonna 1938, 309 no. 161; Gallet de Santerre – Tréheux 1948, 220 no. 69	beads	2
16 Claros, Apollo	unpublished	beads	few
17 Olympia, Zeus + Hera	Furtwängler 1890, 208	beads	2
18 Crete, Dictaean Cave	Boardman 1961, 71. 73	beads	2
19 Samos, Hera[1241]	Kyrieleis 1985, 429	fibula	1
20 Tocra, Demeter + Kore	Boardman 1966, 166 no. 105	bead	1
21 Siphnos, Artemis (?)	Brock 1949, 27 no. 7	bead	1

Table 6 b Amber finds from Greek cemeteries in the Aegean

Site	Literature	Typology	Quantity
Fortetsa, Crete	Brock 1957, 54	beads	70
Eretria, child grave	Blandin 2007, I 98 f.; II 77	beads	29
Lefkandi, graves	Sherratt 2010, 129	beads	ca. 15
Arkades, graves	Levi 1931, 477	beads	several
Praisos, Crete, grave 28	Marshall 1905, 65	beads, pendant	several
Tinos, grave	Levi 1926, 215	beads	3
Athens, grave	Kübler 1954, 197	pendant	1
Thera, grave	Pfuhl 1903, 238	beads	few
Eretria, grave	Blandin 2007, I 49 f.	bead	1
Ialysos, grave	Jacopi 1929, 118	lion figure	1
Eleusi, grave	AE 1898, 103 a. 107	*non vidi*	–

[1241] The amber disc belonging to a fibula from Samos is mentioned by Martelli 1988/1989, 21 f., l). See above, chap. 2.6 for a possible other amber find from Samos.

In the Greek sanctuaries, beads are the most common amber find. However, the original ornaments they belonged to remain unknown: finds from the Italian peninsula show that beads were mostly used for necklaces, but they can also compose other suspended ornaments, such as breast coverings, elaborate pendants and girdles[1242]. Inlays constitute significant but often underestimated amber ornaments, which are used to embellish wood and ivory objects such as furniture, boxes, and metal artefacts, but mostly fibulae. Amber inlays are widely distributed in the Greek world outside Ephesos, and in the 8th and 7th centuries BC, they were used in jewellery, bronze statuary, and decorative work on ivory or wood. The sanctuaries of Artemis Orthia at Sparta, Hera at Perachora, Apollo at Eretria, and Athena Itonia at Philia also yielded amber inlays, presumably destined to embellish ivory items and mostly dating to the 7th century BC. Several bronze fibulae, whose bows were decorated with alternating segments of amber and ivory or bone, and inlaid with amber discs, came to light in the sanctuaries of Artemis at Sparta, Hera at Perachora, and Athena at Lindos, as well as at the Artemision at Ephesos. Already C. Blinkenberg, T. J. Dunbabin, D. E. Strong, and later P. G. Guzzo identified Italian handicraft as the inspiration for the Greek fibulae coated with ivory or bone and inlaid with amber[1243]. The largest production areas of this type of fibula in Italy are located in Verucchio and Campania respectively (above, chap. 2.5).

The distribution of characteristic Ephesian artefacts highlights the supremacy of Ephesos in the Ionian amber-working landscape: a fine connoisseur such as Paul Jacobstahl was able to define an Ephesian shape of bone pinheads with amber inlays, whose single specimens have been found in the sanctuaries of Apollo at Chios, Hera at Samos and perhaps at Miletos[1244].

The role of Ephesos is outstanding compared to other Greek sanctuaries, not only for the quantity but also for the quality of the amber finds, as a brief review of items in the sanctuary of Artemis can confirm.

5.5 AMBER FINDS IN THE ARTEMISION

According to the information provided by D. Hogarth, the carved ambers from the British excavations were found in and around the Central Basis in some find-places[1245]. In this research it was possible to identify only some published objects with the catalogue entries of this volume, because in 1908 few objects were reproduced with photographs and the catalogue numbers for both the Archaeological Museum Istanbul and the British Museum are missing. The secured information is the following. A large amount of amber, including fibulae (**cat. 635**–**652**), ›almost all‹ pendants (**cat. 592**–**630)**, and pinheads (**cat. 656**–**658)** was found in the basis. Spacers (**cat. 632** and **634)**, a disc (**cat. 654**), and a fitting element or hinge (**cat. 659)** were discov-

[1242] The parure of the female grave Chiaromonte 325, late 8th–early 7th cent. BC, exhibits several suspended ornaments, including beads: Bianco 2020, 113–117 figs. 14–20.

[1243] Dawkins 1929, 224 f. pl. 132 (spectacle fibulae) and Droop 1929, 198 pl. 82 a–b. e–f. i–k for Sparta (fibulae with alternating segments of amber and ivory); Blinkenberg 1926, 198; Blinkenberg 1931, 90 nos. 132–133 pl. 9 (spectacle fibulae); 86 pl. 8 no. 103 (three fibulae with alternated segments of amber and ivory) for Lindos; Dunbabin 1962, 433–437 nos. A124 –A194 (c. 60 spectacle fibulae). 439–442 nos. A239–A264 (fibulae with alternated segments of amber and ivory). 523–524 nos. H–H7 for Perachora; Kilian-Dirlmeier 2002, 29 nos. 371–373 (3 fibulae with amber coatings). D. Waarsenburg followed suggestions proposed by the mentioned scholars and presumed an import from Italy to the Aegean for some objects such as bronze fibulae coated with amber (Waarsenburg 1995, 428 n. 1118, with literature), thoroughly analysed in this regard by P. G. Guzzo (Guzzo 1982). The amber finds from Verucchio threw new light on the topic of the amber-coated fibulae. Amber workshops were presumably active at several sites: according to F. Lo Schiavo, a particular type should be Pithecusan (Lo Schiavo 2006, 259 type 172.2; Lo Schiavo 2010, type 172.2, 391 f. nos. 2859–2867). The specimens of the Pithecusan type were mostly found at Pithecusae, but two further examples have been found in southern Campania. Two comparable exemplars came to light, at Perachora (Dunbabin 1962, 440 no. A240) and Lindos (Sapouna Sakellarakis 1978, no. 1581), respectively.

[1244] The amber pins of Ephesian type outside Ephesos have been identified by Jacobstahl 1956, 34 and 88, with literature (Lamb 1934/1935, 154).

[1245] Hogarth 1908a, 214–216.

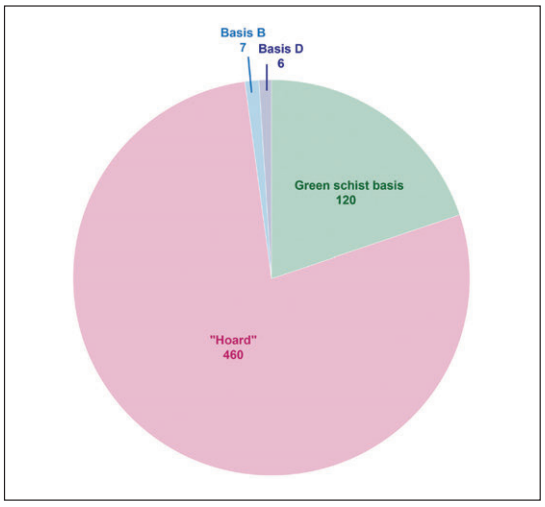


Diagram 2 Main amber finds in the Artemision. 1. Green Schist Basis – 2. »Hortfund« – 3. Limestone Basis D – 4. Limestone Basis B

ered in the area west of the basis. Beads (**cat. 541–591)** come ›from all parts‹. The statuette **cat. 540** was discovered in the area east of the basis. As already noted, the finds in the Green Schist Basis belong to the rich foundation deposit for Naos 2: it consisted of approx. 800–1,000 small precious objects in gold, silver, electrum, ivory and amber, including 24 electrum coins[1246].

According to the excavation data of the Austrian excavations, the amber finds were concentrated inside the sanctuary of Artemis in four areas, two larger and two smaller ones, which have been carefully analysed by M. Kerschner in some contributions focusing on the find-spots of the electrum coins in the sanctuary and reviewed by him and A. M. Pülz in this volume. Further single amber finds are also known. The reconstruction of the stratigraphic sequences of the contexts of the electrum coins can be used as a reference because, in the same layers, the coins were associated with carved amber and other precious votive offerings: the related layers are generally datable no later than the 7th century BC. The careful and recent evaluation of each detail related to the excavation and the related finds allows us to offer only a brief synthesis here: further details can be found in the contributions of M. Kerschner and A. M. Pülz already mentioned[1247]. The four main areas are listed here (diagram 2; pl. 29):

1. The filling of the Green Schist Basis was dug out in 1904–1905, during the British Museum excavations lead by D. G. Hogarth (pl. 29). The Green Schist Basis is located inside the second temple of Artemis, Naos 2, and the votive offerings include electrum coins and hundreds of small jewels of gold, silver, ivory, and amber. D. G. Hogarth interpreted them as belonging to a foundation deposit and classified it as a closed context, now dated around 640–620 BC[1248]. The related amber finds are easy to identify in the present volume because they are preserved in the Archaeological Museum in Istanbul and the British Museum in London (**cat. 540–659**); they comprise 120 amber items, all belonging to the following categories:

Figured	1	
Beads	51	
Pendants	39	
Spacers	4	
Fibulae	19	
Inlay	1	
Pinheads	3	
Indeterminate	1	
Unfinished	1	**Total 120**

2. The »Hortfund« of Naos 1a was explored in 1987 by the Austrian Archaeological Institute (pl. 29). In the second half of the 7th century BC, the first temple of Artemis, Naos 1, was damaged by flooding

[1246] Kerschner 2017, 46–48; Kerschner 2020, 206–211, with literature.
[1247] M. Kerschner – A. M. Pülz, above chap. 1.
[1248] Kerschner 2017, 46–48; Kerschner 2020, 206–223; Kerschner – Konuk 2020, 114–123.

so that reconstruction at a higher level – Naos 2 – became necessary. Naos 1 was infilled with a rammed earth layer, as Hogarth described it, of approx. 0.50 m, the surface of which formed the floor of the subsequent Naos 2. Before the Rammed Earth Layer was infilled, a hoard (Ger. »Hortfund«) was deposited intentionally on the floor of the then abandoned Naos 1 in the building phase identified in the contribution to this volume by M. Kerschner and A. M. Pülz and called Naos 1a. A shallow pit was probably made for this purpose or an existing void in the ground was used to deposit the precious votive offerings. This hoard consisted of approx. 1,500 small objects made of precious materials, such as gold, electrum, silver, bronze, ivory, faience, rock crystal, glass, and amber. Naos 1a was short-lived and was followed by the newly built Naos 2. The foundation deposit for Naos 2 was deposed in the Green Schist Basis and it was excavated in 1904–1905. As the third temple, Sekos 1, was built in the late 7th century BC, Naos 2 must be dated sometime before that and Naos 1a immediately before Naos 2. Dates around 650–640 BC for Naos 1a and around 640–620 BC for Naos 2, respectively, may be presumed[1249]. The »Hortfund« dates to 650–640 BC and includes the following amber finds:

Table 7 a Amber finds of the »Hortfund«: main metrical units

	870232	**870246**	**870281**	**870352**	
Figured				3	3
Beads	62	78	35	30	205
Pendants	8	3	5	14	30
Spacers	30	56	15	34	135
Fibulae	4	2	6	14	26
Inlays		1			1
Indeterminate		1			1
Total	**104**	**141**	**61**	**95**	**401**

Table 7 b Amber finds of the »Hortfund«: other metrical units

	870233	**870245**	**870272**	**870298**	**870324**	**870341**	**870348**	**870349**	**870353**	**870354**	
Beads	3	1	1	3	3	10	12	8	1	4	46
Pendants	2					1	2		4		9
Spacers						1		1			2
Fibulae									2		2
Total	**5**	**1**	**1**	**3**	**3**	**12**	**14**	**9**	**7**	**4**	**59**

The four main metrical units yielded 401 amber finds, to which must be added a further 59 ambers recovered in the metrical units explored in the adjacent areas, so a total of 460 amber elements from the »Hortfund«[1250] with the following typology:

Figured	3	
Beads	251	
Pendants	39	
Spacers	137	
Fibulae	28	
Inlays	1	
Indeterminate	1	**Total 460**

[1249] Kerschner 2005, 134–140; Kerschner – Konuk 2020, 123–128.

[1250] This is a minimum number, because fragments (**cat. 294**–**296**) are not included. See concordance list 1 for the further ambers from the adjacent metrical units explored in the excavation season 1987, here listed in the contribution by M. Kerschner and A. M. Pülz, above chap. 1.

3. The filling east of the northern Limestone Basis D was excavated in 1984–1990 by the Austrian Archaeological Institute in an area located at a distance of approx. 15–20 m north-west of the contemporaneous temple, Sekos 2 (pl. 29)[1251]. According to the recent interpretation suggested by M. Kerschner, it is likely that sacrificial residues and precious votive offerings, including gold, bronze, ivory, faience, and some amber objects, which were found around and east of the Limestone Basis D, constitute a secondary deposition of objects, which had accumulated gradually over time. Votive offerings, among them a few amber objects, and sacrificial remains were deposited in an ashy layer in around 590 BC[1252]. Among the amber objects, two artefacts deserve a special mention: a couple of very fine beads (**cat. 275**–**276**, type 6d), perhaps originally belonging to spinning tools, acting as decorative elements of wooden distaffs.

Table 8 Amber finds beneath the Limestone Basis D

	860000	**860155**	**860203**	**860217**	**860344**	
Figured					1	
Beads	2			1		
Inlays		1			1	
Indeterminate						
Total	**2**	**1**		**1**	**1**	**6**

4. The area of the Limestone Basis B, situated 8 m east of the contemporaneous Sekos 2, was excavated by the Austrian Archaeological Institute in 1993 and 1994. Basis B was built around 600 BC and formed part of the enlarged floor area surrounding the temple[1253]. Beneath the Basis B and thus preceding it, a sequence of two major fillings (labelled A and B) and five depositional layers (C–G) was found. Both fillings were infilled to level the space for the floor area around 600 BC. They contained a few amber objects and precious votive offerings belonging to the late 7th century BC (pl. 29)[1254]. Among the amber finds, only the spacer **cat. 474** was found in »Opferschicht D«, a layer earlier than the Basis B and dated to 620–615 BC.

Table 9 Amber finds beneath the Limestone Basis B

	940014	**940085**	**940110**	**940135**	**940146**	**940242**	**940268**	
Beads		1	1			1		
Pendants	1			1				
Spacers						1		
Inlays							1	
Total	**1**	**1**	**1**	**1**		**2**	**1**	**7**

Single amber ornaments have also been found in other parts of the temenos: a unique find would be the female bust **cat. 1**, one of the most relevant figured pieces, which came to light in the open space to the south, in the area in front of the temple. In this area, no other amber finds or precious items have come to light[1255].

[1251] Kerschner 2020, fig. 15.

[1252] Kerschner – Konuk 2020, 145–155. On the dating: Kerschner – Konuk 2020, 163–167.

[1253] Kerschner 2020, 234 f. fig. 15.

[1254] Kerschner 1997, 182 for the chronology of »Opferschicht D«, 225 for the stratigraphic sequence; recent general overview in Kerschner – Konuk 2020, 137–143 figs. 23–28.

[1255] The stratigraphic sequence and the finds from this area (Ger. »südlicher Tempelvorplatz«) have not yet been studied systematically, and therefore it is not yet possible to define the context of the bust (M. Kerschner, pers. comm.). For the open space to the west, see Kerschner – Konuk 2020, 147 with n. 230; 168.

These contextual datings provide a *terminus ante quem* for the production of the amber objects. The date indicated by the most recent finds of a stratigraphic context is the date of the deposition of this layer. The individual objects contained in it may, however, be older, possibly even significantly so.

Figured

Figured carved ambers are very rare in the Aegean. The Artemision yielded the female bust **cat. 1**, the pair of human heads **cat. 2**–**3**, the scarab **cat. 4**, the bird protome **cat. 5**, and the female statuette **cat. 540** (pl. 30, 540). The most relevant pieces, such as the bust (**cat. 1**) and the two female heads (**cat. 2**–**3**), are pierced by unnecessary through-borings. Evidently, these are traces of these works' previous uses. Reuse was common in the amber-carving field because of the high value of the resin fossil. This occurrence is particularly likely in a region such as Ionia, so far removed from the amber's land of origin[1256]. The Daedalic bust **cat**. **1** initially belonged to an unidentified polymateric artefact and was reused, probably in a suspended horizontal ornament such as a chain or a necklace. The heads **cat. 2**–**3** form a pair and can originally be connected to metal pins, which were among the most popular female votive offerings in the sanctuary of Artemis. Probably the two amber heads belong to the same tradition as the two gold pinheads, each with two human heads, also from the Artemision and already mentioned (above, chap. 2.1), which reproduce the deity or her devotees. Finally, they were probably used as pendants on a chain or a necklace. The geometric style characterises the two heads and indicates that these are indeed among the earliest amber objects offered to Artemis, if not the earliest of all. The bird protome **cat. 5** and the female statuette **cat. 540** are quite rare items with few comparisons and were probably carved at Ephesos. Figured amber finds from the Artemision are strictly connected to local carving activity in other materials, especially ivory. In general, figured amber finds from the Artemision are dated no later than 600 BC.

Beads, pendants, and spacers

The artefacts of these categories are the most numerous of all: 342 beads, 92 pendants, and 143 spacers make up a total of 577 specimens (pl. 31). 460 items were found in the »Hortfund« of Naos 1a, and 426 of them belong to the three categories addressed here. The remaining elements were recovered in one significant concentration, in the Green Schist Basis, and in two smaller clusters inside the sanctuary. Based on their shape, 342 beads have been classified according to seven main types and eight subtypes for a total of 15 more or less different shapes. The comparisons identified for each shape demonstrate the substantial coincidence in the chronology among main types because, outside Ephesos, beads of different shapes often belong to the same ornament. Two types, cylindrical beads with faceted surfaces (type 4b) and cylindrical beads with spiral ends (type 4c), find few comparisons outside Ephesos, supporting the hypothesis of a local production. The beads of the type 6d might originally have belonged to a spinning tool such as a wooden distaff. The 92 pendants have been classified into 6 types and 12 subtypes for a total of 18 shapes. In addition to well-known shapes, such as the ubiquitous type 3 bulla-shaped pendants, common to several amber carving traditions in different countries and probably related to the myth of the origins of amber itself, there are other works, perhaps of local origin, such as the type 4 bottle-shaped and the type 6 wineskin-shaped pendants for which documentation is quite scarce. Depending on the direction of the through-borings, one has to distinguish between horizontal and vertical pendants, which might occur in different positions within the same ornament, as shown by close comparisons.

Finally, 143 spacers are the most significant elements of the groups because they reveal the original presence of multi-row suspended ornaments, which one can imagine in several positions

[1256] Causey 2011, 122 f.

around the breast, neck, and waistline of the women, as pectoral jewellery, necklaces and girdles. Similar bird-shaped spacers with a different pattern of through-borings, i.e. either horizontal and vertical (spacers type 4) or only horizontal (spacers type 5), have also come to light. They point to the presence of multi-row suspended ornaments including upper and lower rows. From the lowest row of the ornament, vertical pendants hung from threads strung through the vertical borings of the spacers. The similarities in size, shape, and colour of several beads and pendants and all the spacers also point to the hypothetical reconstruction of an elaborate, multi-row ornament composed of hundreds of carved ambers. The finds' position proves that the whole jewel was deposited in the floor of Naos 1a, presumably in a shallow pit made for this purpose, around 650–640 BC as part of the »Hortfund«. The lavish artefact explains the difference between the high number of amber offerings at Ephesos and the relative scarcity of amber finds in other Greek sanctuaries. The imbalance depends upon the presence of this one ornament (below, chap. 5.6). The most peculiar elements are the bird-shaped spacers, and these find close comparisons with similar ornaments in the examples of the Oenotrian handicraft of northern Calabria and south-western Basilicata in Southern Italy. Triangle-shaped spacers (type 7) also occur in girdles from Italian contexts. However, in these cases, the triangular spacers are usually combined with lozenge-shaped spacers: only in the Artemision at Ephesos are exclusively triangle-shaped spacers documented. This fact helps to prove that these spacers are carvings executed outside of Italy.

Fibulae

The votive offering of an uncertain number of fibulae, corresponding to about 20 specimens, does not constitute the whole of the original gift – presumably fibulae were offered together with precious textiles and dresses (pl. 19, 2). It is likely that the offerers were mostly women, as the typology of the fibulae and the female deity of the sanctuary indicate.

I. Kilian-Dirlmeier explored the general possibilities as to whether male or female offerers made specific votive offerings to Greek deities.

The scholar observed the popularity of offerings such as metal pins and fibulae in several sanctuaries dedicated to female deities and concluded that the female offerings were most numerous, meaning women were the most common offerers in Greek sanctuaries. Male offerings were less common, either because they were made of perishable materials or on account of their actual smaller quantity[1257]. The inspiration of the fibulae coated with ivory or bone and inlaid with amber (**cat. 489**–**490** plus single pieces belonging to further specimens for a total of 4–5 fibulae) came to the Greek world from Italy, where such fibulae are concentrated particularly at Verucchio and in Campania[1258]. Fibulae and pins are dress-fasteners and were likely also offered together with garments in Greek sanctuaries[1259].

Inlays

The amber inlays from the Artemision are stylistically rooted in the Eastern Greek tradition of ornaments for wooden furniture. Together with bone inlays, they constitute precious proof of the existence of a local carving activity; as the recovered inlays are too few to belong to a complete ornamentation set, they probably testify to work in progress on wooden inlaid artefacts (pls. 21, 1; 22, 1). The inlaid items (*klinai* [?], boxes [?]) have not been identified because no concentration of inlays has been found – instead, the objects were scattered over the entire sanctuary area

[1257] Kilian-Dirlmeier 2002, 219–223.

[1258] See above, chap. 2.5.3. S. Bianco recently noted some influence exerted by the handicraft of Verucchio on the few fibulae coated with amber from Basilicata (Bianco 2020, 115). A fibula from the grave Chiaromonte 258 has been reproduced by Montanaro 2016, 365 f. fig. 4.

[1259] Brøns 2017, 421–430.

(pl. 32). The inlays from the Artemision play an important role in the framework of Greek inlaid wooden furniture. Their date, in the late 7th century BC places them among the earliest, if not the earliest, attestation of inlay in Greece and allows researchers to fill the chronological gap between the earlier finds in Etruria, where amber was largely available, and those in the Greek world[1260].

Pinheads

Pins made from electrum, gold, silver, bronze, ivory and bone were a very popular votive offering in the Artemision at Ephesos[1261]. Some amber pinheads have been found, without needles, which were probably made of bone or ivory (pl. 25, 1). Amber pinheads were probably an Ephesian special production.

Raw and unfinished amber

When compared to the number of areas potentially requiring huge amounts of inlays, the number of unfinished amber lumps (**cat. 535** and **651**: pl. 25, 2) and the scanty number of inlays indicate that fossil resin was worked locally at the Artemision and illustrate the high value assigned to the precious substance. In the sanctuary of Artemis, there is archaeological evidence indicating that materials such as gold, bronze, and carving of bone and ivory were worked locally (above, chap. 2.6).

5.6 A GIRDLE FOR ARTEMIS

436 amber pieces belonging to several categories of carved ambers, namely 258 beads, 42 pendants, and 136 spacers, have been found in the extremely circumscribed area of the »Hortfund«. They show similar style, dimensions, colour, and, if present, a similar type of decoration, so that one can imagine they all once belonged to one single votive offering, a female ornament. 136 spacers are clear clues to the identification of the ornament as a suspended one, constituted by several rows of carved ambers, which were distanced and kept in order by the spacers. Surprisingly good comparisons between the spacers from Ephesos and artefacts from Oenotrian female graves in Southern Italy allow us to identify the suspended ornament: the shapes and numbers agree with the identification of the presumed ornament as a multi-row girdle (above, chap. 2.4). This chapter aims to explore this possibility and reach a plausible idea of the original aspect of the girdle.

Amber girdles have been identified in Oenotrian female graves in modern-day south-western Basilicata, datable from the late 8th to the early 6th century BC, as mentioned (above, chap. 2.4). They have several rows of ornaments, composed of beads, spacers of various shapes (geometric and bird-shaped), pendants of various shapes (with vertical and horizontal through-borings), but all of them have two end-spacers at both extremities used to collect together the various strings of the ornament (pl. 33).

In the Artemision, the spacers were found in four metrical units, i.e., ART 870232, ART 870246, ART 870281 and ART 870352 (pl. 34, 1). The two end-spacers (type 1) are similar in shape and size, each showing five borings, and were found in the same metrical unit in the »Hortfund«, i.e. ART 870352 (pl. 34, 2): they may belong to the ends of the same girdle and are precious indications of the existence of only one ornament originally made up of five rows, sustaining a lower row of pendants. Several spacers, bird-shaped (28 spacers, type 5), triangular (55 spacers, type 7), and round (16 spacers, type 8), respectively, belonged to the upper rows of the ornament, while bird-shaped spacers with three borings (32 spacers, type 4) and some pendants all belonged to the lowest row (pl. 35, 1. 2). The original aspect of the upper part of the girdle is highly hypothetical,

[1260] On the topic, see Naso 2007, 24–26; Baughan 2013, 62–65; Verger 2019, 390.
[1261] Jacobstahl 1956, 33.

a layout comprising opposing rows of triangular spacers so far constituting the only certainty. Pendants with vertical borings (17 pendants, type 5a) might be hung from the lowest row of the girdle thanks to the vertical boring of the type 4 bird-shaped spacers. To the lowest row also belong pendants with a horizontal boring (9 pendants, type 5b), possibly mixed with some others with a vertical boring: both type 5a and type 5b pendants have a similar decoration, which is visible only if the pendant is hanging downward. Another 16 pendants and several beads of various shapes should belong to the same girdle, and were strung along horizontal and vertical rows. One has to presume a quite strict structure, in which the spacers with several through-borings played the most important role, providing both connectivity and a certain solidity to the entire composition. This is particularly true for both ends of the ornaments, where the end-spacers constituted a crucial point for the girdle and where one can locate the round spacers with several borings (15 spacers, types 8b and 8c). The textile thread was surely a key element (pl. 36, 1. 2), and one should postulate that it ran more than once through the borings and was reinforced by well-tied knots.

We must point out that we will probably never know what the girdle offered to Artemis really looked like: the original appearance might be similar to the one we can only imagine. If we try using all the carved ambers found in the »Hortfund« and some others, we can reach a total of about 450–500 components – this takes into account that a percentage of the tiny amber objects was inevitably lost or destroyed in the groundwater or during the modern excavation of the sanctuary[1262]. The evidence of two end-spacers indicates the original presence of one girdle. The suggested reconstruction is based on the actual quantity of carved amber found in the »Hortfund«, but the original length of the girdle remains highly hypothetical (pl. 36, 3)[1263].

I am inclined to exclude the presence of beads of glass, faience, and other materials in the composition of the girdle, in spite of the fact that beads of this type have been found in the Artemision and that they were also numerous in the »Hortfund«: the quantity of amber beads is sufficient to presume the original presence of a girdle completely composed of amber[1264]. On the other hand, the beads of materials other than amber inserted in a few examples of polymateric ornaments from Oenotrian female graves would indicate the possible inclusion of beads of glass, faience, and other materials in the girdle from the Artemision[1265]. It is appropriate to conclude that before passing a definitive judgement we must wait for the final publication of all the beads found in the »Hortfund«, as these are still unpublished.

The votive offering of a unique artefact such as the amber girdle in the sanctuary of Artemis at Ephesos raises a series of questions. Were girdles a common votive offering to Artemis? Was the girdle a local product or was it imported to Ephesos, where it remained an isolated artefact? When was it offered, and by whom?

After all, in Greek sanctuaries outside Ephesos, girdles were a well-known votive offering to female deities but were usually made of bronze[1266]. G. Klebinder-Gauß has recently explored

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[1262] On possible steps in the excavation process during which very small objects may have been lost see Kerschner – Konuk 2020, 157–159 figs. 37–38.

[1263] As a comparison, it may be worth remembering that the girdle found *in situ* in the grave Chiaromonte 156 consists of almost 300 components (S. Bianco in: Ambre 2007, 242 no. III.264, here pl. 33, 2).

[1264] Pulsinger 2008 provided an overview of beads of glass and other materials found in the Artemision. These beads are being prepared for publication by A. M. Pülz and B. Pulsinger, Pulsinger – Pülz (in preparation).

[1265] As composite ornaments, one can mention the diadem with bone, ivory, glass, amber and scarabs from Alianello, grave 315 (C. Gaslain in: Magie 2005, 61; S. Bianco in: Princesses 2012, 339–343) and the girdle with bronze, ivory and amber beads from the grave Alianello 594 (M. Tagliente in: Magie 2005, 80; S. Bianco in: Magie 2005, 94). Both graves date to the 7th cent. BC. M. Kerschner (personal communication) suggested that possibly amber beads were lost and they may have been substituted with beads of other material such as glass or faience, amber being rare in the Aegean.

[1266] Klebinder-Gauß 2007, 93–108 provides an overview of the main cases of girdle finds in Greek sanctuaries devoted to female deities and explored the possible meanings of the votive offerings. A particular belt buckle made up of a gold plate within a bronze frame has been found in the sanctuary of Artemis at Ephesos (Pülz 2009, 136 f. 313 no. 433). D'Acunto 2000 reviewed the images of belts in the Greek statuary of the 7th cent. BC.

the purpose of votive offerings of girdles to deities in general, and to Artemis in particular, in the publication on the bronze girdles brought to light in the Artemision at Ephesos. The ancient literary tradition stressed certain moments in the life of a woman such as virginity, marriage and giving birth, which justified the gift of an ornament closely connected to the waistline and therefore mostly to the function of procreation. Other meanings linked to religious beliefs were sometimes associated with female adornments. An example is provided by female necklaces with bronze pendants. Ornaments of this type were deposited around 600 BC as funerary interments in a grave in Megara Hyblaea (province of Syracuse) and in the second half of the 6th century BC as votive offerings in the sanctuary at Satricum (province of Latina)[1267]. However, this type of link has never been suggested for girdles.

To determine the place where the girdle was produced, we must examine the framework of the relationship between the Ionian world and the Oenotrian cultures in which amber girdles are common. In the composition of the complex belt, bird-shaped spacers play a particularly important role, as they can assume both a religious meaning and a functional purpose (above, chap. 2.4). The earliest finds of amber bird-shaped spacers are documented in the Oenotrian cemetery of Macchiabate (commune of Francavilla Marittima, province of Cosenza), in female burials dated to the third quarter of the 8th century BC onwards – others appear somewhat later, in the female Oenotrian burials in Basilicata, dated from the late 8th to the early 7th century BC (above, chap. 2.4). A relationship between Southern Italy and Ephesos was possible through Siris. This Eastern Greek city was founded by the Ionians from Colophon on the coast of modern-day Basilicata and its active role as a link between Ionian and Oenotrian aristocracies has recently been suggested[1268]. According to a common pattern in the colonial relationships, one can presume marriages between Greek colonists and Oenotrian women, so that the personal relationships became a driving force in the general framework of the contacts between the Greek cities of the Eastern Mediterranean and Southern Italy or the Italian Far West[1269].

The Oenotrian finds from Francavilla Marittima indicate that the fashion for amber girdles was created in Southern Italy in the last quarter of the 8th century BC, and although it developed further in Basilicata, it failed to influence the production of a similar ornament in Ionia: here the girdle appears as an isolated element, and anyway, in no case was amber itself as common as it was in the Italian peninsula. Although the Ephesian girdle follows Italian (Oenotrian) prototypes and the stylised bird figures adopted for the spacers depend upon earlier Italian models, the carver was able to create a personal style, as testified by the rendering of the bird-shaped spacers and by the use of triangular spacers. Therefore, I am inclined to consider the execution of the girdle as a special commission assigned to a skilled (Oenotrian [?], East Greek [?]) carver active at Ephesos, who had become familiar with the carved ambers from Southern Italy within the framework of the relationships between the Oenotrian people and the Greeks of Siris or of other Greek foundations. The circles incised on several ambers are also an Ephesian peculiarity, almost a workshop's trademark: the same is true for the round spacers (spacers, type 8), which have been tentatively associated with the girdle. The hypothesis of local work is, of course, open to doubt, because no other amber girdles from Ephesos or from Ionia have come to light: in future, amber finds will make it possible to verify this hypothesis.

According to local usage, the girdle was first offered to Artemis by a woman and then deposed in the filling on the floor of Naos 1 before Naos 1a was built. The polished and glossy surface of several ambers shows that the pieces were used for a short time so that one can imagine a very

[1267] Verger 2010, 298–305 and Verger 2011.

[1268] See Guzzo 2013, 161 f. no. 2 fig. 2, 191 cat. 5. Similar relationships in the territory of Sybaris have been evaluated by Guzzo 2017 and Guzzo 2022. Ionian emigrations in the western Mediterranean have been analysed by Gras 1991.

[1269] The literature on foreign women and mixed marriages is relevant, and I would be so bold as to refer to my recent contribution on the topic, with previous literature (Naso 2020).

brief exposition followed by the deposition in the earth. The most probable date for the chronology of the girdle is around 650 BC or a little later, before the deposition date of the filling of Naos 1a, placed around 650–640 BC. The jewel was probably buried wrapped in a cloth, as the high number of fibulae with amber coating and belonging to the same votive deposit indicates: some of them may have been used to close the cloth bag containing the precious amber girdle and other ornaments. The cloth bag might possibly also include a precious dress and other perishable offerings. Over time, the continuous infiltration of groundwater into the sanctuary's central area wore out and destroyed the cloth and dispersed the carved amber over a larger area[1270].

Who offered the amber girdle to Artemis? Foreign votive offerings and western offerers are generally rare at the Artemision, which is closely connected to local offerers and Lydian kings, as shown by the inscription on the marble columns of Dipteros 1, mentioning the dedication of the columns by the Lydian king Croesus[1271]. For this reason, the votive offering by an Oenotrian woman, whose possible presence in Ionia has never been suggested, seems quite unlikely: the idea of a local production corroborates the hypothesis of a Greek offerer. The amber girdle was probably offered to Artemis by a Greek woman capable of appreciating a new ornament, locally produced under the influence of Oenotrian jewels from Southern Italy. The girdle should be considered as a work produced as a special commission because at Ephesos it remained a unique piece. The close connections between the Ionians settled in Siris and the Oenotrian élites (below, chap. 5.7) favoured the reception of an Oenotrian style belt in Ionia.

5.7 RELATIONSHIPS BETWEEN IONIA AND MAIN ITALIAN AMBER-WORKING DISTRICTS

What were the overall relationships between Italian localities and Central Ionia? What do we know about the cultural contacts between these two regions? Can one mention further reasons and identify any clues to identify a restricted area?

From the first half of the 8th century BC, the Greek foundations in Southern Italy favoured the extensive spread over the peninsula of their distinctive cultural elements, first among these, of course, the Greek alphabets[1272]. On the other hand, the Greeks ›discovered‹ new customs and new materials in Italy and increased the range of their craftsmanship. The relationships were both complex and articulated: recent research has perceptibly changed the previous outlook concerning the first contacts between Greek ›colonists‹ and local inhabitants in Southern Italy and composed a fascinating picture involving a mix of cultures, dominated by interaction and hybridity[1273]. In this new perspective, the area of the modern-day Basilicata plays a very important role, showing how complex and various these relationships could be. The area overlooking the Gulf of Taranto between the Spartan colony itself and Sybaris was free of Greek foundations in the 8th century BC and only around 650 BC was the Greek colony of Siris founded there[1274]. In the territory in which Siris was founded, Greek finds predating the foundation of that city have been recovered – their interpretation is debated in the framework of the issue about the location of early Siris. It is worthwhile to describe briefly the knowledge accrued so

[1270] Kerschner 2020, 195 and fig. 11 shows the actual presence of groundwater in the Artemision central area.

[1271] Rumscheid 1999, 28 f. fig. 5; Kerschner 2006 collected and discussed the Lydian votive offerings from the Artemision; Kerschner 2020, 235–239 stressed that the construction of the temple began in 580–570 BC and was finished 120 years later, in the 2nd quarter of the 5th cent. BC.

[1272] Parker – Steele 2021 is devoted to the spread of the Greek alphabets in the Mediterranean.

[1273] Several contributions in Donnellan et al. 2016a and Donnellan et al. 2016b raised new ideas on the topic. Ancient literary sources about the Oenotrians settled in Basilicata have been discussed by Mele 2017, 228–230.

[1274] Guzzo 2017 suggested a balanced review of the relationship between Oenotrians and Greeks in the territory of Sybaris. See now Guzzo 2022.

far about the territory around Siris, as shown some years ago in an important symposium[1275]. Recent publications of the cemeteries of Siris in the area of modern-day Policoro (province of Matera) provided fresh data and, by renewing our perspective, allowed the (re)opening of the debate.

The south-west cemetery of Schirone at Siris yielded at least 125 burials, all placed within rare pithoi from Rhodes and Corinth and in trade amphoras from Miletos, Chios, Samos, Clazomenai, Lesbos, Athens, Corinth and from other as yet unidentified Eastern Greek production areas, all dating to the first half of the 7th century BC[1276]. The burial rites and the absence of rich funerary interments allowed researchers to assign the cemetery to a Greek community and to identify the area of Schirone as the earliest cemetery created for the first immigrants from Eastern Greece and the Aegean. According to Mario Lombardo and further scholars, these were indeed the first settlers of this area before the actual foundation of Siris, which is dated ca. 650 BC[1277]. The large range of original provenance of the ›foreign people‹ from Eastern Greece and elsewhere is exemplified firstly by the trade amphoras, whose early shapes find few comparisons in Ionia itself, and secondly, by certain special finds, such as the unidentified (Eastern Greek [?]) trade amphora bearing a presyllabic Cypriot inscription[1278]. The settlement patterns of the earliest phase included mixed groups of people both of various overseas origins and locals, and this favoured the cultural contacts and the exchange of diverse types of knowledge, techniques and customs between individuals of different provenance and languages. The resulting mixed society is well reflected in the approx. 450 burials explored in the Western cemetery of Madonnelle at Siris, dated from the late 8th to the late 7th century BC; it mostly comprised cremations similar to those at Schirone, which are assigned to Greek individuals, but also included other inhumations showing individuals buried in a crouching position in accordance with local burial rites[1279]. The existence of single huts inhabited by indigenous people is attested by single sites dated to the late 8th to the early 7th century BC, including huts and coeval graves of individuals buried in a crouching position in the settlement area. Schematically, it seems to identify at least three types of burials in the territory of modern-day Policoro, related to the different settlement patterns of the district, i.e. 1. cemeteries with Greek cremation burials (Schirone); 2. cemeteries with Greek cremation burials and local people inhumated in a crouching position (Madonnelle); and 3. local people buried in a crouching position in the settlement area[1280]. A detailed interpretation of these data lies outside of the aims of this book. One can summarise that in general, the territory around Siris shows clearly how close the relationships between Greeks and Oenotrians were from the late 8th to the early 7th century BC onwards. Moreover, the intensity of cultural contacts in this area probably also favoured the presence of mixed communities and mixed marriages. How does this reflect upon the votive offering of an amber belt in the Artemision at Ephesos?

According to the schema developed by C. Ulf, cultural contacts among peoples of various origins are characterised by reciprocity[1281], so that one can look for Ionian elements in Italy and Italic elements in Ionia[1282]. Generally speaking, we can identify the main flow from Ionia to Italy

[1275] Siris 1986.

[1276] The funerary interments from the necropolis at Schirone have been published by Berlingò 2005 and Berlingò 2016.

[1277] Lombardo 2000, 200–204. 230–238 collected and discussed ancient literary sources about Siris.

[1278] The Cypriot inscription was identified by G. Pugliese Carratelli (Pugliese Carratelli 1971) and the amphora was later published by Berlingò 2005, 344 no. 16 figs. 10–12.

[1279] 68 funerary interments from the necropolis at Madonnelle have been published by Berlingò 2017.

[1280] Giardino 2010 furnished an overview of the archaeological sites around Policoro, recently analysed by Altomare 2022, 127–134 no. 75 (Policoro), with previous literature. De Stefano 2022, 20–33.

[1281] C. Ulf reviewed the literature on the theoretical approach to cultural contacts in antiquity and believes reciprocity is a key element in contacts among people of different cultures (Ulf 2009, 106–110).

[1282] Good examples are known from the 6th cent. B.C: J. Spier was able to identify a gem-cutter trained in an East Greek workshop, who probably travelled west to Etruria in the late 6th cent. BC and he, in turn, had an Etruscan apprentice, the Master of the Boston Dionysos. Other members of the same East Greek workshop probably influenced gem-engravers in Lydia (Spier 2000). J. Barron presumed the adoption of Latin names by East Greeks (Barron 2004).

and a minor one flowing in the opposite direction from Italy to Ionia and the Aegean: amber is one of the few elements travelling from west to east[1283]. According to this view, the votive offering of an amber girdle influenced by Oenotrian artefacts in a Greek sanctuary in Ionia leads to the search for any contacts going in the opposite direction, namely, from Ephesos to Italy, and more specifically from Ephesos to modern-day Basilicata. We will also follow the same procedure for the Adriatic district, as we have seen how this constituted the main hub for amber trade in pre-Roman times all over the Mediterranean.

The perspective we suggest is supported by some finds from Basilicata, which have recently been identified, some as purely Eastern Greek works, and others as probably Eastern Greek imitations of Phrygian products, all dated to the second half of the 7th century BC. Their identification as personal ornaments (fibulae and pins) corroborates the hypothesis of a movement of people between Southern Italy and Ionia, particularly Ephesos, where close comparisons with the Artemision votive offerings have been identified[1284]. One can also take this argument one step further. A silver fibula from grave 154 of the Oenotrian cemetery of Chiaromonte, similar to Phrygian jewels, has been connected to Northern Greek or Balkanic fibulae. Two silver necklaces from the female graves 142 and 157 of the same cemetery are isolated in those contexts and can actually be connected to jewels from Cumae in Campania; it is worthwhile to point out that, regarding this comparison, we do not have in-depth knowledge of the jewels from cities such as Siris and Sybaris[1285]. Common to each jewel from Chiaromonte is the combination with other precious items, such as a gilded pendant in the necklace (grave 142), a silver chain with two silver pendants in the fibula (grave 154), or a silver pendant on the necklace (grave 157). New jewels have been created by joining various objects of different origin. All three of the graves mentioned belong to the first half of the 6th century BC[1286]. A further silver find has come to light in the *anaktoron* explored at Torre di Satriano (province of Potenza) in Basilicata, which yielded the impressive remains of a building dated from ca. 550 BC onwards, and a silver brooch reproducing a bird with open wings, identifiable either as an eagle or more probably as a hawk[1287]. There are no stylistic comparisons for the jewel in Southern Italy, but the subject is strictly connected to the series of gold and silver brooches found in the Artemision at Ephesos and probably also in other Ionian localities[1288]. The Ionian brooches reproduce a hawk with open wings. On the one hand, this bird is connected to Artemis through Cybele, whose early cult influenced the worship of the Greek deity in the sanctuary at Ephesos. On the other hand, the hawk (Gr. μέρμνος) was the heraldic animal of the Mermnad dynasty of Lydia, whose connections with Ephesos were deep. According to W. Rudolph and G. Platz-Hoerster, similar brooches were produced in the second half of the 7th century BC by the same workshop, active at Ephesos, which had »more than one master and worked for at least one

[1283] Greek foundations in Italy have been and are subject to countless studies, which are continuously reassessed: see Donnellan et al. 2016a and Donnellan et al. 2016b. With special regard to Anatolia and Etruria, the proceedings of the conference held in Rome 2016 are a reference point (Baughan – Pieraccini 2023).

[1284] Verger 2014; Verger 2016.

[1285] Similar silver jewels are also documented in Greek cities in Sicily such as Megara Hyblaea and Syracuse (P. G. Guzzo, personal communication).

[1286] Guzzo 2014, 153 with previous literature for the jewels from the three Oenotrian graves, the best images of which have been reproduced in Trésors 1998, pls. 20 (grave 142). 21–23 (grave 154). 25 (grave 157). Verger 2014, 20 suggested the silver fibula from the grave Chiaromonte 154 should be classified as a work of Northern Greek or Balkan origin, but he did not discuss any of the jewel's other features.

[1287] P. G. Guzzo in: Osanna – Guzzo 2015, 9–11 no. 2. A female grave of the late 5th cent. BC at Orsara di Puglia (province Foggia) also yielded a bronze brooch with silver coating reproducing a hawk with open wings, which is probably a late echo of the Ionian brooches (Bruscella 2016, 239 no. 32k).

[1288] In the Artemision at Ephesos several gold and silver brooches have been found, both in the English excavations (six gold examples reproducing hawks »with open wings«: Hogarth 1908a, 97 nos. IV.21. IV.22–X.35. IV.23. IV.24–X.41. IV.27. IV.28–X.40, for the back: IV.28–X.40; IV.22–X.35, IV.24–X.41), and in the Austrian excavations (two specimens, in gold and silver respectively: Pülz 2009, 221 cat. 26 and 27 pls. 4–5 colour pl. 5, 51–52). Seven other silver brooches are preserved in North America, and one gold brooch is in Berlin (Pülz 2009, 51 f.).

generation«[1289]. According to P. Jacobstahl, another possible example of Ionian or Ephesian import to Italy is a silver pin found several years ago on the Tyrrhenian coast, in northern Calabria, at Santa Maria del Cedro (province of Cosenza) in the territory of Laos. The pin was found in a female grave with other Greek funerary interments, later than the pin itself, which can be dated no later than the first half of the 6th century BC: the imported jewel had probably been held as a precious heirloom for several years before being placed in the grave[1290]. Both the brooch and the pin, conceived as personal ornaments, can be originally related to Ionian women and probably to Siris: the brooch could have been considered as an exotic *keimelion* in an indigenous context, while the pin might originally have belonged to an Ionian (Ephesian [?]) woman in Italy.

Very interesting results emerge when comparing the stylistic characteristics of the silver ornaments and the results of the laboratory analysis of the silver used for the necklaces from the graves Chiaromonte 142 and 157, for the fibula from the grave Chiaromonte 154 and for the brooch from Torre di Satriano: the composition of the silver used in each jewel gave different results, showing the use of different metals, each with its own unique peculiarities[1291]. These results seem to corroborate the idea of distinct provenances, although unknown, for each type of silver, and perhaps also of the jewels themselves, thus confirming the possible existence of open societies in Basilicata in the first half of the 6th century BC.

It is hard to identify Ephesian or Ionian elements on the Adriatic shores of Italy: notoriously, Aegean imports to Verucchio are very few[1292]. On the other hand, Adriatic artefacts indicate contacts with the Aegean already in the 7th century BC, as in the case of three bronze fibulae found in the sanctuary of Hera at Samos, one of them probably produced in Emilia-Romagna at Verucchio[1293]. Regarding Verucchio, one can also presume the export of precious textiles, which is hard to verify archaeologically[1294]. From a *longue durée* perspective, this relationship is also documented later. A special shape of Etruscan bronze funnel from Panticapaeum on the northern shore of the Black Sea, probably produced in Emilia-Romagna in the late 6th century BC, bears a Greek inscription declaring it as a votive offering to Artemis Ephesia: it was first brought from Italy to Ephesos and then offered in a sanctuary in the remote Greek colony of Panticapaeum founded by Milesians[1295]. The find shows how broad and intense the connections in the Mediterranean and beyond were, and how our present-day understanding is still casual and unsystematic.

To sum up, a review of our actual knowledge indicates the presence of settlements inhabited by Ionians and Oenotrians on the Ionian coast of Basilicata, in the area of Policoro, from the 8th century BC onwards, which means that these two peoples enjoyed close relationships with one another. The archaeological record also includes personal belongings of Ionian women connected to the indigenous world and testifies to the use of mixed jewels, obtained from precious elements

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[1289] Quote from Rudolph 1995, 57. 75 f. cat. 13 F; see also Platz Horster 2001, 23 f. for the connection of the hawk with female deities.

[1290] Galli 1932, 325–328 for the grave; 326 fig. 2 for the silver pin, classified as Ionian by Jacobstahl 1956, 34 fig. 133; Guzzo 1993, 298. Similar shapes occur in bronze in the Artemision at Ephesos: Klebinder-Gauß 2007, 71 f. and 240 no. 288, pl. 20.

[1291] R. Teghil – A. Smaldone in: Osanna – Guzzo 2015, 14–17.

[1292] Bentini et al. 2020, 385 f. mention a few Aegean imports to Verucchio. The Greek imports to Emilia dating back to the 7th–6th cent. BC have been listed and commented by Lippolis 2000.

[1293] Among the three specimens of bronze fibulae, a pair of navicella-type fibulae is well known (von Hase 1997, 297 figs. 5.4) and a dragon-shaped fibula has recently been identified (Bentini et al. 2020, 385 f. fig. 3 for this fibula). The origins and the early worship phases in the sanctuary at Samos have been reviewed by Walter et al. 2019 (169 f. for the mention of amber finds in the Artemision at Ephesos).

[1294] The Iron Age textiles from Verucchio, which are one of the most relevant textile groups throughout the Mediterranean, have been reviewed by Stauffer 2012, Ræder Knudsen 2012 and Stauffer – Ræder Knudsen 2015. The remains of raw blue pigments (Isatis tinctoria) were identified in the graves Lippi 32/2006 and Lippi 40/2006 and have been connected to their usage as colouring for textiles (Rottoli et al. 2015, 112. 117; Bentini et al. 2020, 386).

[1295] Naso 2015, 167 no. 78 with previous literature (funnel of the San Martino in Gattara type). On the offerer's name see Vinogradov 1997, 505–507. On archaic Panticapaeum see Treister 2007.

of different origin, also connected to Ionia and Ephesos. The connection between the sanctuary of Artemis at Ephesos and the Oenotrians, whose artisans were able to develop the models for the amber belts, seems to be thus attested. Therefore, we can conclude that the model of the girdle was developed in Italy and then transmitted to Ionia. Probably the girdle was a special commission assigned to a skilled (Oenotrian [?], East Greek [?]) carver active at Ephesos, who had become familiar with the carved ambers from Southern Italy within the framework of the relationships between the Oenotrian people and the Greeks of Siris or of other Greek foundations in Southern Italy.

The connections between Verucchio and the Adriatic area and Ephesos and Ionia are not as strong as those linking Basilicata and Ephesos. Nonetheless, they can be substantiated by some clues, which provide enough evidence to presume that the import of raw amber to Ephesos actually travelled through the Adriatic channel. Probably skilled carvers of different origins travelled to Ionia together with the raw amber. The dense Mediterranean framework of the 8th to the 7th century BC included a whole universe of nuances and gradations, and the identification of single actors is not easy[1296].

5.8 THE ARTEMISION AS AN AMBER-WORKING CENTRE

The development of a taste common to female aristocracies in the late 8th to the 7th century BC is a well-known phenomenon in Mediterranean and Central European societies. It also includes elements traditionally associated with the female sphere, such as careful work on clothes, using precious wool-crafting tools. Therefore, it is hardly surprising to find similarities between the images reproduced on a late Hittite stone funerary stele from Maraş (South-Eastern Türkiye) in the 8th century BC, and on an ivory statuette of a spinner from Ephesos or on an Etruscan bronze rattle from Bologna in the 7th century BC[1297] (pl. 37, 2). The female offerer of the amber girdle to Artemis belonged probably to these elites.

The importation to Ephesos of a substance such as amber, an extremely exotic substance in the Eastern Mediterranean, is an exciting phenomenon. If the early date of the two Geometric heads (**cat. 2**–**3**) is correct, this would mean amber was already known in Ephesos before the girdle's arrival. In this context, we must stress the Baltic origin of the amber used in Ephesos, according to the samples analysed by FTIR (above, chap. 3), and the presence of unfinished pieces, as these prove the importation of amber as a raw material (above, chap. 2.8).

The two Ephesian heads (**cat. 2**–**3**) have a properly Geometric style so that one can presume their production occurred directly in Ionia and at Ephesos. They may possibly be the work of local carvers, more familiar with ivory carving than with amber: this is attested by various drillings, the reuse and the different functions of the two heads and of other figured pieces. The amber-working testifies a very high level of technical ability already in the early finds because the drillings are

[1296] Bourdin et al. 2021.

[1297] Schachner – Schachner 1996 and Gruber 2004, 89 fig. 48 for the late Hittite stele. Şare 2010, 72 fig. 12 furnished literature about the ivory statuette from the Artemision at Ephesos and suggested it was a distaff handle. The literature on the rattle from Bologna ranges at least from Morigi Govi 1971 to Torelli 2011, 201 f. Iron Age textiles from Italy are collected and discussed by Gleba 2012 (231 for wool-working tools). Regarding wool-working tools in precious materials, one can mention amber sets from several burials belonging to the late 8th–early 7th cent. BC in Verucchio such as the graves Lippi 24/2005 (pl. 37, 2), 47/2006 (pl. 37, 3), 23/2005 (pl. 37, 4), 58/2007 (respectively Le ore 2007, 180 nos. 122–123; Princesses 2012, 257 no. 27; Poli – Privitera 2018; Ghini – Poli 2018) and from Vaglio, grave 102 (early 6th cent. BC: M. Tagliente in: Magie 2005, 76–78). A useful selection of funerary interments belonging to upper-class women are collected in Princesses 2012: see particularly S. Bianco in: Princesses 2012, 326–335 for the grave Chiaromonte 325, dated to the late 8th–early 7th cent. BC. The evidence related to the occurrence of wool-working tools and sets in Central European female graves is discussed by Fath – Glunz-Hüsken 2011.

small and fine and the surface perfectly polished[1298]. The clear and transparent substance was carefully chosen. If we are right to assign them originally to pinheads, both amber heads are deeply rooted in a typical Ephesian production, probably made expressly for use as votive offerings in the sanctuary of Artemis, but open to the Near Eastern tradition of the figured pinheads. The use of amber for an Ephesian speciality, such as the pins, can help to clarify the import of raw amber to Ephesos, a substance quite rare and almost exotic in the Aegean in the 7th century BC, as the few comparisons show.

Can one presume an import of the raw amber through Italy? The answer seems positive: along the coasts and inland areas of the Italian peninsula the resin fossil was so popular that one can describe Italy falling prey to an actual *ambermania* at the time. On the other hand, an import through Anatolia seems quite unlikely: very few amber finds have been discovered in this region, and the most relevant, such as the carved ivory panel with gilded and amber inlays from Kerkenes Dağ, date to 580–570 BC (above, chap. 2.6)[1299].

Which Italian region would be likely to serve as a trade hub for the import of raw amber to Ionia? The natural terminal of the Baltic amber used in Ephesos was in the Adriatic basin, an area where the role of Verucchio in amber trade was overwhelming from the second half of the 8th century to 650 BC. This view is confirmed by the amber finds from the Balkanic sites, generally later than the 8th to the 7th century BC[1300]. The redistribution of raw amber undertaken in Italy by the Etruscan élites of Verucchio brought the highly desirable resin fossil by both land and sea routes through the Tyrrhenian and Adriatic shores into central and southern regions of the Italian peninsula, not only to Etruria, Latium vetus and Campania, but also further south, to modern-day Basilicata, Puglia and Calabria. Typical amber products of these regions, such as the fibulae from Emilia-Romagna and Campania and the girdles from Basilicata, find good comparisons in the carved amber from Ephesos and show how large and intense the range of contacts between the Adriatic and Tyrrhenian Italy with Ionia was. It is hard to choose one region or another, or one place or another as the main trade hub for the amber trade from Italy to Ionia. However, the presence of Greek foundations in Southern Italy, such as Siris, leads us to prefer the southern regions. Archaeological evidence leads us to presume that more than one region in Italy could act as a source for the raw amber brought to Ephesos. After all, although the main find, i.e. the girdle, is connected to Basilicata, the fibulae coated with amber and ivory or bone inlaid with amber are rare in Basilicata and seem strictly related to artefacts from Emilia-Romagna and Campania. Future discoveries will no doubt verify this interpretation. Probably skilled carvers travelled together with the raw amber from the Italian peninsula to Ionia.

The relationship may account for the development of similar tastes in amber ornaments in both regions. In Ephesos some ivory statuettes, including the one conventionally called Megabyzos, whose name is now corrected to Megabyxos[1301], show women with long necklaces formed by beads and pendants that in the real world may have been of glass or amber or both of these materials, possibly illustrating the local importance of amber[1302].

The systematic review of the carved amber reveals the existence of shapes occurring only in Ephesos, such as the Daedalic bust (**cat. 1**) and some beads (types 4b and 4c), pendants (type 6) and spacers (types 3, 7 and 8): they have been tentatively assigned to local carvers, who developed an individual style, destined to satisfy the consumption of goods and the demand for votive offerings at the sanctuary of Artemis. Further artefacts can be assigned to these skilled workers,

[1298] I was not able to identify the ancient source of information (Pliny, nat. [?]) on the use of pumice and shark's skin for the first cleaning and then of gypsum powder and finer skin for the final polishing of an amber surface (Virgili 1989, 54).

[1299] Dusinberre 2002.

[1300] In several contributions, A. Palavestra stressed the influence of Italian on Balkanic amber workshops: Palavestra – Krstić 2006, passim.

[1301] According to the new spelling suggested by Bremmer 2004.

[1302] The ivory statuettes from the Artemision have been reviewed by Işık 2001; Radner 2001; Seipel 2008, 159–186.

such as wooden furniture and ivory or bone objects with amber inlays, which correspond to the taste which spread to Eastern Greece and was strictly limited to beds, thrones and boxes, as depicted on Athenian vase paintings. The few inlays identified in the Artemision were significantly not placed in the »Hortfund«, but were found scattered throughout the entire area of the sanctuary, and are too few to compose the intricate decoration which such items would have needed: one can presume they belonged to unknown artefacts, and that the work was abandoned or still in progress when the inlays were placed in the earth fillings. Their early date, certainly not after the late 7th to the early 6th century BC, is relevant because it allows us to assess, at least in this period, the introduction in the Aegean of the taste for amber inlays, which was a peculiarity developed during the 7th century BC in a district rich in amber such as the western Mediterranean. Before the discovery of the Ephesian finds, the earliest amber inlays from Greece and Ionia had been dated from 550 BC onwards.

The location of the carving workshop active in the Artemision is not known, either on the ground or through special finds[1303], but its activity can be reconstructed thanks to a significant quantity of amber and ivory remains. The Artemision at Ephesos can be added to the Greek sanctuaries having local workshops to satisfy the demand for votive offerings[1304].

Alessandro Naso

[1303] The most characteristic amber-carving tool was the bow drill, mostly consisting of perishable materials such as wood and leather and having a metal bit (De Grossi Mazzorin 2012, 40 fig. 2.5). It is hard to identify a drill bit among excavated metal finds, as it can easily be confused with metal artefacts such as nails and other tools.

[1304] Many Greek sanctuaries yielded remains from metalworking, and lists of these have been compiled by Martelli 2004, 15 f. and D'Andria 2020, 122 f.

6 CATALOGUE OF THE AMBER FINDS FROM THE ARTEMISION

The carved ambers are described in two main groups, according to the different excavation campaigns in which they were found. First are listed the finds of the excavations carried out by the Austrian Archaeological Institute (1965–1995, **cat**. **1–539**), which are preserved in the Ephesos Archaeological Museum in Selçuk. The next section deals with the objects found in the campaigns of the British Museum (1904–1905, **cat. 540–659**), which are divided between the Archaeological Museum in Istanbul and the British Museum in London. They are presented in one group because they belong to the same context.

Amber finds have been recovered in four primary find contexts inside the sanctuary of Artemis, which have been discussed by M. Kerschner in some recent contributions devoted to the electrum coins and summarised here[1305].

The carved ambers are listed according to the following categories:
Figured: cat. 1–5. 540
Beads: cat. 6–296. 541–591
Pendants: cat. 297–349. 592–630
Spacers: cat. 350–488. 631–634
Fibulae: cat. 489–523. 635–652
Inlays: cat. 524–533. 653–655
Pinheads: cat. 534. 656–658
Raw amber: cat. 535
Indeterminable: cat. 536–539. 659

6.1 EPHESOS ARCHAEOLOGICAL MUSEUM IN SELÇUK (CAT. 1–539)

The carved ambers are listed according to the following categories:
Figured: cat. 1–5
Beads: cat. 6–296
Pendants: cat. 297–349
Spacers: cat. 350–488
Fibulae: cat. 489–523
Inlays: cat. 524–533
Pinheads: cat. 534
Raw amber: cat. 535
Indeterminable: cat. 536–539

[1305] The stratigraphical sequences and the find assemblages explored during the English and the Austrian excavations have been described and analysed carefully by M. Kerschner in: Kerschner 2005, 134–140; Kerschner 2020, 206–223 and Kerschner – Konuk 2020, 114–155. For the synthesis see above, chaps. 1 and 5.5. – Abbreviations used in the catalogue: AMI = Archaeological Museum, Istanbul; AMS = Ephesos Archaeological Museum Selçuk; ART = Artemision; BM = British Museum, London; D = Diameter; D hole = Diameter of the drill hole; H = Height; L = Length; T = Thickness; W = Width.

As usually happens for finds from the excavations of the Austrian Archaeological Institute in the Artemision at Ephesos[1306], the amber finds have two independent inventory numbers: 1) The excavation inventory number is provided for finds at the time of their discovery and indicates the exact find-spot within the site. Therefore this number is crucial for the connection with the stratigraphical sequence and for the interpretation of each find. It consists of 4 elements: 1. ART[emision]; 2. The first two numbers indicate the year of excavation, abbreviated to the last two numbers: e.g. 87 for 1987. The following four numbers feature the numbers of the excavated metrical unit: e.g. 0352 for 352. Until 1994, the Artemision excavations were carried out according to the metrical method or arbitrary level excavation method. The number after the dot is the number given to each object found in a specific metrical unit: e.g. ART 870352.1, ART 870352.2[1307]; 2) The museum inventory number is assigned to objects when they are handed over to the Archaeological Museum of Selçuk. Objects having only the excavation inventory number, mostly fragments, are preserved in the storeroom in the Austrian Excavation House at Selçuk.

Figured (cat. 1–5)

cat. 1 Female bust **pls. 7, 1. 2; 38, 1**
Excavation inv. ART 760238; AMS inv. 5/29/76
From the west side of the archaic temple.
On the front, the lower part of the hair is still preserved, arranged in Daedalic style (the so-called Etagenperücke) with two braids framing the face. The tresses are divided into horizontal waves and they are quite schematic; the one on the right has four waves and is longer, the left one has only three. The breasts are rounded and shown in relief; the upper parts of the arms are worked in slightly rounded relief, adhering strictly to the body; the bust is sharply tapered. The back is plain; probably it reproduces a veil; in the back's lower section this is underlined by two weakly etched, straight, horizontal parallel lines, and in the upper part by two oblique and parallel grooves carved on each side, from the shoulders upwards, perhaps converging somewhere on the now missing head. The base is rounded.
The bust has an intricate system of horizontal and oblique through-borings. The widest boring runs horizontally about halfway up the humerus. Under the base, three pairs of bore-holes are visible; these are all connected and converge in two further borings on the lower side of the bust.
The head is missing; there are several chippings on the surface and a deep scratch on the back; the fracture at the top is rounded and not recent. Red amber.
H max. 3 cm, base 3.4 × 1.1 cm, T 1.1–1.2 cm, D of the upper boring: 0.2 cm, D of the lower borings 0.1 cm.
Lit.: Erdemgil 2008, 186 no. 165 fig. 165 (dated around 650 BC), with previous literature; Muss 2008a, 96 f. 100 fig. 41; Naso 2013, 262.

cat. 2 Human head **pls. 7, 2; 38, 2**
Excavation inv. ART 870352.1; AMS inv. 141/61/87 (T 12)
From the eastern side of the Naos 2 cella.
Extremely fine Geometric-style human head, very similar to cat. 3. The general form of the head is almost cylindrical, rounded on the sides and flat on the top; slightly oblique grooves indicate the eyebrows; the eyes are rendered as engraved circles with a central cavity; the nose is long and straight, almost pointed; a horizontal groove runs under the nose; the mouth is indicated by a horizontal groove; the chin is prominent; the neck is short and compressed. A blind hole (W 0.2 cm, deep 0.5–0.6 cm) on the top of the head is plugged with amber, perfectly adherent and well polished. Two bore-holes (D 0.1 cm) run through the lower part: one horizontal perforation is visible at the top of the neck, the other is oblique and runs between the base and the back of the head.
Transparent, complete. H 1.8 cm, W 1.2 cm, D base 0.8 cm.
Lit.: Bammer 1988b, 23. 30 no. 7 fig. 27; Bammer 1990, 150 f. fig. 23 (left), pl. 20 a (left); Bammer 1991, 76–79 fig. 32; Mastrocinque 1991a, 68 f. pl. 1, 2; Bammer 1992a, 185 pl. 1 b; Bammer 1992b, 37 f. figs. 8 (left) and 5a; Bammer – Muss 1996, 77 fig. 91; Erdemgil 2008, 186 no. 166 fig. 166; Muss 2008a, 97 f. 102 fig. 53 (right); Naso 2013, 262 f. figs. 1–3.

cat. 3 Human head **pls. 7, 3; 38, 3**
Excavation inv. ART 870352.2; AMS inv. 142/61/87
From the eastern part of the Naos 2 cella.
Extremely fine Geometric-style human head, similar to cat. 2. The general form of the head is almost cylindrical, rounded on the sides and flat on the top; the eyebrows are indicated by slightly oblique grooves; the eyes are circles engraved with a central cavity; the nose is long and straight, almost pointed; a horizontal groove runs under the nose to indicate the mouth; the chin is prominent; the neck is short and compressed upon a rounded base. A blind boring (W 0.2 cm, deep 0.5–0.6 cm) is visible on top of the head; a through-boring (W 0.1 cm) runs horizontally from side to side under the nose; an oblique through-bore runs from the base and the back of the neck (W 0.1 cm; deep. 0.2 cm). A blind boring (W 0.1 cm, deep 0.2 cm) is visible under the base.

[1306] Kerschner – Konuk 2020, 93. 109.
[1307] The asterisk after the excavation inventory number indicates the provenience pieces of the samples taken for the laboratory analysis of amber: above, chap. 3.

Transparent. Complete; cracks and scratches on the surface. H 1.6 cm; W 1 cm; D max 0.9 cm.
Lit.: Bammer 1988b, 23. 30 no. 7 fig. 27; Bammer 1990, 150 f. fig. 23 (right), pl. 20 a (right); Bammer 1991, 76–79 fig. 32; Mastrocinque 1991, 68 pl. 1, 2; Bammer 1992a, 185 pl. 1 c; Bammer 1992b, 38–43 figs. 8 (right) and 5a; Muss 2008a, 97 f. 102 fig. 53 (left); Naso 2013, 262 f figs. 4–6.

cat. 4 Scarab **pl. 8, 1**
Excavation inv. ART 860344; AMS inv. 65/41/86 (A 10)
Scarab with horizontal boring on the long side of the base. The scarab has a prominent clypeus, triangular prothorax, and lines separating the elytra. Under the base, a prancing horse is engraved within a notched frame. The horse's hind legs intersect at the centre of the field, and the front legs are raised; the mane is visible. Engraving on the back and under the base damaged by chipping.
Base: 0.7 × 1.1 cm. Red amber.
Lit.: Boardman 1990, 4. 6 n. 13, with previous literature.

cat. 5 Bird-shaped protome **pls. 8, 2; 38, 5**
Excavation inv. ART 870352.3; AMS inv. 143/61/87 (T 12)
Long, truncated cone-shaped neck, globular head, oblique pronounced beak. A complex system of bore-holes ensures the protome can be secured in position: a lateral bore-hole at the base of the neck and a blind bore-hole running vertically under the base are combined with two small holes placed higher up, along the back of the neck. H max. 2.1 cm; W max. 1.5 cm; D boring under the base 0.2 cm; D side boring 0.15 cm; D back borings 0.1 cm. Red amber.
Lit.: Bammer 1990, 150 f.; Bammer 1991, 76–79 fig. 33; Mastrocinque 1991, 68 pl. 1, 2; Bammer – Muss 1996, 77 fig. 91; Erdemgil 2008, 190 no. 191 fig. 191; Bammer – Muss 2012, 36 fig. 1 (on the right, third from the top).

Serena Privitera

Beads (cat. 6–296)

Type 1: Globular beads (cat. 6–30)

cat. 6 **pl. 39, 6**
ART 88/Basis A–115 AMS inv. 90/54/88
Globular bead with a vertical bore-hole. Uneven thickness makes the bead irregular. Intact. Red amber. D 0.8 cm; D hole 0.15 cm.

cat. 7 **pl. 39, 7**
Excavation inv. ART 870246.21; AMS inv. 14/2/99
Globular bead with an irregular, angular surface and vertical bore-hole. Intact. Red amber. D 0.8 cm; D hole 0.15 cm.

cat. 8 **pl. 39, 8**
Excavation inv. ART 870246.22; AMS inv. 14/2/99
Globular bead with a slightly pointed end, irregular surface and a vertical bore-hole. Intact. Red amber. D 0.9 cm; D. hole 0.1 cm.

cat. 9 **pl. 39, 9**
Excavation inv. ART 870246.23; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Dark red amber. D 0.6 cm; D hole 0.15 cm.

cat. 10 **pl. 39, 10**
Excavation inv. ART 870246.24; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Dark red amber. D 0.6 cm; D hole 0.1 cm.

cat. 11 **pl. 39, 11**
Excavation inv. ART 870246.25; AMS inv. 14/2/99
Globular bead with an irregular, faceted surface and a vertical bore-hole. Dark red amber. D 0.6 cm; D hole 0.1 cm.

cat. 12 **pl. 39, 12**
Excavation inv. ART 870246.26; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Light red amber. D 0.6 cm; D hole 0.1 cm.

cat. 13 **pls. 10, 1; 39, 13**
Excavation inv. ART 870246.27; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Light red amber. D 0.7 cm; D hole 0.1 cm.

cat. 14 **pl. 39, 14**
Excavation inv. ART 870246.28; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Light red amber. D 0.6 cm; D hole 0.1 cm.

cat. 15 **pl. 39, 15**
Excavation inv. ART 870246.29; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Red amber. D 0.6 cm; D hole 0.1 cm.

cat. 16 **pl. 39, 16**
Excavation inv. ART 870246.30; AMS inv. 14/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Red amber. D 0.5 cm; D hole 0.1 cm.

cat. 17 **pl. 39, 17**
Excavation inv. ART 870232.31; AMS inv. 15/2/99
Globular bead with a vertical bore-hole. Intact. Red amber. D 0.7 cm; D hole 0.2 cm.

cat. 18 **pl. 39, 18**
Excavation inv. ART 870232.32; AMS inv. 15/2/99
Globular bead with a vertical bore-hole. Intact. Red amber. D 0.7 cm; D hole 0.2 cm.

cat. 19 **pl. 39, 19**
Excavation inv. ART 870232.33; AMS inv. 15/2/99
Globular bead with a round cross-section and longitudinal bore-hole. Intact. Red amber. D 0.6 cm; D hole 0.2 cm.

cat. 20 **pl. 39, 20**
Excavation inv. ART 870232.34; AMS inv. 15/2/99
Globular bead with a vertical bore-hole. Intact. Red amber. D 0.5 cm; D hole 0.2 cm.

cat. 21 **pl. 39, 21**
Excavation inv. ART 870245 AMS inv. 3/5/99
Globular bead with a central hole on a modern-day string with beads of different materials. Intact. Red amber. D 0.8 cm; D hole 0.3 cm.

cat. 22 **pl. 39, 22**
Excavation inv. ART 870281.9; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. Intact. Red amber. D 0.5 cm; D hole 0.2 cm.

cat. 23 **pl. 39, 23**
Excavation inv. ART 870281.25; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. Intact. Light red amber. D 0.6 cm; D hole 0.25 cm.

cat. 24 **pl. 39, 24**
Excavation inv. ART 870281.33; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. The cross-section is oval. Intact. Light red amber. D 0.45 cm; D hole 0.25 cm.

cat. 25 **pl. 39, 25**
Excavation inv. ART 870281.34; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. Intact. Light red amber. D 0.6 cm; D hole 0.25 cm.

cat. 26 **pl. 39, 26**
Excavation inv. ART 870281.63; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. The cross-section is oval. Intact. Light red amber. D 0.9 cm; D hole 0.25 cm.

cat. 27 **pl. 39, 27**
Excavation inv. ART 870281.64; AMS inv. 16/2/99
Globular bead with a central, vertical bore-hole. The cross-section is oval. Intact. Light red amber. D 0.9 cm; D hole 0.25 cm.

cat. 28 **pl. 39, 28**
Excavation inv. ART 870352.13; AMS inv. 17/2/99
Globular bead with a central, vertical bore-hole. Intact. Red amber. D 0.9 cm; D hole 0.3 cm.

cat. 29 **pl. 39, 29**
Excavation inv. ART 870324.67; AMS inv. 17/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Red amber. D 0.6 cm; D hole 0.1 cm.

cat. 30 **pl. 39, 30**
Excavation inv. ART 870324.70; AMS inv. 17/2/99
Globular bead with an irregular surface and a vertical bore-hole. Intact. Light red amber. D 0.7 cm; D hole 0.1 cm.

Type 2: Ring-shaped beads (cat. 31–64)

cat. 31 **pl. 39, 31**
Excavation inv. ART 880946.113; AMS inv. 83/54/88
Irregular, ring-shaped bead with a central hole. Yellow amber. D 1.2 cm; H 0.7 cm; D hole 0.4 cm.

cat. 32 **pls. 10, 2; 39, 32**
Excavation inv. ART 880443.112; AMS inv. 87/54/88
Large, ring-shaped bead with a central bore-hole. A portion of bone needle remains in the bore-hole and is incised with a V to stop the pearl from shifting position. Chipping is visible on the bead's surface. Dark red amber. D 1.4 cm; H 1 cm; D hole 0.3 cm.

cat. 33 **pl. 39, 33**
Excavation inv. ART 870232.11; AMS inv. 15/2/99
Large, ring-shaped bead with a central hole. Intact. Red amber. Di 1.1 cm; H 0.6 cm; D hole 0.3 cm.

cat. 34 **pl. 39, 34**
Excavation inv. ART 870232.88; AMS inv. 15/2/99
Irregular, ring-shaped bead with a central hole. Many chips visible on the object's surface. Red amber. D 0.65 cm; H 0.4 cm; D hole 0.15 cm.

cat. 35 **pl. 39, 35**
Excavation inv. ART 870281.3; AMS inv. 16/2/99
Ring-shaped bead with a central, vertical bore-hole and an approximately square cross-section. Intact. Red amber. D 0.9 cm; H 0.7 cm; D hole 0.2 cm.

cat. 36 **pl. 39, 36**
Excavation inv. ART 870281.10; AMS inv. 16/2/99
Ring-shaped bead with a vertical perforation through the object. The sides are heavily rounded. Intact. Light red amber. D 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 37 **pl. 39, 37**
Excavation inv. ART 870281.42; AMS inv. 16/2/99
Large, ring-shaped bead with a central bore-hole, the edges are rounded. Intact. Light red amber. D 1.2 cm; H 0.6 cm; D hole 0.2 cm.

cat. 38 **pl. 39, 38**
Excavation inv. ART 870119.44; AMS inv. 16/2/99
Large, ring-shaped bead with a central bore-hole, the edges are rounded. Intact. Light red amber. D 1.2 cm; H 0.4 cm; D hole 0.15 cm.

cat. 39 **pl. 39, 39**
Excavation inv. ART 870119.58; AMS inv. 16/2/99
Ring-shaped bead with a central bore-hole. The object is highly fragmented. Red amber. D 0.8 cm; H 0.4 cm; D hole 0.15 cm.

cat. 40 **pl. 39, 40**
Excavation inv. ART 870352.14; AMS inv. 17/2/99
Ring-shaped bead with a central hole. The bead has pronounced edges, which results in an almost square cross-section. Intact. Red amber. D 0.8 cm; H 0.4 cm; D hole 0.1 cm.

cat. 41 **pl. 39, 41**
Excavation inv. ART 870352.16; AMS inv. 17/2/99
Ring-shaped bead with a central, vertical bore-hole. Intact. Red amber. D 0.7 cm; H 0.4 cm; D hole 0.3 cm.

cat. 42 **pl. 39, 42**
Excavation inv. ART 870324.64; AMS inv. 17/2/99
Ring-shaped bead with a central hole. The bead is well preserved and the edges of the object are clearly defined, whereby an approximately rectangular cross-section is achieved. Intact. Red amber. D 0.9 cm; H 0.5 cm; D hole 0.15 cm.

cat. 43 **pl. 39, 43**
Excavation inv. ART 870341.68; AMS inv. 17/2/99
Small ring-shaped bead with a central hole, the edges are rounded. Intact. Light red amber. D 0.5 cm; H 0.2 cm; D hole 0.2 cm.

cat. 44 **pl. 39, 44**
Excavation inv. ART 870348.83; AMS inv. 17/2/99
Large, ring-shaped bead with a central hole, the edges are rounded. Due to its state of preservation, the object is criss-crossed by streaks of different colours. Intact. Red amber. D 1.4 cm; H 0.5 cm; D hole 0.3 cm.

cat. 45 **pl. 40, 45**
Excavation inv. ART 870199*
Three fragments of a ring-shaped bead with a central hole. Red amber. D 0.6 cm; D hole 0.1 cm (reconstructed).

cat. 46 **pl. 40, 46**
Excavation inv. ART 870246.12
Small fragment of a ring-shaped bead. Due to the small size of the fragment, the identification is not quite certain. Because of its shape and colour, a connection can be established with bead cat. 47 (ART 870246.2). Yellow amber. L 0.95 cm; W 1.1 cm; D hole 0.2 cm.

cat. 47 **pl. 40, 47**
Excavation inv. ART 870246.2*
Highly fragmented ring-shaped bead. Because of its shape and colour, a connection can be established with bead cat. 46 (ART 870246.12). Yellow amber. L 0.7 cm; W 0.9 cm; D hole 0.2 cm.

cat. 48 **pl. 40, 48**
Excavation inv. ART 870246.3
Fragment of a ring-shaped bead with a central hole. Due to the very poor condition, unequivocal assignment to a type is difficult. Based on the shape, the object should probably be classed as a ring-shaped bead. This fragment and cat. 49 (ART 870246.4) probably originate from the same bead. Yellow amber. L 1 cm; W 0.4 cm; D hole 0.4 cm.

cat. 49 **pl. 40, 49**
Excavation inv. ART 870246.4
Fragment of a ring-shaped bead with a central hole. Based on the shape, this fragment and cat. 48 (ART 870246.3) probably originate from the same bead. Yellow amber. L 1.4 cm; W 0.5 cm.

cat. 50 **pl. 40, 50**
Excavation inv. ART 870246.5
Fragment of a ring-shaped bead with a central hole. The hole is filled with a heavily corroded metal which was analysed by means of X-ray fluorescence. The alloy consists primarily of iron and copper in a ratio of 4 : 1, and other trace elements such as silver, lead, etc., have also been identified. It is very likely that cat. 51–52 (ART 870246.6 and ART 870246.7) belong to the same bead. The amber is very poorly preserved. Yellow amber. L 0.9 cm; W 0.6 cm.

cat. 51 **pl. 40, 51**
Excavation inv. ART 870246.6
Fragment of a ring-shaped bead with a central bore-hole. The broken edges are very smooth. It is very likely that cat. 50 and 52 (ART 870246.5 and ART 870246.7) originate from the same bead. The amber is very poorly preserved. Yellow amber. L 1.4 cm; W 0.9 cm

cat. 52 **pl. 40, 52**
Excavation inv. ART 870246.7
Fragment of a ring-shaped bead with a central bore-hole. The shape of the bead is not clearly identifiable, but as the fragments probably belong to the same group as cat. 50–51 (ART 870246.5 and ART 870246.6), we can expect the fragment to belong to the same type. The amber is very poorly preserved. Yellow amber. L 1 cm; W 0.8 cm.

cat. 53 **pl. 40, 53**
Excavation inv. ART 870246.8
Fragment of a ring-shaped bead with remains of a central bore-hole. This fragment and cat. 54 (ART 870246.9) probably originate from the same bead. Yellow amber. D 1.5 cm; H 0.5 cm; D hole 0.6 cm.

cat. 54 **pl. 40, 54**
Excavation inv. ART 870246.9
Fragment of a ring-shaped bead with remains of a central hole. This fragment and cat. 53 (ART 870246.8) probably belong to the same bead. Yellow amber. H 0.6 cm; W 1.2 cm.

cat. 55 **pl. 40, 55**
Excavation inv. ART 870246.10
Fragment of a ring-shaped bead with remains of a central bore-hole. Yellow amber. D max. 0.6 cm; H 0.5 cm; D hole 0.45 cm.

cat. 56 **pl. 40, 54**
Excavation inv. ART 870246.11
Fragment of a ring-shaped bead with remains of a central bore-hole. Yellow amber. D max. 0.9 cm; H 0.4 cm; D hole 0.4 cm.

cat. 57 **pl. 40, 57**
Excavation inv. ART 870349*
Four fragments of a ring-shaped bead with remains of a central hole. Red amber. D 0.6 cm; H 0.25 cm; D hole 0.1 cm.

cat. 58 **pl. 40, 58**
Excavation inv. ART 870354.1
Fragment of a ring-shaped bead with remains of a central bore-hole. About half of the object survives. The amber is poorly preserved and very porous. Yellow amber. D max. 0.7 cm; H 0.3 cm; D hole 0.4 cm.

cat. 59 **pl. 40, 59**
Excavation inv. ART 870354.2
Fragment of a ring-shaped bead with remains of a central bore-hole. About half of the object survives. The amber is poorly preserved and very porous. Yellow amber. D max. 0.9 cm; H 0.4 cm; D hole 0.4 cm.

cat. 60 **pl. 40, 60**
Excavation inv. ART 870374.1
Fragment of a ring-shaped bead originally showing a central bore-hole. Yellow amber. D max. 1.3 cm; H 0.7 cm; D hole 0.4 cm.

cat. 61 **pl. 40, 61**
Excavation inv. ART 900402.1*
Fragment of a ring-shaped bead originally showing a central bore-hole. The bead's edges were carefully smoothed, but have been broken off. Red amber. D max. 0.6 cm; H 0.4 cm; D hole 0.2 cm.

cat. 62 **pl. 40, 62**
Excavation inv. ART 900434*
Ring-shaped bead with a central bore-hole. The edges are rounded. Intact. Red amber. D max. 1.3 cm; H 0.55 cm; D hole 0.4 cm.

cat. 63 **pl. 40, 63**
Excavation inv. ART. 931289*
Fragment of a ring-shaped bead with a central bore-hole. Yellow amber. H 0.9 cm; W 0.85 cm.

cat. 64 **pl. 40, 64**
Excavation inv. ART. 940242.4*
Small ring-shaped bead with a central bore-hole. The edges are rounded. Fragmented on one side. Red amber. D 1 cm; H 0.6 cm; D hole 0.43 cm.

Type 3: Disc-shaped beads (cat. 65–104)

Type 3a: Round, disc-shaped beads (cat. 65–82)

cat. 65 **pl. 40, 65**
Excavation inv. ART 870246.111; AMS inv. 14/2/99
Round, disc-shaped bead. Intact. Red amber. D 0.8 cm; H 0.3 cm; D hole 0.2 cm.

cat. 66 **pl. 40, 66**
Excavation inv. ART 870246.112; AMS inv. 14/2/99
Round, disc-shaped bead, completely preserved. One half of the bead is thinner and shows an irregular height. Intact. Red amber. D 0.7 cm; H 0.2 cm; D hole 0.2 cm.

cat. 67 **pl. 40, 67**
Excavation inv. ART 870246.113; AMS inv. 14/2/99
Round, slightly irregular disc-shaped bead. The ends of the bead are slightly flattened. The bead is completely preserved. Intact. Red amber. D 0.7 cm; H 0.3 cm; D hole 0.2 cm.

cat. 68 **pl. 40, 68**
Excavation inv. ART 870246.114; AMS inv. 14/2/99
Round, disc-shaped, uniform bead. The object is completely preserved. Intact. Red amber. D 0.5 cm; H 0.2 cm; D hole 0.2 cm.

cat. 69 **pl. 40, 69**
Excavation inv. ART 870246.115; AMS inv. 14/2/99
Round, disc-shaped, uniform bead with defined edges and a large bore-hole. A patina covers the object. Intact. Red-orange amber. D 0.5 cm; H 0.2 cm; D hole 0.2 cm.

cat. 70 **pl. 40, 70**
Excavation inv. ART 870246.116; AMS inv. 14/2/99
Round, disc-shaped, uniform bead with well-defined edges and a large bore-hole. A patina covers the object. Intact. Red-orange amber. D 0.5 cm; H 0.2 cm; D hole 0.2 cm.

cat. 71 **pl. 40, 71**
Excavation inv. ART 870232.6; AMS inv. 15/2/99
Round, disc-shaped bead with well-defined edges. Intact. Red amber. D 1 cm; H 0.2 cm; D hole 0.15 cm.

cat. 72 **pl. 40, 72**
Excavation inv. ART 870281.11; AMS inv. 16/2/99
Round, disc-shaped bead with a bore-hole through the whole object. Edges are sharply defined and the sides are tapered. Intact. Light red amber. D 0.6 cm; H 0.1–0.3 cm; D hole 0.1 cm.

cat. 73 **pl. 40, 73**
Excavation inv. ART 870281.12; AMS inv. 16/2/99
Round, disc-shaped bead with a central bore-hole. The edges are flattened. Intact. Light red amber. D 01.4 cm; H 0.5 cm; D hole 0.2 cm.

cat. 74 **pl. 40, 74**
Excavation inv. ART 870281.53; AMS inv. 16/2/99
Disc-shaped round bead with a central bore-hole. The edges are sharply angular. Intact. Red amber. D 0.5 cm; H 0.2 cm; D hole 0.15 cm.

cat. 75 **pl. 40, 75**
Excavation inv. ART 870349.24; AMS inv. 17/2/99
Round, disc-shaped bead with a central bore-hole. Due to its state of conservation, the bead has a very irregular shape. Intact. Red-orange amber. D 0.5 cm; H 0.2 cm; D hole 0.15 cm.

cat. 76 **pl. 40, 76**
Excavation inv. ART 870348.55; AMS inv. 17/2/99
Round, disc-shaped bead with a central bore-hole. The almost lenticular object is well preserved and has rounded edges. Intact. Red-orange amber. D 0.8 cm; H 0.25 cm; D hole 0.15 cm.

cat. 77 **pl. 40, 77**
Excavation inv. ART 870341.63; AMS inv. 17/2/99
Round, disc-shaped bead with a central bore-hole. The bead is irregularly shaped. Intact. Red-orange amber. D 0.9 cm; H 0.4 cm; D hole 0.2 cm.

cat. 78 **pl. 40, 78**
Excavation inv. ART 870341.65; AMS inv. 17/2/99
Small, round disc-shaped bead with a central bore-hole. The almost lenticular object is well preserved and has rounded edges. Intact. Red amber. D 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 79 **pl. 41, 79**
Excavation inv. ART 870341.66; AMS inv. 17/2/99
Round, disc-shaped bead with a central bore-hole. The edges of the object are slightly rounded. Intact. Red amber. D 0.7 cm; H 0.2 cm; D hole 0.3 cm.

cat. 80 **pl. 41, 80**
Excavation inv. ART 870341.81; AMS inv. 17/2/99
Round, disc-shaped bead with a central bore-hole. The bead is irregularly shaped. Intact. Red-orange amber. D 0.8 cm; H 0.3 cm; D hole 0.3 cm.

cat. 81 **pl. 41, 81**
Excavation inv. ART 910496.1
Small, round, disc-shaped bead with a central bore-hole and an approximately rectangular cross-section. Intact. Red amber. D 0.55 cm; H 0.2 cm; D hole 0.2 cm.

cat. 82 **pl. 41, 82**
Excavation inv. ART 910584*
Small, round, disc-shaped bead with a central bore-hole and a lenticular cross-section. Intact. Red amber. D 0.7 cm; H 0.3 cm; D hole 0.15 cm.

Type 3b: Angular, disc-shaped beads (cat. 83–84)

cat. 83 **pl. 41, 83**
Excavation inv. ART 880170.109; AMS inv. 84/54/88
Disc-shaped, hexagonal bead with a central bore-hole.

The bevelled sides are of roughly equal size. A bore-hole runs through the centre of the bead's minimum width. Intact. Light red amber. D 1 cm; H 0.4 cm; D hole 0.2 cm.

cat. 84 **pl. 41, 84**
Excavation inv. ART 940085; AMS inv. 30/43/94
Disc-shaped, pentagonal bead with a central bore-hole running through its minimum width. The bevelled sides are of roughly equal size. Intact. Red amber. D 0.8 cm; H 0.5 cm; D hole 0.15 cm.

Type 3c: Disc-shaped beads with horizontal bore-hole (cat. 85–104)

cat. 85 **pls. 10, 4; 41, 79**
Excavation inv. ART 870352.26; AMS inv. 166/61/87
Large, disc-shaped, lenticular bead with a central perforation running through its maximum width. Edges are sharply defined. Intact. Red amber. D 2.3 cm; H 1 cm; D hole 0.2 cm.

cat. 86 **pl. 41, 86**
Excavation inv. ART 870233.2; AMS inv. 176/61/87.
Disc-shaped, round-oval bead with a central bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.8 cm; H 0.3 cm; D hole 0.1 cm.
Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 87 **pl. 41, 87**
Excavation inv. ART 870246.1; AMS inv. 177/61/87
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Light red amber. L 0.75 cm; H 0.3 cm; D hole 0.1 cm.
Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 88 **pl. 41, 88**
Excavation inv. ART 870246.139; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a perforation running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 89 **pl. 41, 89**
Excavation inv. ART 870246.140; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a perforation running through its maximum width. Edges are sharply defined. The bore-hole is broken off on one side. Red-orange amber. L 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 90 **pl. 41, 90**
Excavation inv. ART 870246.141; AMS inv. 14/2/99
Disc-shaped, round–oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 91 **pl. 41, 91**
Excavation inv. ART 870246.142; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a broken-off bore-hole running through its maximum width. Edges are sharply defined. Red amber. L 0.8 cm; H 0.6 cm; D hole 0.2 cm.

cat. 92 **pl. 41, 92**
Excavation inv. ART 870246.143; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.8 cm; H 0.6 cm; D hole 0.1 cm.

cat. 93 **pl. 41, 93**
Excavation inv. ART 870246.144; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Dark red amber. L 0.7 cm; H 0.2 cm; D hole 0.1 cm.

cat. 94 **pl. 41, 94**
Excavation inv. ART 870246.145; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.7 cm; H 0.2 cm; D hole 0.1 cm.

cat. 95 **pl. 41, 95**
Excavation inv. ART 870246.146; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.6 cm; H 0.2 cm; D hole 0.1 cm.

cat. 96 **pl. 41, 96**
Excavation inv. ART 870246.147; AMS inv. 14/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through the whole object. Edges are sharply defined. Intact. Red amber. L 0.5 cm; H 0.2 cm; D hole 0.1 cm.

cat. 97 **pl. 41, 97**
Excavation inv. ART 870232.18; AMS inv. 15/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through the whole object. Edges are sharply defined. Intact. Red amber. L 0.8 cm; H 0.6 cm; D hole 0.1 cm.

cat. 98 **pl. 41, 98**
Excavation inv. ART 870232.19; AMS inv. 15/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges of the beads are faceted. Intact. Red amber. L 0.7 cm; H 0.6 cm; D hole 0.1 cm.

cat. 99 **pl. 41, 99**
Excavation inv. ART 870232.20; AMS inv. 15/2/99
Disc-shaped, round-oval bead with a bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.8 cm; H 0.6 cm; D hole 0.1 cm.

cat. 100 **pl. 41, 100**
Excavation inv. ART 870232.21; AMS inv. 15/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through its maximum width. Edges are sharply defined. Intact. Red-orange amber. L 0.9 cm; H 0.6 cm; D hole 0.1 cm.

cat. 101 **pl. 41, 101**
Excavation inv. ART 870281.7; AMS inv. 16/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through its maximum width. Edges are sharply defined. Intact. Light red amber. D 0.7 cm; H 0.3 cm; D hole 0.15 cm.

cat. 102 **pl. 41, 102**
Excavation inv. ART 870281.8; AMS inv. 16/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through its maximum width. Edges are sharply defined. Intact. Light red amber. D 0.8 cm; H 0.3 cm; D hole 0.15 cm.

cat. 103 **pl. 41, 103**
Excavation inv. ART 870352.127; AMS inv. 17/2/99
Disc-shaped, round-oval bead with centre bore-hole running through its maximum width. Chipped surface, and one edge partly missing. Intact. Red amber with veins. L 2.2–1.7 cm; H 0.4 cm; D hole 0.2 cm.

cat. 104 **pl. 41, 104**
Excavation inv. ART 870352.69; AMS inv. 17/2/99
Disc-shaped, round-oval bead with a horizontal bore-hole running through its maximum width. Edges are sharply defined. Intact. Red amber. L 0.9–0.6 cm; H 0.3 cm; D hole 0.1 cm.

Type 4: Cylindrical beads (cat. 105–211)

Type 4a: Simple cylindrical beads (cat. 105–113)

cat. 105 **pl. 41, 105**
Excavation inv. ART 870246.117; AMS inv. 14/2/99
Cylindrical bead with a smooth surface. The two short ends are irregular. Red amber. H 1.3 cm; L 0.7 cm; D hole 0.2 cm.

cat. 106 **pl. 41, 106**
Excavation inv. ART 870232.26; AMS inv. 15/2/99
Cylindrical bead with a central bore-hole. Intact. Red amber. H 0.7 cm; D 0.3 cm; D hole 0.1 cm.

cat. 107 **pl. 41, 107**
Excavation inv. ART 870232.28; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole. Intact. Red amber. H 0.7 cm; D 0.35 cm; D hole 0.1 cm.

cat. 108 **pl. 41, 108**
Excavation inv. ART 870232.53; AMS inv. 15/2/99
Cylindrical bead with clearly defined edges and longitudinal bore-hole. The bead tapers slightly upwards, so the object is irregularly conical. Intact. Red amber. H 0.9 cm; D 0.5 cm; D hole 0.1 cm.

cat. 109 **pl. 41, 109**
Excavation inv. ART 870281.3; AMS inv. 16/2/99
Cylindrical bead with clearly defined edges and bore-hole, which runs through the minimum width of the bead. Intact. Orange amber. H 1.8 cm; D 0.6 cm; D hole 0.1 cm.

cat. 110 **pl. 41, 110**
Excavation inv. ART 870352.100; AMS inv. 17/2/99
Large, cylindrical bead with a longitudinal bore-hole. Intact. Red amber. H 1.8 cm; D 0.8 cm; D hole 0.3 cm.

cat. 111 **pl. 41, 111**
Excavation inv. ART 870341.54; AMS inv. 17/2/99
Large, cylindrical bead with a longitudinal bore-hole. Chipped surface. Red amber. H 1.9 cm; D 0.8 cm; D hole 0.2 cm.

cat. 112 **pl. 41, 112**
Excavation inv. ART 870348.85; AMS inv. no 17/2/99
Cylindrical bead with clearly defined edges and a longitudinal bore-hole. The bead narrows asymmetrically on one side. Intact. Light red amber. H 0.6 cm; D 0.6 cm; D hole 0.15 cm.

cat. 113 **pl. 41, 113**
Excavation inv. ART 900483*
Large fragmented cylindrical bead with a longitudinal bore-hole. The bead is broken off along the bore-hole. Red amber. H 1 cm; W 0.8 cm; D hole 0.15 cm.

Type 4b: Cylindrical beads with faceted surface (cat. 114–179)

cat. 114 **pl. 42, 114**
Excavation inv. ART 870246.36; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 115 **pls. 10, 5; 42, 115**
Excavation inv. ART 870246.37; AMS inv. 14/2/99

Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 116 **pl. 42, 116**
Excavation inv. ART 870246.35; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 117 **pl. 42, 117**
Excavation inv. ART 870246.55; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 118 **pl. 42, 118**
Excavation inv. ART 870246.56; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.7 cm; D 0.4 cm; D hole 0.15 cm.

cat. 119 **pl. 42, 119**
Excavation inv. ART 870246.57; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a central bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 120 **pl. 42, 120**
Excavation inv. ART 870246.58; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 121 **pl. 42, 121**
Excavation inv. ART 870246.59; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end of the bead is broken. Red amber. H 0.9 cm; D 0.3 cm; D hole 0.15 cm.

cat. 122 **pl. 42, 122**
Excavation inv. ART 870246.60; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end of the bead is broken. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.15 cm.

cat. 123 **pl. 42, 123**
Excavation inv. ART 870246.61; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end of the bead is broken. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.15 cm.

cat. 124 **pl. 42, 124**
Excavation inv. ART 870246.63; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore–hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.15 cm.

cat. 125 **pl. 42, 125**
Excavation inv. ART 870246.64; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a bore-hole and faceted surface. Red amber. H 0.4 cm; D 0.25 cm; D hole 0.1 cm.

cat. 126 **pl. 42, 126**
Excavation inv. ART 870246.65; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.4 cm; D hole 0.1 cm.

cat. 127 **pl. 42, 127**
Excavation inv. ART 870246.66; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. The bead is broken on one end. Red-orange amber. Height: 0.5 cm; diameter: 0.3 cm; hole diameter: 0.1 cm.

cat. 128 **pl. 42, 128**
Excavation inv. ART 870246.67; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. The bead is broken on one end. Red-orange amber. Height: 0.6 cm; diameter: 0.3 cm; hole diameter: 0.1 cm.

cat. 129 **pl. 42, 129**
Excavation inv. ART 870246.68; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. The bead is broken on one end. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 130 **pl. 42, 130**
Excavation inv. ART 870246.69; AMS inv. 14/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 131 **pl. 42, 131**
Excavation inv. ART 870246.70; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. The bead is broken on one end. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.15 cm.

cat. 132 **pl. 42, 132**
Excavation inv. ART 870246.71; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and facet-

ed surface. The bead is broken on one end. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.15 cm.

cat. 133 **pl. 42, 133**
Excavation inv. ART 870246.72; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.2 cm; D 0.3 cm; D hole 0.15 cm.

cat. 134 **pl. 42, 134**
Excavation inv. ART 870246.73; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a central bore-hole and faceted surface. One side is intact, the other side is broken. Red amber. H 0.2 cm; D 0.3 cm; D hole 0.15 cm.

cat. 135 **pl. 42, 135**
Excavation inv. ART 870246.74; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.3 cm; D 0.3 cm; D hole 0.15 cm.

cat. 136 **pl. 42, 136**
Excavation inv. ART 870246.75; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a central bore-hole and faceted surface. Red amber. H 0.2 cm; D 0.3 cm; D hole 0.15 cm.

cat. 137 **pl. 42, 137**
Excavation inv. ART 870246.76; AMS inv. 14/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.2 cm; D 0.3 cm; D hole 0.15 cm.

cat. 138 **pl. 42, 138**
Excavation inv. ART 870232.22; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.7 cm; D 0.4 cm; D hole 0.15 cm.

cat. 139 **pl. 42, 139**
Excavation inv. ART 870232.23; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.35 cm; D hole 0.1 cm.

cat. 140 **pl. 42, 140**
Excavation inv. ART 870232.25; AMS inv. 15/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. One side is intact, the other side is broken. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.1 cm

cat. 141 **pl. 42, 141**
Excavation inv. ART 870232.54; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.35 cm; D hole 0.1 cm.

cat. 142 **pl. 42, 142**
Excavation inv. ART 870232.55; AMS inv. 15/2/99
Small fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.35 cm; D 0.3 cm; D hole 0.12 cm.

cat. 143 **pl. 42, 143**
Excavation inv. ART 870232.56; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.3 cm; D hole 0.12 cm.

cat. 144 **pl. 42, 144**
Excavation inv. ART 870232.57; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.7 cm; D 0.3 cm; D hole 0.1 cm.

cat. 145 **pl. 42, 145**
Excavation inv. ART 870232.58; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 146 **pl. 42, 146**
Excavation inv. ART 870232.59; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.7 cm; D 0.3 cm; D hole 0.1 cm.

cat. 147 **pl. 42, 147**
Excavation inv. ART 870232.62; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.3 cm; D hole 0.1 cm.

cat. 148 **pl. 42, 148**
Excavation inv. ART 870232.63; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.9 cm; D 0.3 cm; D hole 0.1 cm.

cat. 149 **pl. 42, 149**
Excavation inv. ART 870232.64; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 150 **pl. 42, 150**
Excavation inv. ART 870232.65; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 151 **pl. 42, 151**
Excavation inv. ART 870232.66; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.75 cm; D 0.35 cm; D hole 0.1 cm.

cat. 152 **pl. 42, 152**
Excavation inv. ART 870232.67; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. The diameter of the bead is slightly oval. Red amber. H 0.65 cm; D 0.3 cm; D hole 0.1 cm.

cat. 153 **pl. 42, 153**
Excavation inv. ART 870232.68; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Light red amber. H 0.6 cm; D 0.5–0.4 cm; D hole 0.1 cm.

cat. 154 **pl. 42, 154**
Excavation inv. ART 870232.69; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.5 cm; D 0.3 cm; D hole 0.1 cm.

cat. 155 **pl. 42, 155**
Excavation inv. ART 870232.70; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.7 cm; D 0.4 cm; D hole 0.1 cm.

cat. 156 **pl. 42, 156**
Excavation inv. ART 870232.72; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.1 cm.

cat. 157 **pl. 42, 157**
Excavation inv. ART 870232.73; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.1 cm.

cat. 158 **pl. 42, 158**
Excavation inv. ART 870232.74; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end of the bead is broken. Red amber. H 0.8 cm; D 0.3 cm; D hole 0.08 cm.

cat. 159 **pl. 42, 159**
Excavation inv. ART 870232.75; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.75 cm; D 0.45 cm; D hole 0.18 cm.

cat. 160 **pl. 42, 160**
Excavation inv. ART 870232.76; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.4 cm; D 0.3 cm; D hole 0.1 cm.

cat. 161 **pl. 42, 161**
Excavation inv. ART 870232.77; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.6 cm; D 0.3 cm; D hole 0.1 cm.

cat. 162 **pl. 42, 162**
Excavation inv. ART 870232.79; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.8 cm; D 1.3 cm; D hole 0.1 cm.

cat. 163 **pl. 42, 163**
Excavation inv. ART 870232.80; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.55 cm; D 0.35 cm; D hole 0.1 cm.

cat. 164 **pl. 42, 164**
Excavation inv. ART 870232.81; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Light red amber. H 0.45 cm; D 0.35 cm; D hole 0.1 cm.

cat. 165 **pl. 42, 165**
Excavation inv. ART 870232.82; AMS inv. 15/2/99
Fragment of a cylindrical bead with a longitudinal bore-hole and faceted surface. Red amber. H 0.4 cm; D 1.4 cm; D hole 0.1 cm.

cat. 166 **pl. 42, 166**
Excavation inv. ART 870232.83; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Light red amber. H 0.7 cm; D 0.3 cm; D hole 0.1 cm.

cat. 167 **pl. 42, 167**
Excavation inv. ART 870232.84; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Light red amber. H 0.6 cm; D 0.35 cm; D hole 0.1 cm.

cat. 168 **pl. 42, 168**
Excavation inv. ART 870232.85; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 1.1 cm; D 0.4 cm; D hole 0.18 cm.

cat. 169 **pl. 42, 169**
Excavation inv. ART 870232.86; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end is chipped. Red amber. H 0.8 cm; D 0.3 cm; D hole 0.1 cm.

cat. 170 **pl. 42, 170**
Excavation inv. ART 870232.87; AMS inv. 15/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. One end is chipped. Red amber. H 0.8 cm; D 0.3 cm; D hole 0.1 cm.

cat. 171 **pl. 42, 171**
Excavation inv. ART 870281.19; AMS inv. 16/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.4 cm; D hole 0.1 cm.

cat. 172 **pl. 42, 172**
Excavation inv. ART 870281.20; AMS inv. 16/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.4 cm; D hole 0.1 cm.

cat. 173 **pl. 42, 173**
Excavation inv. ART 870281.32; AMS inv. 16/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Light red amber. H 0.8 cm; D 0.4 cm; D hole 0.1 cm.

cat. 174 **pl. 42, 174**
Excavation inv. ART 870348.72; AMS inv. 17/2/99
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Light red amber. H 0.8 cm; D 0.35 cm; D hole 0.2 cm.

cat. 175 **pl. 42, 175**
Excavation inv. ART 870348.74; AMS inv. 17/2/99
Cylindrical bead with a central bore-hole and faceted surface. Intact. Red amber. H 0.8 cm; D 0.35 cm; D hole 0.2 cm.

cat. 176 **pl. 42, 176**
Excavation inv. ART 870348.86; AMS inv. 17/2/99
Cylindrical bead with a longitudinal bore-hole and a prism-shaped cross-section. The bead appears short in relation to the width. Intact. Red amber. H 0.8 cm; D 0.35 cm; D hole 0.15 cm.

cat. 177 **pl. 42, 177**
Excavation inv. ART 870354.3
Four fragments of cylindrical beads with a longitudinal bore-hole. All four fragments are longitudinally broken at the hole. Red amber. H 0.8 cm; D hole 0.15 cm.

cat. 178 **pl. 42, 178**
Excavation inv. ART 870374.3
Cylindrical bead with a longitudinal bore-hole and faceted surface. Intact. Red amber. H 0.55 cm; D 0.3 cm; D hole 0.1 cm.

cat. 179 **pl. 42, 179**
Excavation inv. ART 900434.1
Fragmented, cylindrical bead with a longitudinal bore-hole. Because of the poor state of preservation, the classification of the object as a cylindrical bead is not certain. Red amber. H 0.3 cm; D 0.5 cm; D hole 0.2 cm.

Type 4c: Spiral beads (cat. 180–199)

cat. 180 **pl. 43, 180**
Excavation inv. ART 870246.14; AMS inv. 185/61/87 (A 14, T 12)
Long, cylindrical bead with a longitudinal bore-hole. The ends are smooth and the cross-section is oval. The bead is covered with spiral carvings. Intact. Red amber. H 1.6 cm; D 0.4 cm; D hole 0.15 cm.

cat. 181 **pl. 43, 181**
Excavation inv. ART 870352.5; AMS inv. 186/61/87 (A 14, T 12)
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1.6 cm; D 0.4 cm; D hole 0.15 cm.

cat. 182 **pl. 43, 182**
Excavation inv. ART 870352.6; AMS inv. 187/61/87
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1.6 cm; D 0.4 cm; D hole 0.15 cm.

cat. 183 **pl. 43, 183**
Excavation inv. ART 870352.7; AMS inv. 188/61/87
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1.6 cm; D 0.4 cm; D hole 0.15 cm.

cat. 184 **pl. 43, 184**
Excavation inv. ART 870352.8; AMS inv. 189/61/87
Long, cylindrical bead with a longitudinal bore-hole. The

ends are smooth and the cross-section is oval. Intact. Red amber. H 1.6 cm; D 0.5 cm; D hole 0.15 cm.

cat. 185 **pl. 43, 185**
Excavation inv. ART 870352.9; AMS inv. 190/61/87
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1.6 cm; D 0.4 cm; D hole 0.15 cm.

cat. 186 **pl. 43, 186**
Excavation inv. ART 880974.111; AMS inv. 86/54/88
Cylindrical bead with five deep grooves. The bore-hole runs longitudinally through the object. The surface shows small chips. Red amber. H 1.5 cm; D 0.4 cm; D hole 0.2 cm.

cat. 187 **pl. 43, 187**
Excavation inv. ART 892645.2; AMS inv. 91/68/89
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1.2 cm; D 0.3 cm; D hole 0.15 cm.

cat. 188 **pls. 10, 6; 43, 147**
Excavation inv. ART 930697; AMS inv. 45/42/93 (A 23)
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth. Intact. Red amber. H 2.1 cm; D 0.3 cm; D hole 0.15 cm.

cat. 189 **pl. 43, 189**
Excavation inv. ART 870246.109; AMS inv. 14/2/99
Cylindrical bead with a longitudinal bore-hole and regular spiral grooves, similar to cat. 180. Both ends are broken, one end is very fragmented. Red amber. H 1.4 cm; D 0.35 cm; D hole 0.1 cm.

cat. 190 **pl. 43, 190**
Excavation inv. ART 870246.110; AMS inv. 14/2/99
Fragment of a cylindrical bead in the form of a spiral. Only three sections of the coil have survived, as one end is broken. Red amber. H 0.35 cm; D 0.25 cm; D hole 0.1 cm.

cat. 191 **pl. 43, 191**
Excavation inv. ART 870232.27; AMS inv. 15/2/99
Fragment of a cylindrical bead in the form of a spiral, similar to cat. 180. One end is broken. Red amber. H 1.6 cm; D 0.5 cm; D hole 0.14 cm.

cat. 192 **pl. 43, 192**
Excavation inv. ART 870232.60; AMS inv. 15/2/99
Fragment of a cylindrical bead in the form of a spiral, similar to cat. 180. One end is broken. Red amber. H 1.6 cm; D 0.5 cm; D hole 0.18 cm.

cat. 193 **pl. 43, 193**
Excavation inv. ART 870232.61; AMS inv. 15/2/99
Fragment of a cylindrical bead in the form of a spiral, similar to cat. 180. One end is broken. Red amber. H 0.9 cm; D 0.4 cm; D hole 0.12 cm.

cat. 194 **pl. 43, 194**
Excavation inv. ART 870232.78; AMS inv. 15/2/99
Long, cylindrical bead with a longitudinal bore-hole, similar to cat. 180. The ends are smooth and the cross-section is oval. Intact. Red amber. H 1 cm; D 0.4 cm; D hole 0.14 cm.

cat. 195 **pl. 43, 195**
Excavation inv. ART 870119.50; AMS inv. 16/2/99
Cylindrical bead with centre bore-hole, similar to no. 180. The ends are smooth and the cross-section is oval. Red amber. H 0.7 cm; D 0.4 cm; D hole 0.15 cm.

cat. 196 **pl. 43, 196**
Excavation inv. ART 870281.60; AMS inv. 16/2/99
Long, cylindrical bead with a central bore-hole, similar to cat. 180. The ends are smooth and the cross- section is oval. Intact. Red amber. H 2.3 cm; D 0.7 cm; D hole 0.15 cm.

cat. 197 **pl. 43, 197**
Excavation inv. ART 870246.62; AMS inv. 14/2/99
Fragment of a spiral bead. One half along the broken bore-hole. Red-orange amber. H 0.4 cm; D 0.25 cm.

cat. 198 **pl. 43, 198**
Excavation inv. ART 870348.78; AMS inv. 17/2/99
Long, cylindrical bead with a longitudinal bore-hole. The ends are smooth and the cross-section is oval. A spiral decoration covers the bead's surface. Intact. Red amber. H 2.3 cm; D 0.7 cm; D hole 0.2 cm.

cat. 199 **pl. 43, 199**
Excavation inv. ART 910496.2*
Fragment of a cylindrical bead in the form of a spiral. One end is broken. The central bore-hole extends through the entire object. Red amber. H 0.5 cm; D 0.35 cm; D hole 0.1 cm.

Type 4d: Cylindrical beads with spiral ends (cat. 200–211)

cat. 200 **pls. 10, 7; 43, 200**
Excavation inv. ART 870246.16; AMS inv. 14/2/99
Cylindrical bead with spiral carvings on both ends. The carvings run three times around the bead. The surface is slightly faceted. Intact. Red amber. H 1.4 cm; D 0.35 cm; D hole 0.1 cm

cat. 201 **pl. 43, 201**
Excavation inv. ART 870246.33; AMS inv. 14/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted and one end is broken. Red amber. H 0.7 cm; D 0.25 cm; D hole 0.1 cm.

cat. 202 **pl. 43, 202**
Excavation inv. ART 870246.34; AMS inv. 14/2/99
Cylindrical bead with spiral carvings on both ends. The carvings run three times around the bead. The surface is slightly faceted and the middle portion is narrow and less pronounced. Intact. Red amber. H 1 cm; D 0.25 cm; D hole 0.1 cm.

cat. 203 **pl. 43, 203**
Excavation inv. ART 870246.32; AMS inv. 14/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted and one end is broken. Red amber. H 0.7 cm; D 0.25 cm; D hole 0.1 cm.

cat. 204 **pl. 43, 204**
Excavation inv. ART 870232.24; AMS inv. 15/2/99
Fragment of a cylindrical bead with spiral carvings on one end. The object is broken on one side. Red amber. H 0.65 cm; D 0.3 cm; D hole 0.1 cm.

cat. 205 **pl. 43, 205**
Excavation inv. ART 870232.29; AMS inv. 15/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted and the middle portion is narrow and less pronounced. Red amber. H 0.9 cm; D 0.3 cm; D hole 0.08 cm.

cat. 206 **pl. 43, 206**
Excavation inv. ART 870232.30; AMS inv. 15/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted and the middle portion is narrow and less pronounced. Red amber. H 1.2 cm; D 0.35 cm; D hole 0.12 cm.

cat. 207 **pl. 43, 207**
Excavation inv. ART 870232.71; AMS inv. 15/2/99
Fragment of a cylindrical bead with spiral carvings on one end. The object is broken on one side. Red amber. H 0.6 cm; D 0.35 cm; D hole 0.09 cm.

cat. 208 **pl. 43, 208**
Excavation inv. ART 870281.23; AMS inv. 16/2/99
Cylindrical bead with spiral carvings on both ends. The carvings run three times around the bead. The surface is slightly faceted. Intact. Light red amber. H 1.2 cm; D 0.4 cm; D hole 0.1 cm.

cat. 209 **pl. 43, 209**
Excavation inv. ART 870281.24; AMS inv. 16/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted. Intact. Light red amber. H 1.2 cm; D 0.4 cm; D hole 0.1 cm.

cat. 210 **pl. 43, 210**
Excavation inv. ART 870298.59; AMS inv. 16/2/99
Cylindrical bead with spiral carvings on both ends. The carvings run three times around the bead. The surface is slightly faceted and the cross-section is approximately diamond-shaped. Intact. Red-orange amber. H 1.2 cm; D 0.4 cm; D hole 0.1 cm.

cat. 211 **pl. 43, 211**
Excavation inv. ART 870348.74; AMS inv. 17/2/99
Cylindrical bead with spiral carvings on one end. The carvings run three times around the bead. The surface is slightly faceted and one end is broken. Red amber. H 0.8 cm; D 0.35 cm; D hole 0.2 cm.

Type 5: Conical beads (cat. 212–216)

cat. 212 **pl. 43, 212**
Excavation inv. ART 880807.125; AMS inv. 100/54/88 (A 15)
Conical bead with a longitudinal bore-hole. The edges are rounded and the surfaces slope slightly towards the bore-hole. Small inclusions are visible in the amber. Intact. Red amber. D max. 1.3 cm; H 1.3 cm; D hole 0.25 cm.

cat. 213 **pls. 10, 8; 43, 213**
Excavation inv. ART 930984; AMS inv. 43/42/93
Conical bead with a vertical bore-hole. The edges are rounded and the surfaces slope slightly towards the bore-hole. The bead is broken off at the wider end. Red amber. D max. 1.7 cm; H 2.3 cm; D hole 0.3 cm.

cat. 214 **pl. 43, 214**
Excavation inv. ART 870246.17; AMS inv. 14/2/99
Conical bead with a small, longitudinal bore-hole. The edges are rounded and the surfaces slope slightly towards the bore-hole. Intact. Red amber. D max. 2.1 cm; H 1.9 cm; D hole 0.15 cm

cat. 215 **pl. 43, 215**
Excavation inv. ART 870232.2; AMS inv. 15/4/99
Conical bead with a longitudinal bore-hole. The edges are rounded and surfaces slope slightly towards the hole.

Intact. Red amber. D max. 1.3 cm; H 0.65 cm; D hole 0.2 cm.

cat. 216 **pl. 43, 216**
Excavation inv. ART 870349.22; AMS inv. 17/2/99
Conical bead with a small, longitudinal bore-hole. Intact. Red amber. D max. 0.75 cm; H 0.5 cm; D hole 0.25 cm.

Type 6: Biconical beads (cat. 217–276)

Type 6a: Simple biconical beads (cat. 217–234)

cat. 217 **pl. 44, 217**
Excavation inv. ART 870352.21; AMS inv. 161/61/87
Roughly biconical bead with a central perforation running across the short axis. The maximum width of the bead is located in the centre, at the cone-base junction. One side of one of the bore-holes is slanted. Red amber. D max. 1.7 cm; H max 1.8 cm; D hole 0.4 cm.

cat. 218 **pl. 44, 218**
Excavation inv.no. ART 870352.22; AMS inv. 162/61/87
Biconical bead with a central perforation across the bead's short axis. Intact. Red amber. D max. 1.7 cm; H 1.1 cm; D hole 0.4 cm.

cat. 219 **pl. 44, 219**
Excavation inv. ART 880947.117; AMS inv. 92/54/88
Small, biconical bead with a longitudinal bore-hole across the bead's short axis. Intact. Red amber. D 0.8 cm; H 0.5 cm; D hole 0.15 cm.

cat. 220 **pl. 44, 220**
Excavation inv. ART 880943.135; AMS inv. 110/54/88
Small, biconical bead with a central bore-hole across the bead's short axis. The edges are rounded. Intact. Red amber. D 1 cm; H 0.55 cm; D hole 0.2 cm.

cat. 221 **pl. 44, 221**
Excavation inv. ART 870232.1; AMS inv. 15/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The edges are rounded and the cross-section is lenticular. Intact. Red amber. D max. 0.8 cm; H 0.4 cm; D hole 0.15 cm.

cat. 222 **pl. 44, 222**
Excavation inv. ART 870232.12; AMS inv. 15/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The edges are rounded and the cross-section is lenticular. Intact. Red amber. D max. 0.8 cm; H 0.3 cm; D hole 0.3 cm.

cat. 223 **pl. 44, 223**
Excavation inv. ART 870281.5; AMS inv. 16/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular. Intact. Red amber. D max. 0.7 cm; H 0.35 cm; D hole 0.25 cm.

cat. 224 **pl. 44, 224**
Excavation inv. ART 870281.40; AMS inv. 16/2/99
Irregular, biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular. Intact. Light red amber. D max. 1.6 cm; H 1.2 cm; D hole 0.25 cm.

cat. 225 **pl. 44, 225**
Excavation inv. ART 870281.43; AMS inv. 16/2/99
Biconical bead with a central bore-hole across the bead's short axis. The edges are well defined and the cross-section is lenticular. Intact. Red amber. D max. 1.2 cm; H 0.8 cm; D hole 0.15 cm.

cat. 226 **pl. 44, 226**
Excavation inv. ART 870281.45; AMS inv. 16/2/99
Biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular and one side is chipped. Red amber. D max. 0.9 cm; H 0.8 cm; D hole 0.1 cm.

cat. 227 **pl. 44, 227**
Excavation inv. ART 870281.47; AMS inv. 16/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular. Intact. Red amber. D max. 0.8 cm; H 0.4 cm; D hole 0.1 cm.

cat. 228 **pl. 44, 228**
Excavation inv. ART 870281.51; AMS inv. 16/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular and one side is chipped. Red amber. D max. 0.7 cm; H 0.4 cm; D hole 0.1 cm.

cat. 229 **pl. 44, 229**
Excavation inv. ART 870298.56; AMS inv. 16/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The edges are rounded and the cross-section is lenticular. Intact. Red amber. D max. 0.7 cm; H 0.4 cm; D hole 0.1 cm.

cat. 230 **pl. 44, 230**
Excavation inv. ART 870298.57; AMS inv. 16/2/99
Small, biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular and one side is chipped. Red amber. D max. 0.9 cm; H 0.4 cm; D hole 0.15 cm.

cat. 231 **pl. 44, 231**
Excavation inv. ART 870348.61; AMS inv. 17/2/99
Biconical bead with a central bore-hole across the bead's short axis. Intact. Red amber. D max. 1.4 cm; H 0.8 cm; D hole 0.3 cm.

cat. 232 **pl. 44, 232**
Excavation inv. ART 870348.62; AMS inv. 17/2/99
Biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular. Intact. Light red amber. D max. 0.9 cm; H 0.5 cm; D hole 0.25 cm.

cat. 233 **pl. 44, 233**
Excavation inv. ART 870341.79; AMS inv. 17/2/99
Simple, biconical bead with a central bore-hole. Intact. Light red amber. D max. 1.1 cm; H 0.7 cm; D hole 0.3 cm.

cat. 234 **pl. 44, 234**
Excavation inv. ART 870341.82; AMS inv. 17/2/99
Biconical bead with a central bore-hole across the bead's short axis. The cross-section is lenticular. Intact. Red amber. D max. 1.2 cm; H 0.6 cm; D hole 0.3 cm.

Type 6b: Compressed biconical beads (cat. 235–260)

cat. 235 **pl. 44, 235**
Excavation inv. ART 870353.7; AMS inv. 82/61/87
Biconical bead with a central perforation across the bead's short axis, with circular flattened areas surrounding the perforation bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 2.2 cm; H 1 cm; D hole 0.4 cm.

cat. 236 **pl. 44, 236**
Excavation inv. ART 870352.23; AMS inv. 163/61/87
Biconical bead with a central perforation across the bead's short axis. Large flat areas surround the bore- holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 2.2 cm; H 0.7 cm; D hole 0.4 cm.

cat. 237 **pl. 44, 237**
Excavation inv. ART 870352.24; AMS inv. 164/61/87
Biconical bead with a centre perforation across the bead's short axis, with circular, flattened areas surrounding the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 2.2 cm; H 1.7 cm; D hole 0.4 cm.

cat. 238 **pl. 44, 238**
Excavation inv. 870233.51; AMS inv. 191/61/87
Biconical bead with a central perforation across the bead's short axis. Large flat areas surround the holes. Intact. Red amber. D max. 1.9 cm; H 0.8 cm; D hole 0.3 cm.

cat. 239 **pl. 44, 239**
Excavation inv. ART 880946.113; AMS inv. 88/54/88
Biconical bead with a central perforation across the bead's short axis. Large flat areas surround the bore-holes. The bead has a hexagonal cross-section and one edge is broken off. Red amber. D max. 0.9 cm; H 1.2 cm; D hole 0.15 cm.

cat. 240 **pl. 44, 240**
Excavation inv. ART 880946.114; AMS inv. 89/54/88
Biconical bead with a central perforation across the bead's short axis. Large flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 0.9 cm; H 0.35 cm; D hole 0.2 cm.

cat. 241 **pl. 44, 241**
Excavation inv. ART 870246.18; AMS inv. 14/2/99
Flat, biconical bead with a central perforation across the bead's short axis. Large flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 0.9 cm; H 0.3 cm; D hole 0.2 cm.

cat. 242 **pl. 44, 242**
Excavation inv. ART 870246.19; AMS inv. 14/2/99
Flat, biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Orange amber. D max. 0.9 cm; H 0.3 cm; D hole 0.2 cm.

cat. 243 **pl. 44, 243**
Excavation inv. ART 870246.31; AMS inv. 14/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 0.9 cm; H 0.5 cm; D hole 0.2 cm.

cat. 244 **pl. 44, 244**
Excavation inv. ART 870246.20; AMS inv. 14/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and a striking grain. Intact. Red amber. D max. 1 cm; H 0.7 cm; D hole 0.3 cm.

cat. 245 **pl. 44, 245**
Excavation inv. ART 870232.9; AMS inv. 15/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 1.2 cm; H 0.6 cm; D hole 0.2 cm.

cat. 246 **pl. 45, 246**
Excavation inv. ART 870281.1; AMS inv. 16/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The

bead has a hexagonal cross-section. Intact. Red amber. D max. 1.8 cm; H 0.7 cm; D hole 0.2 cm.

cat. 247 **pl. 45, 247**
Excavation inv. ART 870281.6; AMS inv. 16/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Light red amber. D max. 0.7 cm; H 0.35 cm; D hole 0.2 cm.

cat. 248 **pl. 45, 248**
Excavation inv. ART 870281.62; AMS inv. 16/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Light red amber. D max. 1.8 cm; H 0.6 cm; D hole 0.15 cm.

cat. 249 **pl. 45, 249**
Excavation inv. ART 870352.112; AMS inv. 17/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Red amber. D max. 0.6–0.8 cm; H 0.3 cm; D hole 0.1 cm.

cat. 250 **pl. 45, 250**
Excavation inv. ART 870352.115; AMS inv. 17/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section. Intact. Red amber. D max. 0.8 cm; H 0.4 cm; D hole 0.1 cm.

cat. 251 **pl. 45, 251**
Excavation inv. ART 870349.21; AMS inv. 17/2/99.21
Biconical bead with a central perforation across the bead's short axis. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Red amber. D max. 1.1 cm; H 0.7 cm; D hole 0.4 cm.

cat. 252 **pl. 45, 252**
Excavation inv. ART 870349.23; AMS inv. 17/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Light red amber. D max. 0.6 cm; H 0.4 cm; D hole 0.2 cm.

cat. 253 **pl. 45, 253**
Excavation inv. ART 870352.132; AMS inv. 17/2/99
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and one edge is chipped. Red amber. D max. 1.4 cm; H 0.6 cm; D hole 0.2 cm.

cat. 254 **pl. 45, 254**
Excavation inv. ART 870348.87; AMS inv. 17/2/99
Large, biconical bead with a central perforation across the short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Orange amber. D max. 1.4 cm; H 0.8 cm; D hole 0.2 cm.

cat. 255 **pl. 45, 255**
Excavation inv. ART 870348.89; AMS inv. 17/2/99
Large, biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore- holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Orange amber. D max. 1.4 cm; H 0.8 cm; D hole 0.2 cm.

cat. 256 **pl. 45, 256**
Excavation inv. ART 850316; AMS inv. 244/8/07
Biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. Intact. Red amber. D max. 1.1 cm; H 0.75 cm; D hole 0.1 cm.

cat. 257 **pl. 45, 257**
Excavation inv. ART 850314
Fragment of a biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The bead has a hexagonal cross-section and the edges are clearly outlined. One side is broken off; the broken edge is smooth. Red amber. D max. 0.9 cm; H 0.7 cm; D hole 0.18 cm.

cat. 258 **pl. 45, 258**
Excavation inv. ART 860203*
Large fragment of a biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The edges are clearly outlined; one side is broken off. Red amber. D max. 2.6 cm; H 1.9 cm; D hole 0.4 cm.

cat. 259 **pl. 45, 259**
Excavation inv. ART 931010.2*
Large fragment of a biconical bead with a central perforation across the bead's short axis. Flat areas surround the bore-holes. The edges are clearly outlined and one side is broken. Approximately one-third of the object is preserved. Red amber. H 1.9 cm; D hole 0.2 cm.

cat. 260 **pl. 45, 260**
Excavation inv. ART 940110*
Fragment of a biconical bead with a central perforation. Flat areas surround the bore-holes. The edges are clearly outlined and one side is broken. About half of the object is preserved. Red amber. D 1.3 cm; H 0.9 cm; D hole 0.15 cm.

Type 6c: Long biconical beads (cat. 261–274)

Beads cat. 261–274 belong to one and the same subgroup, with no variations as to appearance or size.

cat. 261 **pl. 45, 261**
Excavation inv. ART 870246.42; AMS inv. 14/2/99
Long, biconical bead with a central perforation across the bead's maximum width. The edges are clearly outlined. The cross-section is angular and characterised as lenticular. Intact. Red amber. D 0.7 cm; H 0.35 cm; D hole 0.2 cm.

cat. 262 **pls. 10, 9; 45, 262**
Excavation inv. ART 870246.43; AMS inv. 14/2/99
Similar to cat. 261. Intact. Red amber. D 0.7 cm; H 0.4 cm; D hole 0.2 cm.

cat. 263 **pl. 45, 263**
Excavation inv. ART 870272.18; AMS inv. 16/2/99
Similar to cat. 261. Intact. Red amber. D 1 cm; H 0.4 cm; D hole 0.2 cm.

cat. 264 **pl. 45, 264**
Excavation inv. ART 870352.102; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.2 cm.

cat. 265 **pl. 45, 265**
Excavation inv. ART 870352.103; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 266 **pl. 45, 266**
Excavation inv. ART 870352.104; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 267 **pl. 45, 267**
Excavation inv. ART 870352.105; AMS inv. 17/2/99
Similar to cat. 261. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 268 **pl. 45, 268**
Excavation inv. ART 870352.106; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 269 **pl. 45, 269**
Excavation inv. ART 870352.107; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 270 **pl. 45, 270**
Excavation inv. ART 870352.108; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 271 **pl. 45, 271**
Excavation inv. ART 870352.109; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.1 cm.

cat. 272 **pl. 45, 272**
Excavation inv. ART 870352.110; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 273 **pl. 45, 273**
Excavation inv. ART 870352.111; AMS inv. 17/2/99
Similar to cat. 261. Intact. Red-orange amber. H 0.7–1.2 cm; D hole 0.15 cm.

cat. 274 **pl. 45, 274**
Excavation inv. ART 870349.20; AMS inv. 17/2/99
Similar to cat. 261. Some chips are visible on the bead's surface. Red amber. D 1 cm; H 0.7 cm, D hole 0.15 cm.

Type 6d: Rosette-shaped beads (cat. 275–276)

cat. 275 **pl. 10, 11; 46, 275**
Excavation inv. ART 860000.1; AMS inv. 66/41/86
Rosette-shaped, biconical bead with a central bore-hole. Grooves run across the entire object from one end of the bore-hole to the other. The edges are clearly outlined, with a roughly lenticular cross-section. The bead is whole and well preserved. Red amber. D 1.1 cm; H 1.4 cm; D hole 0.1 cm.

cat. 276 **pl. 10, 10; 46, 276**
Excavation inv. ART 860000.2; AMS inv. 67/41/86 T 13
Rosette-shaped, biconical bead with a central bore-hole. Grooves run across the entire object from one end of the bore-hole to the other. The edges are clearly outlined with a roughly lenticular cross-section. The bead is whole and well preserved. Red amber. D 2 cm; H 2 cm; D hole 0.1 cm.

Type 7: Square beads (cat. 277–293)

cat. 277 **pl. 10, 12; 46, 277**
Excavation inv. ART 870352.27; AMS inv. 167/61/87
Square bead with a hole through the long side. The object has an approximately rectangular shape, with rounded edges. The cross-section is slightly oval. Intact. Red amber. L 2.7 cm; W 1.3 cm; H 0.8 cm, D 0.45 cm.

cat. 278 **pl. 46, 278**
Excavation inv. ART 870233.52; AMS inv. 192/61/87

Square bead with a hole through the long side. The object has a rectangular shape and a rectangular cross-section. Red amber. Intact. L 2.8 cm; W 2 cm; H 1 cm; D hole 0.3 cm.

cat. 279 **pl. 46, 279**
Excavation inv. ART 870232.8; AMS inv. 15/2/99
Square bead with a hole through the long side. The object has an approximately rectangular shape, but the long sides drag onto the narrow sides. The cross-section is slightly oval. Intact. Red amber. L 2.3 cm; W 1.1 cm; H 0.2 cm; D hole 0.3 cm.

cat. 280 **pl. 46, 280**
Excavation inv. ART 870232.10; AMS inv. 15/2/99
Fragment of a square bead with a hole through the long side. The object has a rectangular shape and a rectangular cross-section. The bead is broken on one of its longer sides. Red amber. L 1.1 cm; W 0.9 cm; D hole 0.2 cm.

cat. 281 **pl. 46, 281**
Excavation inv. ART 870232.92; AMS inv. 15/2/99
Square bead with a hole through the long side. The bead has a long rectangular shape and a triangular cross-section. The object has a distinct patina. Intact. Red amber. L 2.1 cm; W 0.9 cm; D hole 0.2 cm.

cat. 282 **pl. 46, 282**
Excavation inv. ART 870281.14; AMS inv. 16/2/99
Fragment of a square bead with a hole through the long side. The object has an approximately rectangular shape and the cross-section is slightly oval. The bead is broken on one of its longer sides. Intact. Red amber. L 1.1 cm; W 0.8 cm; H 0.45 cm; D hole 0.2 cm.

cat. 283 **pl. 46, 283**
Excavation inv. ART 870281.15; AMS inv. 16/2/99
Fragment of a square bead with a hole through the long side. The object has an approximately rectangular shape and the cross-section is slightly oval. The bead is broken on one of its longer sides. Red amber. L 0.9 cm; W 1.1 cm; H 0.5 cm; D hole 0.3 cm.

cat. 284 **pl. 46, 284**
Excavation inv. ART 870104.16; AMS inv. 16/2/99
Fragment of a square bead with a hole through the long side. The object has an approximately rectangular shape and the cross-section is irregularly hexagonal. Intact. Red amber. L 0.8 cm; W 0.5 cm; H 0.35 cm; D hole 0.1 cm.

cat. 285 **pl. 46, 285**
Excavation inv. ART 870281.46; AMS inv. 16/2/99
Fragment of a square bead with a hole through the long side. The basic shape and the cross-section of the bead are rectangular. The edges are clearly defined. The bead is broken on one of its long sides. Red amber. L 1 cm; W 0.9 cm; H 0.7 cm; D hole 0.3 cm.

cat. 286 **pl. 46, 286**
Excavation inv. ART 870281.48; AMS inv. 16/2/99
Square bead with a hole through the long side. The basic shape and the cross-section of the bead are rectangular. The edges are clearly defined. Chipping is visible here and there on the object's surface. Red amber. L 0.7 cm; W 1 cm; H 0.45 cm; D hole 0.15 cm.

cat. 287 **pl. 46, 287**
Excavation inv. ART 870281.67; AMS inv. 16/2/99
Square bead with a hole through the long side. The basic shape and the cross-section of the bead are rectangular. The edges are clearly defined. Intact. Light red amber. L 1.9 cm; W 1.7 cm; H 0.7 cm: D hole 0.15 cm.

cat. 288 **pl. 46, 288**
Excavation inv. ART 870349.18; AMS inv. 17/2/99
Square bead with a hole through the long side. The bead has a long rectangular shape and a triangular cross-section. Intact. Red amber. L 1.7 cm; W 0.9 cm; D hole 0.2 cm.

cat. 289 **pl. 46, 289**
Excavation inv. ART 870349.19; AMS inv. 17/2/99
Square bead with a hole through the long side. The bead has a long, rectangular shape and a triangular cross-section. One long side is convex. Intact. Red amber. L 1.6 cm; W 0.7 cm; D hole 0.3 cm.

cat. 290 **pl. 46, 290**
Excavation inv. ART 870341.60; AMS inv. 17/2/99
Square bead with a hole through the long side. The object has a rectangular shape and the cross-section is slightly oval. Intact. Red amber. L 1.5 cm; W 0.8 cm; D hole 0.2 cm.

cat. 291 **pl. 46, 291**
Excavation inv. ART 870341.90; AMS inv. 17/2/99
Square bead with a hole through the long side. The bead has a trapezoidal shape and a triangular cross-section. Intact. Red amber. L 2.1 cm; W 1.7 cm; D hole 0.3 cm.

cat. 292
Excavation inv. ART 900486.1*
Fragmented square bead with a former central bore-hole. The bead is broken along the hole. The hole was drilled to two-thirds of one narrow side and one-third of the other narrow side of the bead. The bead has a long rectangular shape and a triangular cross-section. Red amber. L 1.6 cm; W 0.5 cm; D hole 0.1 cm.

cat. 293 **pl. 46, 293**
Excavation inv. ART 900486.2*
Square bead with a hole through the long side. The bead has a long rectangular shape and a triangular cross-section. The bead is broken on one side. Red amber. L 1.4 cm; W 0.6–0.7 cm; D hole 0.15 cm. The following beads cannot be assigned to a type because of the poor state of preservation:

cat. 294
Excavation inv. ART 870246.15
Fragments of one or more beads. Red-yellow amber.

cat. 295
Excavation inv. ART 870354.4*
18 fragments of amber beads. Yellow amber.

cat. 296
Excavation inv. ART 900374.4
Two fragments of amber beads. Yellow amber. L 1.1 cm; W 1.2 cm; H 0.6 cm.

Martina Ott

Pendants (cat. 297–349)

Type 1: Drop-shaped pendants (cat. 297–298)

cat. 297 **pls. 12, 1; 47, 297**
Excavation inv. ART 870232.48; AMS inv.15/2/99
Elongated, flattened, oval pendant, with an oval section. The slanted, peripheral perforation runs from the top of the object to the front of the object. Clear yellow amber. H 1.9 cm; L 1.3 cm; W 0.35 cm; D hole 0.1 cm.

cat. 298 **pl. 47, 298**
Excavation inv. ART 901329*
Elongated, flattened, oval pendant, with an oval section, a concave front and a straight back. The horizontal, slightly slanted, peripheral perforation is located peripherally in the object's upper section. Opaque red amber. H 1.1 cm; L 0.85 cm; W 0.35 cm; D hole 0.1 cm.

Type 2: Elongated pendant

cat. 299 **pl. 47, 299**
Excavation inv. ART 900402.2*
Upper globular part of a pendant with a protruding neck, surmounted by an elaborate, horizontally perforated, gable-shaped top. The lower part of the artefact is missing. Red amber. D 0.6 cm; H 0.4 cm; D hole 0.2 cm.

Type 3: Bulla-shaped pendants (cat. 300–317)

Type 3a: Cylindrical projection with a round section (cat. 300–311)

cat. 300 **pl. 47, 300**
Excavation inv. 870246.41; AMS inv. 181/61/87
Flat, oval pendant with an oval section, with a clearly defined neck, surmounted by a horizontal, perforated cylindrical projection with a round section. The object is covered by a rather smooth patina. Red, opaque amber. H 1.6 cm; L 0.9 cm; W 0.5 cm; D hole 0.2 cm.

cat. 301 **pl. 47, 301**
Excavation inv. ART 870246.45; AMS inv. 14/2/99
Flat, rather round pendant with an oval section, with a slightly protruding neck, surmounted by a horizontally perforated, cylindrical projection. Red amber. H 1.7 cm; D max. 1.5 cm; W 0.4 cm.

cat. 302 **pl. 47, 302**
Excavation inv. ART 870246.44; AMS inv. 14/2/99
Round pendant with an oval section with a protruding neck, surmounted by a trapezoidal, horizontally perforated projection with a round section. Red amber. H 1.6 cm; W 0.4 cm; D 1.1 cm; D hole 0.2 cm

cat. 303 **pls. 12, 4; 47, 303**
Excavation inv. ART 870232.7; AMS inv. 15/2/99
Flat, rounded pendant with an oval section, with a slightly protruding neck, surmounted by a cylindrical, reduced projection with a horizontal perforation. Dark yellow amber. H 1.5 cm; L 1.3 cm; D hole 0.2 cm.

cat. 304 **pl. 47, 304**
Excavation inv. ART 870232.94; AMS inv. 15/2/99
Flat, rounded pendant with an oval section, with a slightly protruding neck, surmounted by a cylindrical, reduced projection with a horizontal perforation. The front of the pendant is convex, the back is rather concave. Opaque red amber. H 2 cm; L 1 cm; W 0.4 cm; D hole 0.15 cm.

cat. 305 **pl. 47, 305**
Excavation inv. ART 870232.95; AMS inv. 15/2/99
Flat, rounded pendant with an oval section with a slightly protruding neck, surmounted by a cylindrical, reduced projection with a horizontal perforation. The projection is rather small in comparison with the rest of the object. Opaque red amber. H 0.95 cm; L 0.7 cm; D hole 0.15 cm.

cat. 306 **pl. 47, 306**
Excavation inv. ART 870281.66; AMS inv. 16/2/99
Flat, oval pendant with an oval section with a protruding neck decorated by two grooves, and which is surmounted by a cylindrical, horizontally perforated projection with a round section. Red amber. H 1.6 cm; D 1 cm; D hole 0.2 cm.

cat. 307 **pl. 47, 307**
Excavation inv. ART 870348.58; AMS inv. 17/2/99
Flat, rather rounded pendant with an oval section with a slightly protruding neck, surmounted by a cylindrical, largely reduced projection with a horizontal perforation. Red amber. H 2.3 cm; L 1.6 cm; W 0.5 cm, D hole 0.15 cm.

cat. 308 **pl. 47, 308**
Excavation inv. ART 880594.107; AMS inv. 82/54/88
Squat, rather round pendant with a flat oval section, with a protruding neck, surmounted by a cylindrical, horizontally perforated projection with a square section with rounded edges. Red amber. H 1.2 cm; L 1 cm; W 0.6; D hole 0.1 cm.

cat. 309 **pl. 47, 309**
Excavation inv. ART 880943.134; AMS inv. 109/54/88
Flat, oval pendant with an oval section, with a slightly protruding neck, surmounted by a horizontally perforated cylindrical projection with a round section, whose upper section is broken off. The front is convex, the back rather flattened. Red opaque amber. H 1.4 cm; L 1 cm; W 0.5 cm; D hole 0.2 cm.

cat. 310 **pl. 47, 310**
Excavation inv. ART 900380; AMS inv. 245/8/07
Oval, flat pendant with an oval section with a protruding neck, surmounted by a trapezoidal, horizontally perforated projection with a round section. Red amber. H 2 cm; L 1.3 cm; D hole 0.1 cm.

cat. 311 **pl. 47, 311**
Excavation inv. ART 940014*
Flat, rather rounded pendant with an oval section, with a slightly protruding neck, surmounted by a cylindrical, reduced projection with a horizontal perforation. The projection is partly fractured, the bottom is also partly broken. Opaque red amber. H 1 cm; L 0.9 cm; W 0.55 cm.

Type 3b: Bulla-shaped pendants with decorated top (cat. 312–314)

cat. 312 **pl. 47, 312**
Excavation inv. ART 870233.1; AMS inv. 175/61/87
Flat, oval pendant with an oval section with a protruding neck. The cylindrical projection shows a horizontal drilling and is characterised by a horizontal incision, as well as three moulded knobs on its top. Red amber. H 1.8 cm; L 1.2 cm; W 0.6 cm; D hole 0.15 cm.

cat. 313 **pl. 47, 313**
Excavation inv. ART 870352.12; AMS inv. 152/61/87
Flat, slightly elongated, oval pendant with an oval section; its neck is decorated with two grooves, surmounted by a cylindrical, horizontally perforated projection, which is only partly preserved. Red amber. H 2.6 cm; L 1.5 cm; W 0.8 cm; D hole 0.15 cm.

cat. 314 **pls. 12, 5; 47, 314**
Excavation inv. ART 870352.20; AMS inv. 160/61/87
Flat, oval pendant with an oval section with a neck characterised by two grooves, surmounted by a rather big cylindrical, horizontally perforated projection, showing several vertical grooves. Two straight incisions at each side, as well as two slightly curved ones in the middle, converge at the top of the projection. Transparent yellow amber. H 2.25 cm; L 1.5 cm; W 0.7 cm; D hole 0.2 cm.

Fragments (cat. 315–317)

Body fragments

cat. 315 **pl. 47, 315**
Excavation inv. ART 870362*
Oval, flat pendant with an oval section, which is fractured at the top, where no traces of the projection are preserved. Red amber. H 0.7 cm; L 0.9 cm; W 0.5 cm.

cat. 316 **pl. 47, 316**
Excavation inv. ART 870409*
Oval, flat pendant, which is fractured at its bottom as well as at the top. Red amber. H 0.9 cm; L 1 cm; W 0.5 cm.

Projection fragments

cat. 317 **pl. 47, 317**
Excavation inv. ART 870281.52; AMS inv. 16/2/99
Fragment of the projection of a pendant of indeterminable shape, with a horizontal bore-hole. Red amber. L 0.5 cm; D hole 0.15 cm.

Type 4: Bottle-shaped pendants (cat. 318–319)

cat. 318 **pl. 48, 318**
Excavation inv. ART 870233.3; AMS inv. 174/61/87
Flat, round pendant with an oval section followed by a distinct, protruding neck with a round projection, which is perforated sideways from the top to the front. At its bottom some traces of a failed drilling can be seen. Red amber. H 1.2 cm; L 0.9 cm; W 0.7 cm; D hole 0.1 cm.

cat. 319 **pls. 12, 7; 48, 319**
Excavation inv. ART 880807.124; AMS inv. 99/54/88
Round, flat pendant with an oval section and a rectangular flat projection at its top. The object is perforated twice with two intersecting drillings: once horizontally from its front to its back, right beneath the projection, and once vertically with a perforation running from the top to the base. Red amber. D 1.6 cm; W 0.9 cm; D hole 0.18 cm.

Type 5: Fruit pendants (cat. 320–345)

Type 5a: Pomegranate pendants with a vertical bore-hole (cat. 320–332. 340–342. 345)

cat. 320 **pl. 48, 320**
Excavation inv. ART 870353.3; AMS inv. 81/61/87
Oval pendant with an oval section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.8 cm; L 0.9 cm; W 0.6 cm; D hole 0.1 cm.

cat. 321 **pl. 48, 321**
Excavation inv. ART 870352.13; AMS inv. 153/61/87
Oval pendant with an oval section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.7 cm; L 1.7 cm; W 0.1 cm; D hole 0.1 cm.

cat. 322 **pl. 48, 322**
Excavation inv. ART 870352.14; AMS inv. 154/61/87
Oval pendant with a round section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.5 cm; L 0.8 cm; W 0.7 cm; D hole 0.13 cm.

cat. 323 **pl. 48, 323**
Excavation inv. ART 870352.15; AMS inv. 155/61/87
Oval pendant with an oval, flat section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.6 cm; L 1 cm; W 0.65 cm; D hole 0.15 cm.

cat. 324 **pl. 48, 324**
Excavation inv. ART 870352.16; AMS inv. 156/61/87
Oval pendant with an oval, flat section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a flat, oval, floral, decorated projection, which resembles the calyx of a pomegranate. Orange amber. H 1.6 cm; L 0.8 cm; W 0.6 cm; D hole 0.1 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 325 **pl. 48, 325**
Excavation inv. ART 870352.17; AMS inv. 157/61/87
Oval pendant with an oval, flat section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a flat, oval, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.6 cm; L 1 cm; W 0.5 cm; D hole 0.13 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 326 **pl. 48, 326**
Excavation inv. ART 870352.18; AMS inv. 158/61/87
Oval pendant with an oval, flat section, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. Red amber. H 1.7 cm; L 0.9 cm; W 0.6 cm; D hole 0.15 cm.

cat. 327 **pl. 48, 327**
Excavation inv. ART 870352.19; AMS inv. 159/61/87
Oval pendant with a round section, which is perforated from its bottom to its top. At its lower end the object shows a protruding neck and is characterised by a round, floral projection which resembles the calyx of a pomegranate. Red amber. H 1.5 cm; L 0.9 cm; W 0.6 cm; D hole 0.15 cm.

cat. 328 **pl. 48, 328**
Excavation inv. ART 870352.42; AMS inv. 182/61/87
Oval pendant with an oval section, which is perforated from its bottom to its top. At its lower end the object shows a slightly protruding neck and is characterised by a round, floral projection which resembles the calyx of a pomegranate. The colour of the amber is red. H 1.15 cm; L 0.5 cm; W 0.4 cm; D hole 0.07 cm.

cat. 329 **pl. 48, 329**
Excavation inv. ART 880822.106; AMS inv. 81/54/88
Oval pendant with a flat, oval section and a flattened upper part, which is perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by an oval, floral, decorated projection which resembles the calyx of a pomegranate. The colour of the amber is red. H 1.6 cm; L 1.1 cm; W 0.7 cm; D hole 0.2 cm.

cat. 330 **pl. 48, 330**
Excavation inv. ART 870281.49; AMS inv. 16/2/99
Oval, squat pendant with a round section, which is

perforated from its bottom to its top. In its lower section the object shows a protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. The colour of the amber is yellow. H 0.9 cm; L 0.6 cm; D hole 0.15 cm.

cat. 331 **pl. 48, 331**
Excavation inv. ART 870352.117; AMS inv. 17/2/99
Fragment of the button-top of a pomegranate pendant, round, with a vertical perforation through its centre. It is elaborated in a shape that resembles the calyx of a pomegranate or apple. Red amber. H 0.4 cm; D 0.5 cm; D hole 0.1 cm.

cat. 332 **pl. 48, 332**
Excavation inv. ART 870341.80; AMS inv. 17/2/99
Oval, rather big but squat pendant with a round section, which is perforated by a rather small hole from its bottom to its top. In its lower section the object shows a slightly protruding neck and is characterised by a round, floral, decorated projection which resembles the calyx of a pomegranate. The colour of the amber is dark yellow. H 1.4 cm; L 1 cm; D hole 0.15 cm.

Type 5b: Pomegranate pendants with horizontal bore-hole (cat. 333–339. 343–344)

cat. 333 **pl. 48, 333**
Excavation inv. ART 870232.13; AMS inv. 15/2/99
Elongated oval pendant, rather small, with an oval section and a protruding neck, surmounted by a button-top, characterised by two deep notches, so the projection resembles the calyx of a pomegranate or apple. At its base, the pendant is perforated horizontally. H 1.3 cm; L 0.6 cm; D hole 0.1 cm.

cat. 334 **pl. 48, 334**
Excavation inv. ART 870232.16; AMS inv. 15/2/99
Oval, rather small pendant, with an oval section and a protruding neck, surmounted by a round button-top, characterised by two deep notches so the projection resembles the calyx of a pomegranate. The base is perforated horizontally. Red amber. H 0.9 cm; L 0.6 cm; D hole 0.1 cm.

cat. 335 **pl. 48, 335**
Excavation inv. ART 870352.156; AMS inv. 17/2/99
Oval, rather small and squat pendant, with a round section with a protruding neck, surmounted by a round projection with three deep notches which together equate to the calyx of a pomegranate. The base of the object is perforated horizontally. Yellow amber. H 1 cm; L 0.5 cm; D hole 0.1 cm.

cat. 336 **pl. 48, 336**
Excavation inv. ART 870348.57; AMS inv. 17/2/99
Oval, rather small and squat pendant, with a round section and a protruding neck, surmounted by a round projection with three deep notches which together equate to the calyx of a pomegranate. The base of the object is perforated horizontally. Yellow amber. H 1 cm; L 0.5 cm; D hole 0.1 cm.

cat. 337 **pl. 48, 337**
Excavation inv. ART 870352.43; AMS inv. 183/61/87
Oval, elongated, small pendant, with a round section with a protruding neck, surmounted by a round projection with two deep notches which equate to the calyx of a pomegranate. The base of the pendant is perforated horizontally. Red amber. H 0.95 cm; L 0.5 cm; W 0.5 cm; D hole 0.09 cm.

cat. 338 **pl. 48, 338**
Excavation inv. ART 870352.44; AMS inv. 184/61/87
Oval, elongated, small pendant, with an oval section with a protruding neck, surmounted by a round projection with two deep notches which equate to the calyx of a pomegranate. The base of the pendant is perforated horizontally. Red amber. H 0.9 cm; L 0.5 cm; D hole 0.1 cm.

cat. 339 **pl. 48, 339**
Excavation inv. ART 940135; AMS inv. 31/43/94
Elongated oval pendant, with an oval section with a protruding neck, surmounted by a round projection, characterised by two deep notches, partly chipped, and which resembles the calyx of a pomegranate/apple. The base of the pendant is perforated horizontally. Red amber. H 1.7 cm; L 0.95 cm; D hole <0.1 cm.

Type 5a: Pomegranate pendants with a vertical bore-hole (cat. 320–332. 340–342. 345)

cat. 340 **pl. 49, 340**
Excavation inv. ART 870353.5; AMS inv. 79/61/87
Globular pendant, with a round section and a protruding neck, which is characterised by two grooves. The pendant features a round button-top, which is decorated with radiating incisions at its top; a perforation runs vertically through the whole object. Red amber. H 2.2 cm; D 1.6 cm; D hole 0.25 cm.

cat. 341 **pls. 12, 8; 49, 341**
Excavation inv. ART 892609.1; AMS inv. 2/71/89
Globular pendant with an oval section with a protruding neck characterised by two grooves, surmounted by an oval button-top with twelve triangular notches. The object itself is perforated by a vertical, rather slanted, decentralised drilling. Red amber. H 1.4 cm; L 1.7 cm; W 1.1 cm; D hole 0.2 cm.

cat. 342 **pl. 49, 342**
Excavation inv. ART 870281.39; AMS inv. 16/2/99.39
Fragment of an elongated oval pendant with an oval section and a cylindrical neck, surmounted by a round button-top, characterised by four surviving radiating grooves. The object is fractured vertically lengthwise, so only half of the pendant is preserved. There are two drillings, one perforating the artefact lengthwise from bottom to top and one, probably secondary, boring just over the neck of the pendant, running horizontally from its front to its back. The fracture is covered by an ancient patina. Red amber. H 2.2 cm; D max. 1.2 cm; D hole 0.25 cm; D horizontal hole 0.3 cm.

Type 5b: Pomegranate pendants with a horizontal bore-hole (cat. 333–339. 343–344)

cat. 343 **pls. 12, 9; 49, 343**
Excavation inv. ART 892609.2; AMS inv. 7/2/90
Globular pendant with a round section with a protruding neck, characterised by two grooves, surmounted by a round button-top with radiating incisions. The pendant is perforated at its base with two intersecting drillings. Red amber. H 1.5 cm; L 1 cm; D hole 0.1 cm.

cat. 344 **pl. 49, 344**
Excavation inv. ART 870353.6; AMS inv. 80/61/87
Globular pendant with a round section with a protruding neck, characterised by two grooves, followed by a round button-top with radiating incisions. The pendant is perforated at its base by intersecting drillings. Due to corrosion, the object has a massive hole at the front, which perforates almost half of the object. Red amber. H 1.4 cm; D 1.1 cm; D hole 0.1 cm.

Type 5a: Pomegranate pendants with a vertical bore-hole (cat. 320–332. 340–342. 345)

cat. 345 **pl. 49, 345**
Excavation inv. ART 870353.4; AMS inv. 78/61/87
Drop-shaped, oval pendant with a round section, which features a protruding neck and a cylindrical button-top. The object is perforated vertically from its bottom to its top. Red amber. H 2.2 cm; D max. 1.4 cm; D hole 0.25 cm.

Fragments

cat. 346 **pl. 49, 346**
Excavation inv. ART 870232.15; AMS inv. 15/2/99
Upper part of a fractured globular pendant with an oval section; its lower section is completely broken. The object is perforated horizontally at its base. Red amber. H 0.7 cm; L 0.7 cm; D hole 0.1 cm.

cat. 347 **pl. 49, 347**
Excavation inv. ART 870232.96; AMS inv. 15/2/99
Fragment of a globular pendant with an oval section; its whole upper part is fractured, therefore no clear statement can be made regarding its shape. A vertical perforation runs through the whole object. Yellow amber, translucent. H 1.1 cm; L 1 cm; D hole 0.15 cm.

cat. 348 **pl. 49, 348**
Excavation inv. ART 870281.55; AMS inv. 16/2/99
Possible fragment of a circular-shaped projection with an oval section, which features a horizontal drilling. The lower part of the object is fractured. Red amber. D 0.4 cm; D hole 0.1 cm.

cat. 349 **pl. 49, 349**
Excavation inv. ART 900374.3*
Possible fragment of a pendant with remains of a horizontal drilling. A typological designation of this piece is not possible due to its bad state of conservation. Yellow amber. L 0.5 cm; W 0.3 cm.

Caroline Posch

Spacers (cat. 350–488)

Type 1: Triangular-shaped end spacer-plates (cat. 350–351)

cat. 350 **pls. 18, 1; 49, 350**
Excavation inv. ART 870352.29; AMS inv. 169/61/87
Triangular-shaped spacer with five through-borings from the base to the top, one in the centre, two on each side. One boring is visible in the fracture; the end of one side is slightly fractured. Red amber. H 0.9 cm; L 3.7 cm; T 0.5 cm; D bore-holes 0.1 cm.

cat. 351 **pls. 18, 2; 49, 351**
Excavation inv. ART 870352.30; AMS inv. 170/61/87
Triangular-shaped spacer with four through-borings, one in the centre, two on one side and one on the opposite side. One end is missing. Dark yellow amber. H 1.3 cm; L max. 4.25 cm; T 0.6 cm; D bore-holes 0.08–0.09 cm.

Type 2: Rectangular-shaped spacer-plates (cat. 352–353)

cat. 352 **pl. 49, 352**
Excavation inv. ART 870232.93; AMS inv. 15/2/99
Fragment of a rectangular-shaped spacer, corresponding to an end, with two through-borings on the long side. A corner is missing. Red amber. L 2.1 cm; T 0.9 cm; D bore-holes 0.2 cm.

cat. 353 **pl. 49, 353**
Excavation inv. ART 870352.128; AMS inv. 17/2/99
Fragment of a rectangular-shaped spacer, corresponding to an end with two through-borings on the long side. Truncated at both ends. The sections of the broken sides are quite polished. Red amber. L 1.7 cm; W 1.7 cm; D bore-holes 0.2 cm.

Type 3: Uniquely shaped spacer-plates (cat. 354–356)

cat. 354 **pl. 49, 354**
Excavation inv. ART 870281.54; AMS inv. 16/2/99
Tiny fragment corresponding to an end of a two-row spacer, similar to no. 355 (excavation inv. 870341.77) with a through-boring. Red amber. H 0.5 cm; D hole 0.1 cm.

cat. 355 **pl. 49, 355**
Excavation inv. ART 870341.77; AMS inv. 17/2/99
Spacer, almost cylindrically shaped, with a central part and two sides, divided by two grooves; a through-boring on the length of each side. Whole. Red amber. H max. 1.1 cm; W max. 0.6 cm; T 0.5 cm; D holes 0.1 cm.

cat. 356 **pl. 49, 356**
Excavation inv. ART 870352.28; AMS inv. 168/61/87
Large triangular-shaped spacer with three through-borings, one larger in the middle of the long side and intersecting the other two, which are on the short side, and smaller. A fracture runs through one of the bore-holes on the short side. An end is missing, the surface is scratched. Matt, red amber. L max. 4.6 cm (originally 5.1 cm); W 2.3 cm; T 0.6 cm; D holes 0.25–0.4 cm.

Types 4–6: Bird-shaped spacers (cat. 357–417)

cat. 357 **pl. 50, 357**
Excavation inv. ART 900486.3*
Fragment of the projection of a triangular application. The object features a triangular section and a horizontal drill hole, visible in fracture. Translucent red amber. H. 0.6 cm; W 0.5 cm; D hole 0.15 cm.

cat. 358 **pl. 50, 358**
Excavation inv. ART 870352.4; AMS inv. 144/61/87
The element has a triangular base, which is perforated by one horizontal boring on each corner. The upper part is at a 45° angle to the base. Translucent yellow amber. L max. 1.2 cm; H 0.9 cm; T 0.6 cm; D holes 0.1 cm.

cat. 359 **pl. 50, 359**
Excavation inv. ART 870352.5; AMS inv. 145/61/87
Similar to cat. 358. Whole. Translucent yellow amber. L max. 1.4 cm; H 0.9 cm; T 0.4 cm; D holes 0.05 cm.

cat. 360 **pl. 50, 360**
Excavation inv. ART 870352.6; AMS inv. 146/61/87
Similar to cat. 358. Whole. Translucent yellow amber. L max. 1.4 cm; H 0.9 cm; T 0.5 cm; D holes 0.05 cm.

cat. 361 **pl. 50, 361**
Excavation inv. ART 870352.7; AMS inv. 147/61/87
Similar to cat. 358. Whole. Translucent yellow amber. L max. 1.1 cm; H 0.9 cm; T 0.5 cm; D holes 0.05 cm.

cat. 362–378 **pls. 18, 3; 50, 364. 366–378**
cat. 362
Excavation inv. ART 870246.121; AMS inv. 14/2/99
cat. 363
Excavation inv. ART 870246.122; AMS inv. 14/2/99
cat. 364
Excavation inv. ART 870246.123; AMS inv. 14/2/99
cat. 365
Excavation inv. ART 870246.124; AMS inv. 14/2/99
cat. 366
Excavation inv. ART 870246.125; AMS inv. 14/2/99
cat. 367
Excavation inv. ART 870246.126; AMS inv. 14/2/99
cat. 368
Excavation inv. ART 870246.127; AMS inv. 14/2/99
cat. 369
Excavation inv. ART 870246.128; AMS inv. 14/2/99
cat. 370
Excavation inv. ART 870246.129; AMS inv. 14/2/99
cat. 371
Excavation inv. ART 870246.130; AMS inv. 14/2/99
cat. 372
Excavation inv. ART 870246.131; AMS inv. 14/2/99
cat. 373
Excavation inv. ART 870246.132; AMS inv. 14/2/99
cat. 374
Excavation inv. ART 870246.133; AMS inv. 14/2/99
cat. 375
Excavation inv. ART 870246.134; AMS inv. 14/2/99
cat. 376
Excavation inv. ART 870246.135; AMS inv. 14/2/99
cat. 377
Excavation inv. ART 870246.136; AMS inv. 14/2/99
cat. 378
Excavation inv. ART 870246.137; AMS inv. 14/2/99

Seventeen bird-shaped elements similar to cat. 358, but with two different boring systems on the base. The first type, to which belong cat. 362, 364, 366, 368, 370–371, 373–378, has three through-borings: two are transversal and one longitudinal. The transversal boring on the front is connected to the longitudinal boring. Cat. 368, 370, 373–374, 376 belong to the first type, although they have two borings, because they are not whole and some parts are missing.
Cat. 363, 365, 367, 369, 372 belong to the second type and actually have one transversal boring, but they are not whole and some parts of the back are missing: the original presence of a second boring is highly probable.
In both types the upper part is at a 45° angle to the base. Translucent yellow and translucent red amber. The dimensions vary from max. (cat. 362) L 1 cm; H 0.9 cm; T 0.6 cm to min. (cat. 363) L 0.8 cm; H 0.5 cm; T 0.35 cm; D holes 0.1 cm.

cat. 379 **pls. 18, 3; 50, 379**
Excavation inv. ART 870246.138; AMS inv. 14/2/99
Bird-shaped element, similar to cat. 362 and with three borings: the transversal boring on the front is connected to a longitudinal boring. Whole. Translucent yellow amber. L max. 1 cm; H 0.9 cm; T 0. 4 cm; D hole 0.1 cm.

cat. 380 **pls. 18, 3; 50, 380**
Excavation inv. ART 870246.118; AMS inv. 14/2/99
Bird-shaped element, similar to cat. 362 and pierced by three borings: the transversal boring on the front is connected to a longitudinal boring. Whole, red amber. L max 1 cm; H 0.6 cm; T 0.2 cm; D hole 0.1 cm.

cat. 381–388 **pls. 18, 3; 50, 381–388**
cat. 381
Excavation inv. ART 870246.100; AMS inv. 14/2/99.l
cat. 382
Excavation inv. ART 870246.101; AMS inv. 14/2/99.m
cat. 383
Excavation inv. ART 870246.102; AMS inv. 14/2/99.n
cat. 384
Excavation inv. ART 870246.103; AMS inv. 14/2/99.o
cat. 385
Excavation inv. ART 870246.104; AMS inv. 14/2/99.p
cat. 386
Excavation inv. ART 870246.105; AMS inv. 14/2/99.q
cat. 387
Excavation inv. ART 870246.106; AMS inv. 14/2/99.r
cat. 388
Excavation inv. ART 870246.107; AMS inv. 14/2/99.s
Eight bird-shaped elements similar to cat. 358, but with two different boring systems on the base. The first type, to which belong cat. 381, 387 and 388, has three borings: the transversal boring on the front is connected to the longitudinal boring. The elements cat. 382–386 actually have one transversal boring, but they belong to the second type with two transversal borings, because all are incomplete and some parts are missing.
In both types the upper part is at a 45° angle to the base. Translucent yellow and translucent red amber. L max. (cat. 387) 0.6 cm; H 0.7 cm; D holes 0.1 cm.

cat. 389 **pl. 50, 389**
Excavation inv. ART 870232.35; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 362, with three borings: the transversal boring on the front is connected to the longitudinal boring; traces of the boring on the back are visible in fracture. The upper part is at a 45° angle to the base. Both ends of the base are broken and missing. Dark yellow amber. L max. 0.8 cm; H max. 0.7 cm; T 0.3 cm; D hole 0.1 cm.

cat. 390 **pl. 50, 390**
Excavation inv. ART 870232.36; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 362, with three borings: the transversal boring on the front is connected to the longitudinal boring; on the back of the element, a fracture runs through the bore-hole. The upper part is at a 45° angle to the base. One end is missing. Red amber. L max. 0.9 cm; H max. 0.7 cm; T 0.3 cm; D hole 0.1 cm.

cat. 391 **pl. 50, 391**
Excavation inv. ART 870232.37; AMS inv. 15/2/99 (5)
Fragment of a bird-shaped element, with a transversal boring on the base. Remains of the upper section have survived. Yellow, matt amber. L max. 0.5 cm; H max. 0.7 cm; T 0.2 cm; D hole 0.1 cm.

cat. 392 **pl. 50, 392**
Excavation inv. ART 870232.38; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 363 with a transversal boring on the base. The upper part is at a 45° angle to the base. One end is missing. Yellow, matt amber. L max. 0.7 cm; H max. 0. 5 cm; T 0.3 cm; D hole 0.1 cm.

cat. 393 **pl. 50, 393**
Excavation inv. ART 870232.39; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 362, with three borings: the transversal boring on the front is connected to a longitudinal boring; on the back of the element, a fracture runs through the bore-hole. The upper part is at a 45° angle to the base and its top is missing. Red amber. L max. 0.8 cm; H 0.9 cm; T 0.3 cm; D holes 0.1 cm.

cat. 394 **pl. 50, 394**
Excavation inv. ART 870232.40; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 362, with three borings: the transversal boring on the front is connected to a longitudinal boring; on the back of the element, a fracture runs through the bore-hole. The upper part is at a 45° angle to the base. One end is missing. Dark yellow amber. L 0.7 cm; H max. 0.5 cm; T 0.3 cm; D holes 0.1 cm.

cat. 395 **pl. 50, 395**
Excavation inv. ART 870232.49; AMS inv. 15/2/99 (5)
Bird-shaped element, similar to cat. 363 with a transversal boring on the base. The upper part and the back are missing. Yellow, matt amber. L max. 0.6; H max. 0.7 cm; T 0.2 cm; D hole 0.1 cm.

cat. 396 **pl. 50, 396**
Excavation inv. ART 870232.50; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 363 with a transversal boring on the base. The upper part is at a 45° angle to the base. Translucent, yellow amber. L max. 0.9 cm; H 0.7 cm; T. 0.3 cm; D hole 0.1 cm.

cat. 397 **pl. 50, 397**
Excavation inv. ART 870232.51; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 358. The upper part is missing. Translucent, yellow amber. L. max. 1.1 cm; H 0.8 cm; T 0.6 cm; D holes 0.1 cm.

cat. 398 **pl. 50, 398**
Excavation inv. ART 870232.52; AMS inv. 15/2/99 (3)
Bird-shaped element, similar to cat. 358. The upper part is at a 45° angle to the base. The top of the upper part is missing. Translucent, yellow amber. L max. 1.2 cm; H 0.7 cm; T 0.6 cm; D holes 0.1 cm.

cat. 399–405 **pls. 50, 399–51, 405**
cat. 399
Excavation inv. ART 870232.101; AMS inv.15/2/99
cat. 400
Excavation inv. ART 870232.102; AMS inv.15/2/99
cat. 401
Excavation inv. ART 870232.103; AMS inv.15/2/99
cat. 402
Excavation inv. ART 870232.104; AMS inv.15/2/99
cat. 403
Excavation inv. ART 870232.105; AMS inv.15/2/99
cat. 404
Excavation inv. ART 870232.106; AMS inv.15/2/99
cat. 405
Excavation inv. ART 870232.107; AMS inv.15/2/99
Seven bird-shaped elements with two different boring systems on the base. The first type, to which belong cat. 399–403 and 405, has three borings: the transversal boring on the front is connected to the longitudinal boring. The second type, to which belongs cat. 404, has one boring on the base. The upper part is at a 45° angle to the base and is missing or broken in some pieces. Translucent yellow amber. L max. 1 cm; H 0.9 cm; T max. 0.6 cm; D holes 0.1–0.15 cm.

cat. 406 **pl. 51, 406**
Excavation inv. ART 870232.108; AMS inv. 15/2/99
Bird-shaped element, similar to cat. 358; fractures run through two bore-holes. The upper part and the back are missing. Translucent yellow amber. L max. 1 cm; H 1.3 cm; T max. 0.6 cm; D hole 0.1 cm.

cat. 407 **pl. 51, 407**
Excavation inv. ART 870281.4; AMS inv. 16/2/99
Fragment of the base of a bird-shaped element, with traces of the borings at both ends. Yellow, matt amber. L max. 1.2 cm; T 0.3 cm; D holes 0.1 cm.

cat. 408 **pl. 51, 408**
Excavation inv. ART 870281.75; AMS inv. 16/2/99
Bird-shaped element, with a boring on the base. The upper part is at a 45° angle to the base. The back area is missing. Yellow, matt amber. L 1.1 cm; H 0.7 cm; T 0.2 cm; D holes 0.1 cm.

cat. 409 **pl. 51, 409**
Excavation inv. ART 870281.13; AMS inv. 16/2/99
Bird-shaped element, of a particular size and shape, with one vertical bore-hole and one horizontal bore-hole running through the base. The horizontal boring has been drilled across the vertical boring. The upper part is at a 90° angle to the base. Red, matt amber. H 1.4 cm; W 1.1 cm; D holes 0.15 cm.

catt. 410 **pl. 51, 410**
Excavation inv. ART 870281.21; AMS inv. 16/2/99
Bird-shaped element, with a transversal boring on the base. The upper part is at a 45° angle to the base. Whole. Yellow, matt amber. L max. 1 cm; H max. 0.6 cm; T 0.3 cm; D hole 0.1 cm.

cat. 411–415 **pl. 51, 411–415**
cat. 411
Excavation inv. ART 870281.27; AMS inv. 16/2/99
cat. 412
Excavation inv. ART 870281.28; AMS inv. 16/2/99
cat. 413
Excavation inv. ART 870281.29; AMS inv. 16/2/99
cat. 414
Excavation inv. ART 870281.30; AMS inv. 16/2/99
cat. 415
Excavation inv. ART 870281.31; AMS inv. 16/2/99
Five bird-shaped elements, with two different boring systems on the base. The first type, to which belong cat. 411 and 414, has three borings: the transversal boring on the front is connected to the longitudinal boring. The second type, to which belong cat. 412–413 and 415, has one boring on the base. Cat. 415 shows traces of a further blind hole in the front part of the base. The upper part is at a 45° angle to the base and in some pieces is broken. The colours vary from dark red to translucent yellow. L max. 1 cm; H 0.6 cm; T 0.3 cm; D holes 0.1 cm.

cat. 416 **pl. 51, 416**
Excavation inv. ART 870349.25; AMS inv. 17/2/99
Bird-shaped element, with a transversal boring on the base. The upper part is at a 45° angle to the base. Whole. Translucent, yellow amber. L max. 1.1 cm; H 0.8 cm; D hole 0.1 cm.

cat. 417 **pl. 51, 417**
Excavation inv. ART 870352.125; AMS inv. 17/2/99
Fragment of a bird-shaped element, with a transversal boring on the base. The upper part is missing. Cracked surface. Translucent, yellow amber. L max. 1 cm; H. 0.5 cm; D hole 0.1 cm.

Type 7: Triangle-shaped spacer-plates (cat. 418–472)

cat. 418 **pl. 51, 418**
Excavation inv. ART 870281.17; AMS inv. 16/2/99
Triangle-shaped spacer, flat and rounded, with two horizontal through-borings on the top and on the base; at the centre of the base, a third vertical through-boring is connected to the lower horizontal one. The top and the base are partly missing. Red amber. H 0.9 cm; W max. 0.6 cm; T 0.4 cm; D holes 0.15 cm.

cat. 419 **pl. 51, 419**
Excavation inv. ART 870352.8; AMS inv. 148/61/87
Triangle-shaped spacer, with a horizontal through-boring in each corner. On the main face a circle with a central point is incised. Yellow amber. H 1.3 cm; D holes 0.1 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 420 **pl. 51, 420**
Excavation inv. ART 870352.9; AMS inv. 149/61/87
Triangle-shaped spacer, with a horizontal through-boring in each corner. Two lower corners are missing. Red amber. H 1.2 cm; W max. 0.95 cm; T 0.2 cm; D holes 0.05 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 421 **pl. 51, 421**
Excavation inv. ART 870352.10; AMS inv. 150/61/87
Similar to cat. 420. The top is missing. Red amber. H 1.3 cm; W max. 0.9 cm; T 0.2 cm; D holes 0.06 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 422 **pl. 51, 422**
Excavation inv. ART 870352.11; AMS inv. 151/61/87
Similar to cat. 420. Yellow amber. H 1.25 cm; W max. 0.95 cm; T 0.5 cm; D holes 0.07 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 423–429 **pl. 51, 423–429**
cat. 423
Excavation inv. ART 870246.90; AMS inv. 14/2/99
cat. 424
Excavation inv. ART 870246.91; AMS inv. 14/2/99
cat. 425
Excavation inv. ART 870246.92; AMS inv. 14/2/99
cat. 426
Excavation inv. ART 870246.93; AMS inv. 14/2/99
cat. 427
Excavation inv. ART 870246.94; AMS inv. 14/2/99
cat. 428
Excavation inv. ART 870246.95; AMS inv. 14/2/99
cat. 429
Excavation inv. ART 870246.96; AMS inv. 14/2/99
Seven triangle-shaped elements, similar to cat. 420. Yellow amber. Whole. H max. 0.9 cm; W max 0.75 cm; T 0.25 cm; D holes 0.1 cm.

cat. 430 **pls. 18, 4; 51, 430**
Excavation inv. ART 870246.108; AMS inv. 14/2/99
Similar to cat. 419. Red amber. Whole. H max. 0.9 cm; W max. 0.75 cm; T 0.25 cm; D holes 0.1 cm.

cat. 431 **pl. 51, 431**
Excavation inv. ART 870246.119; AMS inv. 14/2/99
Similar to cat. 419. Red amber. Whole. H max. 0.8 cm; W max. 0.6 cm; T 0.25 cm; D holes 0.1 cm.

cat. 432 **pl. 51, 432**
Excavation inv. ART 870246.120; AMS inv. 14/2/99
Similar to cat. 419. Red amber. Whole. H max. 0.9 cm; W max 0.6 cm; T 0.25 cm; D holes 0.1 cm.

cat. 433–441 **pl. 51, 433–441**
cat. 433
Excavation inv. ART 870246.81; AMS inv. 14/2/99.a
cat. 434
Excavation inv. ART 870246.82; AMS inv.14/2/99.b
cat. 435
Excavation inv. ART 870246.83; AMS inv. 14/2/99.c
cat. 436
Excavation inv. ART 870246.84; AMS inv.14/2/99.d
cat. 437
Excavation inv. ART 870246.85; AMS inv. 14/2/99.e
cat. 438
Excavation inv. ART 870246.86; AMS inv. 14/2/99.f
cat. 439
Excavation inv. ART 870246.87; AMS inv.14/2/99.g
cat. 440
Excavation inv. ART 870246.88; AMS inv.14/2/99.h
cat. 441
Excavation inv. ART 870246.89; AMS inv. 14/2/99.i
Nine triangle-shaped elements, similar to cat. 419. All pieces are incompletely preserved. Yellow amber. H max. 1.4 cm; W max 0.7 cm; T 0.25 cm; D holes 0.1cm.

cat. 442 **pl. 51, 442**
Excavation inv. ART 870232.114; AMS inv. 15/2/99
Tiny fragment of a triangular element, similar to cat. 419, corresponding to the central/upper part. Yellow amber. H max. 0.7 cm; W max. 0.4 cm; T 0.25 cm; D holes 0.1 cm.

cat. 443 **pl. 51, 443**
Excavation inv. ART 870232.41; AMS inv. 15/2/99
Fragment of a triangular element, similar to cat. 419. Red amber. H max. 0.8 cm; W max. 0.5 cm; T 0.25 cm; D holes 0.1 cm.

cat. 444 **pl. 52, 444**
Excavation inv. ART 870232.42; AMS inv. 15/2/99
Similar to cat. 419. The top is missing. Red amber. H max. 1 cm; W max. 1 cm; T 0.4 cm; D holes 0.1 cm.

cat. 445 **pl. 52, 445**
Excavation inv. ART 870232.43; AMS inv. 15/2/99
Similar to cat. 419. Red amber. The top is missing. H max. 0.8 cm; W max. 0.9 cm; T 0.25 cm; D holes 0.1 cm.

cat. 446 **pl. 52, 446**
Excavation inv. ART 870232.44; AMS inv. 15/2/99
Similar to cat. 419. Red amber. Whole. H 1 cm; W max. 0.8 cm; T 0.25 cm; D holes 0.1 cm.

cat. 447 **pl. 52, 447**
Excavation inv. ART 870232.45; AMS inv. 15/2/99
Similar to cat. 419. Red amber. Whole. H 1.2 cm; W max. 0.8 cm; T 0.2 cm; D holes 0.1 cm.

cat. 448 **pl. 52, 448**
Excavation inv. ART 870232.46; AMS inv. 15/2/99
Similar to cat. 419. Red amber. The top and the base are partly missing. H max. 0.9 cm; W max. 0.6 cm; T 0.2; D holes 0.1 cm.

cat. 449 **pl. 52, 449**
Excavation inv. ART 870232.47; AMS inv. 15/2/99
Similar to cat. 419. Red amber. Whole. H 1 cm; W max. 0.8 cm; T 0.25 cm; D holes 0.1 cm.

cat. 450 **pl. 52, 450**
Excavation inv. ART 870232.97; AMS inv. 15/2/99
Similar to cat. 419. Yellow amber. The top is missing. H max. 0.7 cm; W max. 0.7 cm; T 0.25 cm; D holes 0.1 cm.

cat. 451 **pl. 52, 451**
Excavation inv. ART 870281.26; AMS inv. 16/2/99
Similar to cat. 419. Yellow amber. The top is missing. H max. 0.8 cm; W max. 0.8 cm; T 0.25 cm; D holes 0.1 cm.

cat. 452–453 **pl. 52, 452**
cat. 452
Excavation inv. ART 870281.35; AMS inv. 16/2/99
cat. 453
Excavation inv. ART 870281.36; AMS inv. 16/2/99
Two triangle-shaped elements, similar to cat. 419. Yellow amber. The top is missing on both pieces. H max. 0.9 cm; W max. 0.9 cm; T 0.25 cm; D holes 0.1 cm.

cat. 454–471 **pl. 52, 454–471**
cat. 454 Excavation inv. ART 870352.135; AMS inv. 17/2/99
cat. 455
Excavation inv. ART 870352.136; AMS inv. 17/2/99
cat. 456
Excavation inv. ART 870352.137; AMS inv. 17/2/99
cat. 457
Excavation inv. ART 870352.138; AMS inv. 17/2/99
cat. 458
Excavation inv. ART 870352.139; AMS inv. 17/2/99
cat. 459
Excavation inv. ART 870352.140; AMS inv. 17/2/99
cat. 460
Excavation inv. ART 870352.141; AMS inv. 17/2/99
cat. 461
Excavation inv. ART 870352.142; AMS inv. 17/2/99
cat. 462
Excavation inv. ART 870352.143; AMS inv. 17/2/99
cat. 463
Excavation inv. ART 870352.144; AMS inv. 17/2/99
cat. 464
Excavation inv. ART 870352.145; AMS inv. 17/2/99
cat. 465
Excavation inv. ART 870352.146; AMS inv. 17/2/99
cat. 466
Excavation inv. ART 870352.147; AMS inv. 17/2/99
cat. 467
Excavation inv. ART 870352.148; AMS inv. 17/2/99
cat. 468
Excavation inv. ART 870352.149; AMS inv. 17/2/99
cat. 469
Excavation inv. ART 870352.150; AMS inv. 17/2/99
cat. 470
Excavation inv. ART 870352.151; AMS inv. 17/2/99
cat. 471
Excavation inv. ART 870352.152; AMS inv. 17/2/99
Seventeen triangle-shaped elements, similar to cat. 419. Except for cat. 457, 461 and 470, all elements are incomplete. Yellow amber. Cat. 461: H 1.3 cm; W max. 1 cm; T 0.3 cm; D holes 0.1 cm.

cat. 472 **pl. 52, 472**
Excavation inv. ART 870352.175; AMS inv. 17/2/99
Similar to cat. 419. Yellow amber. The top is missing. H max. 0.7 cm; D holes 0.1 cm.

Type 8: Round spacer-plates (cat. 473–488)

cat. 473 **pl. 52, 473**
Excavation inv. ART 870232.2; AMS inv. 15/2/99 (5)
Disc with one horizontal through-boring. Red amber. Whole T 0.5 cm; D 1.1 cm; D hole 0.15 cm.

cat. 474 **pl. 52, 474**
Excavation inv. ART 940146; AMS inv. 32/43/94
Disc with two horizontal through-borings connected to one another in the centre of the disk. Drill traces show that the borings were drilled in four segments. Red amber. Whole. D 1.1 cm; T 0.4 cm; D holes > 0.1 cm.

cat. 475 **pl. 52, 475**
Excavation inv. ART 870352.133; AMS inv. 17/2/99
Disc with two horizontal through-borings connected to one another in the centre of the disc, similar to no. 474. Red amber. Whole. D 1.1 cm; T 0.35 cm; D holes 0.2 cm.

cat. 476 **pl. 52, 476**
Excavation inv. ART 870246.97; AMS inv. 14/2/99
Tiny, almost oval disc with two horizontal through-borings, not connected to one another. On the main face a circle with a central point is incised. Red amber. Whole. L 0.9 cm; W 0.7 cm; T 0.2 cm; D holes 0.1 cm.

cat. 477 **pl. 52, 477**
Excavation inv. ART 870246.98; AMS inv. 14/2/99
Similar to cat. 476. Red amber. Whole. L 0.6 cm; W 0.5 cm; T 0.2 cm; D holes 0.1 cm.

cat. 478 **pl. 52, 478**
Excavation inv. ART 870246.99; AMS inv. 14/2/99
Similar to cat. 476. Red amber. One part is missing. L 0.6 cm; W 0.5 cm; T 0.2 cm; D holes 0.1 cm.

cat. 479 **pl. 52, 479**
Excavation inv. ART 870246.80; AMS inv. 14/2/99
Similar to cat. 476. Red amber. Whole. L 0.7 cm; W 0.5 cm; T 0.2 cm; D holes 0.1 cm.

cat. 480 **pl. 52, 480**
Excavation inv. ART 870246.77; AMS inv. 14/2/99
Similar to cat. 476. Red amber. One part is missing. L max. 0.6 cm; W max. 0.5 cm; T 0.2 cm; D hole 0.1 cm.

cat. 481 **pl. 52, 481**
Excavation inv. ART 870246.78; AMS inv. 14/2/99
Similar to cat. 476. Red amber. Whole. L 0.7 cm; W 0.6 cm; T 0.2 cm; D holes 0.1 cm.

cat. 482 **pl. 52, 482**
Excavation inv. ART 870246.79; AMS inv. 14/2/99 (3)
Similar to cat. 476. Red amber. Whole. L 0.7 cm; W 0.6 cm; T 0.2 cm; D holes 0.1 cm.

cat. 483 **pl. 52, 483**
Excavation inv. ART 870232.17; AMS Inv. 15/2/99 (5)

Similar to cat. 476. Dark yellow amber. Whole. D 0.7 cm: T 0.2 cm; D hole 0.1 cm.

cat. 484 **pl. 52, 484**
Excavation inv. ART 870281.22; AMS inv. 16/2/99
Similar to cat. 476. Yellow amber. Whole. D 0.7 cm; T 0.3 cm; D holes 0.1 cm.

cat. 485 **pl. 52, 485**
Excavation inv. ART 870352.176; AMS inv. 17/2/99
Fragment of a disc similar to cat. 476. Yellow amber. D 0.6 cm; T 0.2 cm; D holes 0.1 cm.

cat. 486 **pl. 52, 486**
Excavation inv. ART 870246.38; AMS inv. 178/61/87
Similar to cat. 476. Red amber. Whole. L. 0.8 cm; W 0.7 cm; T 0.3 cm; D hole 0.11 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 487 **pl. 52, 487**
Excavation inv. ART 870246.39; AMS inv. 179/61/87
Similar to cat. 476. Red amber. Whole. L 0.8 cm; W 0.7 cm; T 0.3 cm; D holes 0.09 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

cat. 488 **pl. 52, 488**
Excavation inv. ART 870246.40; AMS inv. 180/61/87
Similar to cat. 476. Red amber. Whole. L 0.8 cm; W 0.7 cm; T 0.3 cm; D holes 0.1 cm.
Lit.: Bammer 1990, fig. 24; Bammer 1992b, fig. 5 c.

Alessandro Naso

Fibulae (cat. 489–523)

Type 1: Composite fibulae with amber and bone segments inlaid with amber (cat. 489–490)

cat. 489 **pls. 19, 3; 53, 1**
Excavation inv. 870246.53; AMS inv. 193/61/87

The bow of the bronze fibula is coated alternately with four amber and three conical bone segments; the central bone segment has a circular amber inlay on each side and one rectangular amber plaque on the top. The central section of the bow is not visible because the upper rectangular amber plaque is glued. Chipped surface.

Red amber, yellowish-white bone. H 1.8 cm; L 3.8 cm; W 2.3 cm.
Lit.: Bammer 1990, pl. 20 b; Bammer 1992b, fig. 9; Naso 2000, fig. 4; Naso 2001, 173 fig. 3; Naso 2006a, 358 fig. 4; Naso 2007, 28 f. fig. 11; Muss 2008c, 14 fig. 6 (the caption does not correspond to this fibula); Naso 2011, 124 f.; Naso 2012, 319 f. fig. 4.

cat. 490
Excavation inv. unknown; AMS inv. unknown
The bow of the fibula is similar to cat. 489, and is coated with two conical amber segments and one conical bone segment; the central bone segment has a circular cavity for an amber inlay. Remains of the metal bow.
Lit.: Muss 2008c, 22 fig. 5 (the caption does not correspond to this fibula); Naso 2012, 319 f.

Type 2: Composite fibulae with amber segments (cat. 491–502)

cat. 491 **pl. 53, 491**
Excavation inv. ART 870352.25; AMS inv. 165/61/87
Segment with gradually varying thickness and central perforation for the bow of a fibula. Side surfaces are flat. A scratch is visible on one side. Red amber. H 1.4 cm; T 1–1.4 cm; W 2.3 cm; D hole 0.5 cm.

cat. 492 **pl. 53, 492**
Excavation inv. ART 931107; AMS inv. 44/42/93
Cylindrical disc with gradually varying thickness and central hole for the bow of a fibula. Side surfaces are flat. Yellow amber. H 1.9 cm; T 1.9 cm; W 2.3 cm; D hole 0.3 cm.

cat. 493 **pl. 53, 493**
Excavation inv. ART 900427; AMS inv. 2/2/1999
Thin disc with gradable thickness and irregular central hole for the bow. Side surfaces are flat. Yellow amber with impurities. H 3.4 cm; T 0.2–0.8 cm; W 3.4 cm; D hole 0.5–0.6 cm.

cat. 494 **pl. 53, 494**
Excavation inv. ART 870246.54; AMS inv. 14/2/99.1
Segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. H 2.4 cm; T 0.9–1.4 cm; W 2.4 cm; D hole 0.4 cm.

cat. 495 **pl. 53, 495**
Excavation inv. ART 880949.118; AMS inv. 93/54/88 (A 15)
Segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. T 0.5–0.3 cm; D 1.2 cm; D hole 0.3 cm.

cat. 496 **pl. 53, 496**
Excavation inv. ART 892645.1; AMS inv. 90/68/89 (A 19)
Segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. T 0.45–0.5 cm; W 0.9 cm; D hole 0.3 cm.

cat. 497 **pls. 20, 2; 53, 497**
Excavation inv. ART 870232.3; AMS inv. 15/2/99 (3)
Oval segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. H 1.3 cm; T 0.4–0.6 cm; W 0.9 cm; D hole 0.4 cm.

cat. 498 **pls. 20, 3; 53, 498**
Excavation inv. ART 870232.4; AMS inv. 15/2/99 (3)
Conical segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. H 1.1 cm; T 0.25–0.6 cm; W 0.8 cm; D hole 0.4 cm.

cat. 499 **pls. 20, 4; 54, 499**
Excavation inv. ART 870232.89; AMS inv. 15/2/99 (3)
Segment with gradable thickness and central hole for the bow. Side surfaces are flat. It could be the lateral segment of a composite fibula. Red amber. H 0.9 cm; T 0.3–0.65 cm; W 1.1 cm; D hole 0.4 cm.

cat. 500 **pls. 20, 5; 54, 500**
Excavation inv. ART 870232.90; AMS inv. 15/2/99 (3)
Oval segment with gradable thickness and central hole for the bow. Side surfaces are flat. It could be the central disc of a composite fibula. Red amber. H 1 cm; T 0.6–0.7 cm; W 0.8 cm; D hole 0.4 cm.

cat. 501 **pl. 54, 501**
Excavation inv. ART 870281.65; AMS inv. 16/2/99
Oval segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. H 1.3 cm; T 0.3–0.6 cm; W 1.7 cm; D hole 0.5 cm.

cat. 502 **pl. 54, 502**
Excavation inv. ART 870352.134; AMS inv. 17/2/99
Circular segment with gradable thickness and central hole for the bow. Side surfaces are flat. Red amber. H 1.2 cm; T 0.2–0.5 cm; W 1.1 cm; D hole 0.4 cm.

Type 3: Fibulae with an amber bead on the bow (cat. 503–523)

cat. 503 **pl. 54, 503**
Excavation inv. ART 870281.82; AMS inv. 74/61/87
Triangular, elongated core with a central perforation for the bow running through its length. Well-polished surfaces. Red amber. H 1.8 cm; L 3.6 cm; W 3.1 cm; D hole 0.3 cm.

cat. 504 **pl. 54, 504**
Excavation inv. 870353.1; AMS inv. 76/61/87
Triangular-shaped core with a central perforation for the bow running through its length. Slightly chipped. Red amber. H 1.6 cm; L 5.1 cm; W 3.4 cm; D hole 0.35 cm.

cat. 505 **pl. 54, 505**
Excavation inv. ART 880915.110; AMS inv. 85/54/88 (A 16)
Elongated and shapeless core with one straight and one rounded margin. A double oval hole on the upper side and a second regular and circular hole in the centre, along the longest side. Two assembled fragments, showing recent breaks and one old scratch next to the upper hole. Yellow amber. H 1.6 cm; L 5.3 cm; W 2.9 cm; D first double hole 0.6 cm, D second hole 0.3 cm.

cat. 506 **pl. 55, 506**
Excavation inv. 870352.33; AMS inv. 173/61/87 (A 14, T 13)
Trapezoidal element with a central hole for the bow along the longest side. Intact; small cavities on the polished surface. Opaque yellow amber. H 1.35 cm; L 5.6 cm; W 4.1 cm; D hole 0.3 cm.

cat. 507 **pl. 55, 507**
Excavation inv. ART 870281.2; AMS inv. 75/61/87
Triangular-shaped core with a central hole for the bow along the short side. Red amber. H 1.4 cm; L 3.4 cm; W 2.7 cm; D hole 0.3 cm.

cat. 508 **pl. 55, 508**
Excavation inv. ART 870352.31; AMS inv. 171/61/87
Trapezoidal-shaped pearl with rounded and polished corners. Central hole for the bow along the actually shortest axis. Flat lower and weakly convex upper surface. Dark yellow amber. H 0.7 cm; L 2.5 cm; W 2.1 cm; D hole 0.4 cm.

cat. 509 **pl. 55, 509**
Excavation inv. ART 870353.2; AMS inv. 77/61/87
Rectangular core with a central hole for the bow along the longest side; rounded corners. Lines engraved on the upper surface (no scratches). Red amber. H 1.7 cm; L 2.7 cm; W 2.8 cm; D hole 0.5 cm.

cat. 510 **pl. 56, 510**
Excavation inv. ART 880947.116; AMS inv. no 91/54/88 (A 15)
Rectangular core with a central hole for the bow along the longest side; rounded corners. Convex upper and weakly convex lower surface. Crack on the upper surface. Red amber. H 0.8 cm; L 2.1 cm; W 1.5 cm; D hole 0.35 cm.

cat. 511 **pl. 56, 511**
Excavation inv. ART 870352.126; AMS inv. 17/2/99
Rectangular pearl with a central hole for the bow along the longest side; rounded corners. Natural crack on the upper surface, which is polished. Red amber. H 0.7 cm; L 1.8 cm; W 1.5 cm; D hole 0.35 cm.

cat. 512 **pl. 56, 512**
Excavation inv. ART 870352.184; AMS inv. 17/2/99
Rectangular pearl with a central hole for the bow along the longest side; rounded corners. Flat lower and weakly convex upper surface. Partially preserved, chipped on one side and open crack around a hole. Red amber. H 0.6 cm; L 1.7 cm; W 1.1 cm; D hole 0.35 cm.

cat. 513 **pl. 56, 513**
Excavation inv. ART 870352.131; AMS inv. 17/2/99
Rectangular pearl with a central hole along the longest axis. On the upper margin there is a hole with gradable diameter (0.2–0.4 cm) from a previous use. Red amber. H 0.5 cm; L 1.1 cm; W 0.9 cm; D hole 0.3 cm.

cat. 514 **pl. 56, 514**
Excavation inv. ART 870281.38; AMS inv. 16/2/99
Rectangular and elongated pearl with a central hole along the longest side; rounded corners. Red amber. Intact. H 0.8 cm; L 2.7 cm; W 1.4 cm; D hole 0.35 cm.

cat. 515 **pl. 56, 515**
Excavation inv. ART 870352.159; AMS inv. 17/2/99
Rectangular and elongated pearl with big central hole along the longest side; rounded corners. Flat lower and convex upper surface. Partially preserved, broken on both sides; chipped on one side. Red amber. H 0.8 cm; L 2.1 cm; W 1.6 cm; D hole 0.4 cm.

cat. 516 **pl. 56, 516**
Excavation inv. ART 870352.129; AMS inv. 17/2/99
Shapeless pearl with only a short margin preserved. Central hole along the longest axis. Broken on both sides. Yellow amber. H 0.9 cm; L 2 cm; W 1.7 cm; D hole 0.35 cm.

cat. 517 **pl. 56, 517**
Excavation inv. ART 870352.32; AMS inv. 172/61/87
Rectangular-shaped pearl with one irregular margin and central hole along the longest axis. H 0.9 cm; L 2.3 cm; W 1.5 cm; D hole 0.35 cm.

cat. 518 **pl. 56, 518**
Excavation inv. ART 870281.61; AMS inv. 16/2/99
Fragment of a rectangular-shaped pearl, drilling carried out at a distance from the object's main axis. A natural small appendage on one side. Flat lower and convex upper surface. Red amber. H 1 cm; L 1.5 cm; W 1.3 cm; D hole 0.35 cm.

cat. 519 **pl. 56, 519**
Excavation inv. ART 870352.153; AMS inv. 17/2/99
Fragment of a triangular, elongated pearl with a central hole along the longest axis. Flat lower and weakly convex upper surface. Red amber. H 0.8 cm; L 2.5 cm; W 1.5 cm; D hole 0.35 cm.

cat. 520 **pl. 56, 520**
Excavation inv. ART 870352.188; AMS inv. 17/2/99
Rectangular-shaped pearl with an off-centre hole along the longest axis. The surface shows an old coating and is broken and chipped on one side. Red amber. H 0.5 cm; L 1.6 cm; W 1.3 cm; D hole 0.35 cm.

cat. 521 **pl. 56, 521**
Excavation inv. ART 870281.37; AMS inv. 16/2/99
Oval-shaped pearl with three parallel bore-holes along the longest axis, the largest in the centre shows remains of the bronze bow. Flat lower surface and convex upper. Red amber, shaded. H 1.3 cm; L 2.6 cm; W 2 cm; D central hole 0.4 cm; D side holes 0.35 cm.

cat. 522 **pl. 57, 522**
Excavation inv. ART 870352.130; AMS inv. 17/2/99
Rectangular-shaped pearl with three parallel bore-holes along the longest axis, the largest in the centre shows remains of the bronze bow. Partially preserved, missing a small piece on one side. Red amber. H 0.5 cm; L 1.6 cm; W 1 cm; D central hole 0.3; D side holes 0.2 cm.

cat. 523 **pl. 57, 523**
Excavation inv. ART 870352.91; AMS inv. 17/2/99
Fragment of a rectangular core with two holes of different sizes for the bow along the longest axis; the element is broken and one portion is missing, likely to have included a third perforation. Yellow amber. H 1 cm; L 2.3 cm; W 2.2 cm; D first hole 0.35 cm; D second hole 0.25 cm.

Nunzia Laura Saldalamacchia

Inlays (cat. 524–533)

cat. 524 **pl. 57, 524**
Excavation inv. ART 800006; AMS inv. 46/38/81
Disc-shaped. One face is matt, one is translucent. Red amber. D 0.8 cm; T 0.15 cm.

cat. 525 **pl. 57, 525**
Excavation inv. ART 880128.121; AMS inv. 96/54/88 (A 15)
Round inlay, polished and convex on the upper side, flat on the lower side. Red amber. H 0.4 cm; D 1.2 cm.

cat. 526 **pl. 57, 526**
Excavation inv. ART 870081*
Fragment of a round inlay. Upper face convex and polished, lower face flat and smooth. Red amber. D 1.1 cm; T 0.3 cm; weight 0.22 g.

cat. 527 **pl. 57, 527**
Excavation inv. ART 870246.13
Round inlay, with a small round cavity on each face. Each cavity shows remains of a metallic dark substance, also present outside the cavity. A fluorescence analysis has revealed that the metallic substance is composed of iron and copper in a ratio of 4 to 1, and identified traces of other metals (silver and lead)[1308]. Yellow amber, consolidated chemically. D inlay 1.4 cm; T 0.6 cm; D cavity 0.6 cm.

cat. 528 **pl. 57, 528**
Excavation inv. ART 809431*
Tiny bone disc, quite irregular, containing a round amber inlay. The profile of the bone disc identifies its function as an inlay. Polished, particularly in the upper part. D disc 1 cm; H disc 0.3 cm; D inlay 0.65 cm.

cat. 529 **pl. 57, 529**
Excavation inv. ART 860155*
Fragment of an inlay in the shape of a flower petal, having a straight pattern and a rounded ending. The upper side is convex, the lower is flat. Red amber. Almost half is missing. H max. 1.6 cm, W max. 0.8 cm, T 0.2 cm; weight 0.19 g.

cat. 530 **pl. 57, 530**
Excavation inv. ART 910611*
Fragment of an inlay in the shape of a flower petal, which has a rounded form. The upper side is convex, the lower is flat. The fragment corresponds to the central part. Red amber. W max. 1.7 cm, L max. 1.5 cm; T 0.4 cm; weight 0.65 g.

cat. 531 **pl. 57, 531**
Excavation inv. ART 860217*
Fragment of a rectangular inlay, preserved only in the width. The upper side is convex and polished, the lower

[1308] We wish to thank Prof. Manfred Schreiner and Dr. Michael Melcher (Institute for Natural Sciences and Technology in the Art at the Academy of Fine Arts, Vienna) for their kind collaboration in the fluorescence analysis of this piece.

is flat and smooth. Red amber. W 1.2 cm; L max. 1.7 cm, T 0.3 cm; weight 0.60 g.

cat. 532 **pl. 57, 532**
Excavation inv. ART 930672; AMS inv. 22/42/93 Bone inlay containing an amber inlay (*astragalus*)[1309].
Object composed of two bobbins, each containing an amber disc on one side, one still preserved. The upper sides of the bobbins are identical: concave, showing an engraved design with single lines along the rim and in the middle. In the middle of each bobbin, a round cavity is destined to be filled with an amber inlay; one is still in position, the other contains remains of a black substance, probably the glue (bolus [?]) used to fix the amber. A line is engraved along the rim on the lower side of both bobbins. Red amber. Whole, with small fractures. L 2.4 cm; W 1.4 cm; H 1.3 cm.
Lit.: Muss 2008c, 14 (classified as ivory with amber inlay) fig. 3.

cat. 533 **pl. 57, 533**
Excavation inv. ART 940268*
Fragment of a round inlay. The upper side is convex and polished, the lower one is flat and smooth. The lower side shows remains of a horizontal blind hole, owing to an earlier use, probably as a bead. Red amber. D 1.1 cm; T 0.4 cm; weight 0.30 g.

Alessandro Naso

Pinhead

cat. 534 **pl. 57, 534**
Excavation inv. ART 809433*
Fragment of the upper part of a bone pin with the amber head still in position. The head is well polished and globular: the bead is sustained by a ring-shaped relief on the pin. The lower stem of the pin is broken and missing. H 1.9 cm; D pin 0.15 cm; D head 0.8 cm; D hole of the head 0.2 cm.

Caroline Posch

Raw amber

cat. 535 **pl. 25, 3**
Excavation inv. ART 880943.132; AMS inv. 107/54/88 (A 15)
Natural piece of raw amber, shapeless and badly broken on two sides. A centre through-boring and a second deep hole are visible in section and are artificial, having perhaps been drilled to cut away a smaller piece. The sections of the broken sides are shiny and polished; the section with a hole is translucent and seems more recent than the other. The amber is red, with several patches of dark yellow. L max 4.2 cm; W max. 4.6 cm; T max. 1.9 cm.

Alessandro Naso

Indeterminable fragments (cat. 536–539)

cat. 536 **pl. 57, 536**
Excavation inv. ART 900380.3*
Very small segment, fragment of unknown designation. The object shows a quite smooth surface. Red amber with yellow bands. H max. 0.6 cm; W 0.5 cm.

cat. 537 **pl. 57, 537**
Excavation inv. ART 900380.4*
Fragment of a rather circular object with a horizontal perforation. Less than half of the object is preserved, so a clear attribution to a typological group is not possible. Red amber. L 1 cm; W 0.6 cm; D hole 0.1 cm.

cat. 538 **pl. 57, 538**
Excavation inv. ART 870246.46; AMS inv. 14/2/99
Fragment of a cylindrical element, perforated vertically through its centre. A typological designation of this piece is not possible (pendant [?], spacer [?]). Possible remains of a second bore-hole are visible at the break point. Dark yellow amber. H 1.4 cm; D 0.5–0.6 cm.

cat. 539 **pl. 57, 539**
Excavation inv. ART 900486.4; AMS inv. DB (1) 604
Fragment of an elongated artefact of rectangular shape with a longitudinal drilling. As it is broken, it is difficult to establish a typological designation. Possible functions range from pearl to pendant, spacer or inlay. Yellow amber. H 1.6 cm: L 0.7 cm; W 4 cm; D hole 0.1 cm.

Caroline Posch

[1309] The typical structure of animal bone is clearly visible in the fractures.

6.2 ARCHAEOLOGICAL MUSEUM ISTANBUL – BRITISH MUSEUM LONDON (CAT. 540–659)

The carved amber is listed according to the following categories:

Figured: cat. 540
Beads: cat. 541–591
Pendants: cat. 592–630
Spacers: cat. 631–634
Fibulae: cat. 635–652
Inlays: cat. 653–655
Pinheads: cat. 656–658
Indeterminable: cat. 659

Figured

cat. 540 Female statuette **pls. 8, 3; 58, 540**
AMI inv. 2912
The statuette reproduces a standing woman. The carving is very roughly executed. The face is triangular, the facial features are indicated schematically: the eyes as two dots, the nose as a vertical line in low relief and the mouth as a slight horizontal groove. A grid of engraved lines runs over the ears and the head, to suggest a veil. The body is cylindrical; the work lacks any suggestion of arms, hands and legs, while breasts, abdomen and glutes are evident; the feet are well defined, and gouged grooves indicate the toes (six on the right foot). The lower back is smooth and lacks any detail. A deep central groove separates the feet at the base. Intact, with slight chipping on the face and the right foot. Dark red amber. H 3.7 cm; W 1.6 cm; T 1.4 cm.
Lit.: Hogarth 1908, 214 pl. 48, 20–21; Muss 2008a, 96. 100 fig. 41; Muss 2008b, 115; Robino 2009, 72 n. 37; Naso 2013, 262 n. 29.

Serena Privitera

Beads

Type 1: Globular beads (cat. 541–543)

cat. 541 **pl. 58, 541**
AMI inv. 2907.53
Globular bead with a central, vertical bore-hole. Intact. D 1 cm; D hole 0.15 cm. Red amber.

cat. 542 **pl. 58, 542**
AMI inv. 2907.75
Small, globular bead with circumferential grooves on the surface. The object has a central, through-bore. Intact. Red amber. D 0.3 cm; D hole 0.1 cm.

cat. 543 **pl. 58, 543**
AMI inv. 2907.80
Small, globular to oval bead with a smooth surface. The object has a central, continuous perforation. Intact. Red amber. D 1.1 cm; D hole 0.1 cm.

Type 2: Ring-shaped beads (cat. 544–546)

cat. 544 **pl. 58, 544**
BM inv. 1907.12–1.496
Large, ring-shaped bead with a central bore-hole. The edges are rounded. Intact. Red amber. D 3.25 cm; H 1.3 cm; D hole: 0.3 cm.

cat. 545 **pl. 58, 545**
BM inv. 1907.12–1.626
Large ring-shaped bead with a central bore-hole. The edges are rounded. Intact. Red amber. D 1.8 cm; H 1.3 cm; D hole 0.3 cm.

cat. 546 **pl. 58, 546**
AMI inv. 2907.49
Large ring-shaped bead with a central bore-hole. The edges are rounded. Intact. Red amber. D 1.4 cm; H 1.7 cm; D hole 0.3 cm.

Type 3: Disc-shaped beads (cat. 547–551)

Type 3a: Round, disc-shaped bead

cat. 547 **pl. 58, 547**
BM inv. 1907.12–1.506
Round disc-shaped bead with a central bore-hole. The edges are well defined. Intact. Red amber. D 0.7 cm; H 0.4 cm; D hole 0.2 cm.

Type 3b: Angular, disc-shaped beads (cat. 548–550)

cat. 548
AMI inv. 2907.1
Small, angular, disc-shaped bead with a central bore-

hole. The corners are rounded and irregular. Intact. Red amber. D 1 cm; H 0.5 cm; D hole: 0.2 cm.

cat. 549 **pl. 58, 549**
AMI inv. 2907.66
Small angular disc-shaped bead with a central bore-hole. Shaped like a flat cube. Intact. Red amber. D 0.6 cm; H 0.55 cm; D hole 0.2 cm.

cat. 550 **pl. 58, 550**
AMI inv. 2907.71
Small angular disc-shaped bead with a central bore-hole. Shaped like a flat prism. Intact. Red amber. D 0.6 cm; H 0.5 cm; D hole: 0.15 cm.

Type 3c: Disc-shaped bead with horizontal bore-hole

cat. 551 **pl. 58, 551**
AMI inv. 2911.4
Disc-shaped round-oval bead with a horizontal bore-hole through the whole object. Edges are sharply defined. Intact. Dark red amber. L1.5 cm; W 1.1 cm; H 0.3 cm; D hole 0.1 cm.

Type 4: Cylindrical beads (cat. 552–566)

Type 4a: Simple cylindrical beads (cat. 552–556)

cat. 552 **pl. 58, 552**
AMI inv. 2911.6
Cylindrical bead with a central bore-hole. The object tapers towards the holes. Two parallel lines decorate the bead. Intact. Red amber. H 2 cm; D 0.7 cm; D hole 0.1 cm.

cat. 553 **pl. 58, 553**
AMI inv. 2931.8
Cylindrical bead with a central bore-hole. The object tapers towards the holes. The cross-section of the bead shows multiple edges. Intact. Red amber. H 1 cm; D 0.6 cm; D hole 0.15 cm.

cat. 554 **pl. 58, 554**
AMI inv. 2931.10
Cylindrical bead with a central bore-hole. The cross-section of the bead is triangular, and on a narrow side a breaking point is visible. Red amber. H 1.1 cm; D 0.6 cm; D hole 0.2 cm.

cat. 555 **pl. 58, 555**
AMI inv. 2931.11
Cylindrical bead with a central bore-hole. The cross-section of the bead is oval and a break is visible at one end. Red amber. H 0.8 cm; D 0.5 cm; D hole: 0.2 cm.

cat. 556 **pl. 58, 556**
AMI inv. 2931.12
Cylindrical bead with a central bore-hole. The cross-section of the bead is round and one end is broken. Red amber. H 0.9 cm; D 0.45 cm; D hole 0.1 cm.

Type 4c: Spiral beads (cat. 557–566)

cat. 557 **pl. 58, 557**
BM inv. 1907.12–1.643
Spiral-shaped cylindrical bead. The cross-section is triangular, and one end is broken. The perforation extends through the entire object. Yellow amber. H 1.4 cm; D 0.5 cm; D hole 0.2 cm.

cat. 558 **pl. 58, 558**
AMI inv. 2931.1
Two fragments of a cylindrical bead with circular, spiral-shaped carvings and a central perforation. The cross-section is oval and the bead is chipped at various points. Red amber. H 2.7 cm; D 0.7 cm; D hole 0.2 cm.

cat. 559 **pl. 58, 559**
AMI inv. 2931.2
Spiral-shaped cylindrical bead. The cross-section is round, and one end is broken. The perforation extends through the entire object. Orange amber. H 2.4 cm; D 0.6 cm; D hole 0.4 cm.

cat. 560 **pl. 58, 560**
AMI inv. 2931.3
Spiral-shaped cylindrical bead. The cross-section is round, and one end is broken. The central perforation extends through the entire object. Orange amber. H 1.3 cm; D 0.5 cm; D hole 0.2 cm.

cat. 561 **pl. 58, 561**
AMI inv. 2931.4
Spiral-shaped cylindrical bead. The cross-section is round, and one end is broken. The central perforation extends through the entire object. Orange amber. H 1.1 cm; D 0.45 cm; D hole 0.15 cm.

cat. 562 **pl. 58, 562**
AMI inv. 2931.5
Spiral-shaped cylindrical bead. The cross-section is slightly triangular, and the carvings are less pronounced. The central perforation extends through the entire object. Intact. Red amber. H 2 cm; D 0.6 cm; D hole 0.2 cm.

cat. 563 **pl. 58, 563**
AMI inv. 2931.6
Spiral-shaped cylindrical bead. The cross-section is round and both ends are broken. The central perforation

extends through the entire object. Red amber. H 1.3 cm; D 0.3 cm; D hole 0.1 cm.

cat. 564 **pl. 58, 564**
AMI inv. 2931.7
Spiral-shaped cylindrical bead. The cross-section is slightly triangular, and one end is broken. The central perforation extends through the entire object. Red amber. H 0.9 cm; D 0.3 cm; D hole 0.1 cm.

cat. 565 **pl. 58, 565**
AMI inv. 2931.9
Cylindrical bead with a central bore-hole. The surface of the bead is decorated with a circumferential spiral scoring. Breaks can be identified at both ends. Red amber. H 0.9 cm; D 0.3 cm; D hole 0.1 cm.

cat. 566
AMI inv. 2931.14
Twenty slivers of cylindrical beads covered with spiral carvings. Red amber.

Type 5: Conical beads (cat. 567–571)

cat. 567 **pl. 59, 567**
BM inv. 1907.12–1.497
Large, conical bead with a vertical bore-hole. The bead expands towards a perforation, assuming a cone-shaped appearance. The edges are rounded. Intact. Red amber. D max. 2.75 cm; H 2.1 cm; D hole 0.25 cm.

cat. 568 **pl. 59, 568**
BM inv. 1907.12–1.500
Large, conical bead with a vertical bore-hole. The edge is rounded. Intact. Red amber. D max. 1 cm; H 1.2 cm; D hole 0.2 cm.

cat. 569 **pl. 59, 569**
BM inv. 1907.12–1.505
Small, conical bead with a vertical bore-hole. The edge is rounded. The cross-section is very irregular and shows some indents. Intact. Red amber. D max. 0.9 cm; H 0.5 cm; D hole 0.08 cm.

cat. 570 **pl. 59, 570**
AMI inv. 2907.45
Conical bead with a vertical bore-hole. The edges are sharply defined. Intact. Red amber. D max. 1 cm; D hole 0.2 cm.

cat. 571 **pl. 59, 571**
AMI inv. 2909.4
Conical bead with a vertical bore-hole. The edges are sharply defined. Intact. Red amber. D max. 2.3 cm; H 1 cm; D hole 0.25 cm.

Type 6: Biconical beads (cat. 572–582)

Type 6a: Simple biconical beads (cat. 572–576)

cat. 572 **pl. 59, 572**
BM inv. 1907.12–1.498
Biconical bead with a central perforation. The bead's central section is the widest, showing a well-defined edge and sloping towards the bore-holes. The cross-section is lenticular. Two perforations intersect at the widest point. Intact. Red amber. D max. 2.2 cm; H 1 cm; D hole 0.2–0.3 cm.

cat. 573 **pl. 59, 573**
BM inv. 1907.12–1.499
Biconical bead with a central bore-hole. The bead's central section is the widest, showing a well-defined edge and sloping towards the bore-holes. The cross-section is asymmetrical. Intact. Red amber. D max. 2.2 cm; H 1 cm; D hole 0.2–0.3 cm.

cat. 574 **pl. 59, 574**
AMI inv. 2907.50
Biconical bead with a central hole. The bead's central section is the widest, showing a well-defined edge. The edges are well defined. Intact. Red amber. D max. 1.6 cm; H 0.9 cm; D hole 0.3 cm.

cat. 575 **pl. 59, 575**
AMI inv. 2907.78
Fragment of a biconical bead with a central bore-hole. The bead's central section is the widest, showing a well-defined edge. The edges are rounded. Red amber. D max. 1.5 cm; H 1 cm; D hole 0.4 cm.

cat. 576 **pl. 59, 576**
AMI inv. 2907.79
Biconical bead with a central bore-hole. The bead's central section is the widest, showing a well-defined edge. The edges are rounded, and one side is chipped. Red amber. D max. 1 cm; H 0.5 cm; D hole 0.25 cm.

Type 6b: Compressed biconical beads (cat. 577–578)

cat. 577 **pl. 59, 577**
BM inv. 1907.12–1.641
Biconical bead with a central bore-hole. The bead's central section is the widest. The bead has a hexagonal cross-section, and the edges are well defined. Intact. Red amber. D max. 1.3 cm; H 1.15 cm; D hole 0.1 cm.

cat. 578 **pl. 59, 578**
AMI inv. 2914
Large, biconical bead with a central bore-hole. The bead's central section is the widest. The bead has a hexagonal cross-section, and the edges are well defined. Intact. Red amber. D max. 2.6 cm; H 2.2 cm; D hole 0.4 cm.

Type 6c: Long biconical beads (cat. 579–580)

cat. 579 **pl. 59, 579**
AMI inv. 2909.5
Large, long, biconical bead with a central bore-hole. The bead's central section is the widest. The cross-section is angular and can be described as lenticular. Intact. Red amber. D 2.3 cm; H 1.55 cm; D hole 0.3 cm.

cat. 580 **pl. 59, 580**
AMI inv. 2931.13
The edges are well defined. The cross-section is angular and can be described as lenticular. Intact. Red amber. D 1 cm; H 0.5 cm; D hole 0.2 cm.

Type 6d: Rosette-shaped beads (cat. 581–582)

cat. 581 **pl. 59, 581**
BM inv. 1907.12–1.501
Rosette-shaped biconical bead with a central bore-hole. Grooves run across the entire object. The bead's shape is irregular, and the surface somewhat chipped. Red amber. D 1.35–1.45 cm; H 0.9 cm; D hole 0.3–0.4 cm.

cat. 582 **pl. 59, 582**
BM inv. 1907.12–1.502
Rosette-shaped biconical bead with a central bore-hole. Grooves run across the entire object. The edges are well defined, and the cross-section can be characterised as lenticular. Some chipping is visible on the bead's surface. Red amber. D 1.2 cm; H 1.15 cm; D hole 0.15 cm.

Type 7: Square beads (cat. 583–590)

cat. 583 **pl. 59, 583**
BM inv. 1907.12–1.504
Square bead with a bore-hole through the long side. The object has an approximately rectangular shape. The cross-section is slightly oval. Intact. Red amber. L 1.8 cm; W 1.35 cm; H 0.55 cm; D hole 0.3 cm.

cat. 584 **pl. 59, 584**
AMI inv. 2909.2
Square bead with a bore-hole through the long side. The object has a rectangular shape and a rectangular cross-section. Intact. Red amber. L 1.6 cm; W 1.4 cm; D hole 0.3 cm.

cat. 585 **pl. 59, 585**
AMI inv. 2909.3
Square bead with a perforation through the long side. The bead has a trapezoidal shape and a triangular cross-section. The bead's surface is partly chipped. Red-orange amber. L 2.2 cm; W 1.6 cm; D hole 0.3 cm.

cat. 586 **pl. 59, 586**
AMI inv. 2911.7
Oblong bead with a perforation through the long side. The bead has a long, rectangular shape and a triangular cross-section. The object is broken on one side along the bore-hole. Red amber. L 2.3 cm; W 1.1 cm; H 1 cm; D hole 0.25 cm.

cat. 587 **pl. 59, 587**
AMI inv. 2911.9
Fragment of a squarish bead with a bore-hole through the long side. The basic shape and the cross-section of the bead are rectangular. The edges are clearly defined. The bead is broken on one side. Red amber. L 1.1 cm; W 0.7 cm; H 0.6 cm; D hole 0.15 cm.

cat. 588 **pl. 59, 588**
AMI inv. 2911.10
Fragment of a square bead with a bore-hole through the long side. The bead has a long, rectangular shape, and the cross-section is rectangular. The edges are clearly defined. Intact. Red amber. L 1.1 cm; W 0.6 cm; H 0.25 cm; D hole 0.1 cm.

cat. 589 **pl. 59, 589**
AMI inv. 2911.11
Squarish bead with a bore-hole through the long side. The bead has a long, rectangular shape and a triangular cross-section. Small chips are present around the bore-hole. Red amber. L 1.2 cm; W 0.7 cm; H 0.35 cm; D hole 0.1 cm.

cat. 590 **pl. 59, 590**
AMI inv. 2911.12
Fragment of a square bead with a bore-hole through the long side. The bead has a long, rectangular shape and a triangular cross-section. The object is broken on several sides. Red amber. L 1.1 cm; W 1.2 cm; H 0.45 cm; D hole 0.2 cm.

Other bead

cat. 591
AMI inv. 2907
Sixty-six amber beads on a modern-day string. The beads are stored by being strung on a thread. It is not possible to document each bead individually, as undoing the string has proved impossible. Ten examples from this string were typologically documented.

Martina Ott

Pendants (cat. 592–630)

Type 1: Drop-shaped pendants (cat. 592–593)

cat. 592 **pls. 12, 2; 60, 529**
BM inv. 1907.12–1.508
Elongated, oval pendant with an oval section. The pendant is somewhat flattened with a peripheral, horizontal perforation of the upper section. The surface is covered with a smooth, even patina. Little parts are missing. Opaque orange-brown amber. H 1.7 cm; L 1 cm; W 0.7 cm; D hole 0.2 cm.

cat. 593 **pl. 60, 593**
AMI inv. 2911.5
Oval pendant, its upper section completely missing. It shows two horizontal through-borings, one at the base and another, broken one at the top. A vertical, blind hole is drilled into the base, partly intersecting the lower horizontal boring; this can probably be linked to the first, and as yet unknown, use of the amber piece. Then the piece was probably reused twice: the first time when the upper bore-hole was drilled, and a second time when this bore-hole broke, and a further, lower perforation was carried out. Red amber. H 1.5 cm; L 0.9 cm.

Type 2: Elongated pendants (cat. 594–595)

cat. 594 **pls. 12, 3; 60, 594**
BM inv. 1907.12–1.509
Elongated pendant with a circular section and an inserted neck, surmounted by a cylindrical, horizontally perforated projection, which is slightly fractured on one side. An additional projection with a circular, flattened form is located at the bottom of the pendant. The object features an even, rather smooth patina. Opaque Dark red to dark orange amber. H 2 cm; L 0.8 cm; W 0.8 cm; D hole 0.1 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 595 **pl. 60, 595**
AMI inv. 2919
Elongated pendant with a circular section and a slightly inserted neck, surmounted by a small, elaborate, fractured projection. The horizontal fracture runs along a former horizontal drill hole. Here two parallel vertical borings were started, but not completed. At the bottom of the pendant, there is an additional circular, floral attachment. The artefact is badly fractured on three sides, the remaining side showing only superficial fractures. The object is opaque with a smooth, even patina, except in the fracture areas. Brown-red amber. H 2.7 cm; L 1.5 cm; D of the broken upper part – former horizontal drill hole 0.2–0.3 cm.
Lit.: Hogarth 1908, pl. 47, 3.

Type 3: Bulla-shaped pendants (cat. 596–624)

Type 3a: Bulla-shaped pendants with a cylindrical projection (cat. 596–608)

cat. 596 **pl. 60, 596**
AMI inv. 2910.1
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a horizontally perforated cylindrical projection with a square section. The object is entirely covered by a smooth, even patina. Opaque red amber. H 2.2 cm; L 1.4 cm; W 0.5 cm; D hole 0.2 cm.

cat. 597 **pl. 60, 597**
AMI inv. 2910.2
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a horizontally perforated cylindrical projection with a square section. The object is covered by a smooth, even patina and shows a fracture at the back, where the projection's right side is also fractured. The fracture on the back of the pendant must be older as it is covered by patina. Red translucent amber. H 1.9 cm; L 1.3 cm; W 0.7 cm; D hole 0.25 cm.

cat. 598 **pl. 60, 598**
BM inv. 1907.12–1.520
Flat, slightly elongated, oval pendant with an oval section surmounted by a horizontally perforated cylindrical projection. Opaque, dark red to brown amber. H 1.7 cm; L 1.2 cm; W 0.45 cm; D hole 0.2 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 599 **pl. 60, 599**
BM inv. 1907.12–1.522
Flat, rounded pendant with an oval section and a slightly inserted neck, which is surmounted by a horizontal perforated cylindrical projection with a square section and flattened edges. The patina is thick but smooth. Dark red amber. H 1.4 cm; L 1 cm; D hole 0.1 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 600 **pl. 60, 600**
BM inv. 1907.12–1.528
Flat, oval pendant with an oval section, fractured on its left side and at the bottom. The neck is slightly inserted and surmounted by a horizontal perforated cylindrical projection with a round section. Only half of the projection is left; the rest is fractured. The object is covered by a heavy, rather rough patina. Dark red amber. H 1.75 cm; L 1.5 cm; W 0.8 cm; D hole 0.2 cm.
Lit.: Strong 1966, 44.

cat. 601 **pl. 60, 601**
BM inv. 1907.12–1.529
Flat, oval pendant with an irregular, slightly oval section

with an inserted neck surmounted by a cylindrical, horizontally perforated projection with a round section. Orange amber. H 2.6 cm; L 1.45 cm; W 1 cm; D hole 0.2 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 602 **pl. 60, 602**
BM inv. 1907.12–1.530
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a horizontal, perforated cylindrical projection with a square section with rounded edges. The projection is well preserved, with a smooth and even patina. Dark red amber. H 2.5 cm; L 1.45 cm; W 1 cm; D hole 0.2 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 603 **pl. 60, 603**
BM inv. 1907.12–1.531.5h
Flat, rounded pendant with an oval section and a slightly inserted neck, surmounted by a horizontal perforated cylindrical projection with a round section, which is slightly broken to the left. The surface is covered by an even patina. Orange amber. H 1.9 cm; L 1.2 cm; W 0.6 cm; D hole 0.15 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 604 **pl. 60, 604**
BM inv. 1907.12–1.532.5c
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a rather large, cylindrical projection with a horizontal perforation. The object is covered by an even patina: Opaque red amber. H 1.7 cm; L 1 cm; W 0.5 cm; D hole 0.25 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 605 **pls. 12, 6; 60, 605**
BM inv. 1907.12–1.533
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a horizontal, perforated cylindrical projection with a square section. The object is covered by an even but rather rough patina. Red amber. H 1.3 cm; L 0.9 cm; W 0.5 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 606 **pl. 60, 606**
BM inv. 1907.12–1.534
Flat, oval pendant with an oval section and a slightly inserted neck, surmounted by a horizontal, perforated cylindrical projection with a square section. The surface is covered completely by a rather thick patina; at the projection level old fractures are covered by a patina. Opaque, red-orange amber. H 1.2 cm; L 0.5 cm; W 0.5 cm; D hole 0.15 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 607 **pl. 61, 607**
BM inv. 1907.12–1.535
Flat, oval pendant with an oval section and a clearly inserted neck, surmounted by a horizontal, perforated cylindrical projection with an oval section. The object is covered by an even, rather rough patina. Opaque, dark red amber. H 1.7 cm; L 1 cm; W 0.5 cm; D hole 0.15 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

cat. 608 **pl. 61, 608**
BM inv. 1907.12–1.536
Flat, rather rounded pendant with an oval section and a slightly inserted neck, surmounted by a horizontal perforated cylindrical projection with a round section, which is broken. The surface is covered by a rough, uneven patina, the object itself is rather badly conserved. Red to opaque, dark orange amber. H 1.8 cm; L 1.35 cm; W 0.6 cm.
Lit.: Strong 1966, 44.

Type 3b: Bulla-shaped pendants with decorated top (cat. 609–610)

cat. 609 **pls. 12, 6; 61, 609**
BM inv. 1907.12–1.519
Rather elongated, flat, oval pendant with an oval section with two grooves defining the neck, surmounted by a cylindrical, horizontal perforated projection, which has only partly survived. The surface of the object is covered by a rather smooth patina, which also features some fresh superficial fractures. Opaque, dark orange amber. H 1.9 cm; L 1.2 cm; W 1 cm; D hole 0.2 cm.
Lit.: Strong 1966, 44.

cat. 610 **pl. 61, 610**
BM inv. 1907.12–1.523
Flat, rounded pendant with an oval section with two grooves defining the neck, surmounted by a cylindrical, horizontal perforated projection, partly fractured, decorated with three vertical, slightly slanted incisions. The amber is covered by a smooth, even patina. Opaque, dark orange amber. H 1.55 cm; L 1.1 cm; W 0.5 cm; D hole 0.1 cm.
Lit.: Strong 1966, 44 pl. 2, 5.

Fragments (cat. 611–624)

cat. 611 **pl. 61, 611**
BM inv. 1907.12–1.517
Oval pendant with an oval section and an inserted neck, surmounted by a projection of uncertain nature; the pendant is fractured at the lower end of the drilling. The patina is quite thick and rough, with superficial fractures on the back of the object. Opaque, brown-orange amber. H 1.4 cm; L 1.2 cm; W 1 cm.
Lit.: Strong 1966, 44.

cat. 612 **pl. 61, 612**
BM inv. 1907.12–1.518
Oval, flattened pendant with an oval section and an inserted neck, surmounted by a projection of uncertain nature which is fractured directly at the bottom of the drilling. The amber is covered by a thick but smooth patina. Opaque, dark brown-orange amber. H 1.4 cm; L 1.2 cm; W 0.9 cm.
Lit.: Strong 1966, 44.

cat. 613 **pl. 61, 613**
BM inv. 1907.12–1.521
Round, flat pendant with an oval section and an inserted neck, surmounted by a projection of uncertain nature, which is fractured directly at the bottom of the drilling. The object features a thick, rough patina. Opaque, Dark red amber. H 1.35 cm; L 1.1 cm; W 0.5 cm.
Lit.: Strong 1966, 44.

cat. 614 **pl. 61, 614**
BM inv. 1907.12–1.524
Round, flat pendant with an oval section, where no neck could be identified; the upper part of the object is badly preserved and fractured, so that no clear statement can be made concerning the original form of the projection. Beneath the fracture, a semicircular perforation is visible at the top right of the object. The surface is covered by a rough, thick patina with capillary cracks. Opaque, Dark red amber. H 1.45 cm; L 1.1 cm; W 0.9 cm; D hole 0.15 cm.
Lit.: Strong 1966, 44.

cat. 615 **pl. 61, 615**
BM inv. 1907.12–1.525
Round, flat pendant with an oval section and traces of an inserted neck, surmounted by the remains of a projection and a horizontal boring, which are both badly fractured, so that no statement can be made concerning the original nature of the projection. The amber features a thick but smooth patina. Opaque red amber with orange inclusions. H 1.55 cm; L 1.2 cm; W 0.8 cm.
Lit.: Strong 1966, 44.

cat. 616 **pl. 61, 616**
BM inv. 1907.12–1.526
Round, rather flattened pendant with a circular section and an inserted neck, surmounted by a projection of uncertain nature which is fractured directly at the bottom of the drilling. The object and the fracture at the drilling level are covered by a thick, rather smooth patina. The colour of the amber is an opaque orange. H 1.1 cm; L 1.1 cm; W 0.7 cm.
Lit.: Strong 1966, 44.

cat. 617 **pl. 61, 617**
BM inv. 1907.12–1.527
Round, flat pendant with an oval section. The object's whole upper section is missing, including the neck and the projection, so that no clear statement can be made concerning their shape. Both the surface and the fracture are covered by a smooth patina. Opaque, dark red amber. H 1 cm; L 1.1 cm; W 0.6 cm.
Lit.: Strong 1966, 44.

cat. 618 **pl. 61, 618**
BM inv. 1907.12–1.537
Oval, flat pendant with an oval section. The whole upper section, including the neck and the projection, is missing, so that no clear statement can be made concerning their shape. The whole amber is covered by a rough but even patina. Opaque, Dark red amber with an orange stripe along the middle. H 1.8 cm; L 1.3 cm; W 0.8 cm.
Lit.: Strong 1966, 44.

cat. 619 **pl. 61, 619**
BM inv. 1907.12–1.538
Oval, flat pendant with an oval section. The object features a clean, almost even fracture at its top. Its whole upper part, including the neck and the projection, is missing, so that no clear statement can be made concerning their shape. The amber has a very thin, smooth patina; its colour is a translucent dark red. H 1.6 cm; L 1.25 cm; W 0.7 cm.
Lit.: Strong 1966, 44.

cat. 620 **pl. 61, 620**
BM inv. 1907.12–1.539
Very small, oval, flat pendant with an oval section and an inserted neck, surmounted by a projection of uncertain nature, which is fractured directly beneath the drilling. The whole surface is covered by a rough but rather even patina. Opaque amber. H 0.95 cm; L 0.85 cm; W. 0.4 cm.

cat. 621 **pl. 61, 621**
BM inv. 1907.12–1.596a
Small, flat but asymmetrical rounded pendant with an oval section and an inserted neck; its top is completely fractured. The drilling from its front to its back is unusual. The surface is covered by a rough, uneven patina, which does not cover the fracture at its top. Dark red amber. H 1.5 cm; L 1.3 cm; W 0.75 cm.

cat. 622 **pl. 61, 622**
BM inv. 1907.12–1.596b
Small round, rather flattened pendant with an oval section and pointed edges, surmounted by an inserted neck. The upper part is completely fractured. The surface is covered by a rough, uneven patina, which does not cover the fracture at the top. Dark red amber. H 1.1 cm; L 1.2 cm; W 0.6 cm.

cat. 623 **pl. 61, 623**
AMI inv. 2910.3

A cylindrical projection with a horizontal perforation and an oval section. The lower part of the object is broken. The surface is covered by a rather smooth patina. Orange translucent amber. D hole 0.25 cm.

cat. 624 **pl. 61, 624**
AMI inv. 2910.4
A cylindrical projection with a horizontal perforation and a square section. The lower part of the object is broken. The surface is covered by a rather smooth patina. Orange translucent amber. D hole 0.25 cm.

Type 5: Fruit pendants (cat. 625–629)

Type 5a: Pomegranate pendants with vertical bore-hole (cat. 625–627)

cat. 625 **pl. 62, 625**
BM inv. 1907.12–1.512
Globular pendant with an inserted neck, surmounted by a circular, rosette-shaped button-top, with five triangular grooves. The object is perforated by a drilling running lengthwise. Dark red amber. H 1.45 cm; L 1.1 cm; W 0.9 cm; D hole 0.1 cm.
Lit.: Strong 1966, 45 pl. 2 a.

cat. 626 **pl. 62, 626**
BM inv. 1907.12–1–513
Oval pendant with an oval section, perforated from the base up to the chipped top. The object's lower section shows an inserted neck and is decorated by a round, floral projection which resembles the calyx of a pomegranate fruit and is partly fractured. A rough patina covers the whole object, including the fractures. Opaque, dark orange amber. H 1.4 cm; L 1 cm; W 0.9 cm; D hole 0.05 cm.
Lit.: Strong 1966, 45 pl. 2 f.

cat. 627 **pls. 12, 10 a; 62, 627**
BM Inv.1907.12–1.514
Oval pendant with an oval section, perforated from its bottom to its top. The object's lower section shows an inserted neck and is decorated by a round, floral projection which resembles the calyx of a pomegranate fruit. The surface of the object is covered by a thick but smooth patina. Opaque, dark red amber. H 1.3 cm; L 0.9 cm; W 0.7 cm; D hole 0.1 cm.
Lit.: Strong 1966, 45 pl. 2 d.

Type 5b: Pomegranate pendant with horizontal bore-hole

cat. 628 **pls. 12, 10 b; 62, 628**
BM inv. 1907.12–1.511
Globular pendant with an inserted neck, surmounted by a circular button-shaped top decorated with eight radiating incisions. The artefact features two intersecting borings at the base; the middle section between the two bore-holes is fractured. Nevertheless, traces of the two distinct drillings are still visible. Dark red amber. H 1.5 cm; L 1 cm; W 1 cm; D hole 0.2 cm.
Lit.: Strong 1966, 45 pl. 2 b.

Fragment

cat. 629 **pl. 62, 629**
BM inv. 1907.12–1.516
Globular pendant/pinhead (?) with an oval section which features an inserted neck surmounted by a cylindrical button-shaped top, chipped on the left side. The surface is rather rough and features a thick patina. The back of the object is fractured. Vertical perforation from end to end. Orange amber. H 1.3 cm; L 1 cm; W 0.6 cm; D hole 0.12 cm.
Lit.: Strong 1966, 45.

Type 6: Wineskin-shaped pendant

cat. 630 **pl. 62, 630**
AMI inv. 2917
Square pendant with a rectangular section, broken at its base. From the pendant's middle, the upper section shows two bulges and a horizontally perforated gable, decorated with a row of vertical incisions. The projection is fragmented. Yellowish patina and otherwise red amber. H 2.7 cm; L 2.3 cm; W 1.3 cm.
Lit.: Hogarth 1908, 215 pl. 47, 5.

Caroline Posch

Spacers (cat. 631–634)

cat. 631 **pl. 62, 631**
AMI inv. 2911.2
Almost rectangular-shaped, flat on one side and convex on the other. Three small through-borings on the short side and one large through-boring on the long side, cutting the small ones. Orange amber with yellowish stripes. A corner is missing. L. 2.7 cm; W max. 1.2 cm; T 0.6 cm; D holes 0.2 and 0.4 cm.
Lit.: Hogarth 1908, 214 pl. 47, 20 (flat side).

cat. 632 **pl. 62, 632**
AMI inv. 2911.3
Disc-shaped, flat on one side and convex on the other. Two cross through-borings run through its width: one boring has a notch on both ends, to give the wire a certain direction; one notch is broken through use. Red and transparent amber. H 0.5 cm; D 1.8 cm; D hole 0.2 cm.
Lit.: Hogarth 1908, 214 f. pl. 47, 21.

cat. 633 **pl. 62, 633**
AMI inv. 2921
Parallelepiped-shaped, has two through borings on the short side near the endings. Three major sides are smooth, the fourth is rough. A corner is broken. Red amber. L 3.1 cm; W max. 1.1 cm; T 0.7; D holes 0.2 cm.
Lit.: Hogarth 1908, 215.

cat. 634 **pl. 62, 634**
AMI inv. 2921
Flat and rectangular, has smoothed corners and five through-borings, equidistant from each other. Intact. Red amber. L 4.1 cm; W 1.6 cm; T 0.5 cm; D holes 0.3 cm.
Lit.: Hogarth 1908, 215 pl. 47, 28.

Alessandro Naso

Fibulae (cat. 635–652)

Type 2: Composite fibulae with amber segments (cat. 635–646)

cat. 635 **pl. 63, 635**
BM inv. 1907. 12–1.642
Conical disc with variable thickness and central hole for the bow. Intact. Red amber. T 0.3–0.6 cm; D 1 cm; D hole 0.3 cm.

cat. 636
AMI inv. 2907.7
Conical disc with gradable thickness and central hole for the bow. Two flat surfaces. Intact. Orange amber. T 0.3–0.4 cm; D 0.3 cm; D hole 0.3 cm.

cat. 637
AMI inv. 2907.10
Probable cylindrical disc with gradable thickness and central hole for the bow. Two flat surfaces. Intact. Red amber. T 0.5 cm; D 0.85 cm; D hole 0.2 cm.

cat. 638
AMI inv. 2907.15
Conical disc with gradable thickness and central bore-hole for the bow. Two slightly flat surfaces. Partially preserved, chipped on one side. Red amber. T 0.3–0.4 cm; D 0.85 cm; D hole: 0.3 cm.

cat. 639
AMI inv. 2907.18
Probable conical disc with gradable thickness and central bore-hole for the bow. Two slightly flat surfaces. Two fragments reassembled. Red amber. T 0.4–0.5 cm; D 1.05 cm; D hole 0.35 cm.

cat. 640
AMI inv. 2907.22
Conical disc with gradable thickness and central hole for the bow. Two flat surfaces. Intact. Red amber. T 0.2–0.5 cm; D 0.9 cm; D hole 0.4 cm.

cat. 641 **pl. 63, 641**
AMI inv. 2907.34
Probable cylindrical disc with gradable thickness and central bore-hole for the bow. Two slightly flat surfaces. Intact. Orange amber. T 1.1 cm; D 0.85 cm; D hole 0.25 cm.

cat. 642 **pl. 63, 642**
AMI inv. 2907.43
Conical disc with gradable thickness and central bore-hole for the bow. Two flat surfaces. Intact. Red amber. T 0.8–1 cm; D 1.2 cm; D hole 0.5 cm.

cat. 643
AMI inv. 2907.56
Probable cylindrical disc with central bore-hole for the bow. Two flat surfaces. Intact. Orange amber. T 0.15–0.2 cm; D 0.9 cm; D hole 0.3 cm.

cat. 644
AMI inv. 2907.59
Conical disc with gradable thickness and central bore-hole for the bow. Two flat surfaces. Intact. Red amber. T 0.35 cm; D 0.7 cm; D hole 0.25 cm.

cat. 645
AMI inv. 2907. 65
Conical disc with gradable thickness and central bore-hole for the bow. Two flat surfaces. Intact. Red amber. T 0.2 cm; D 0.6 cm; D hole 0.3 cm.

cat. 646
AMI inv. 2907.76
Probable conical disc with gradable thickness and off-centre bore-hole for the bow. Red amber. T 0.1–0.2 cm; D 0.6 cm; D hole 0.3 cm.

Type 3: Fibulae with an amber bead on the bow (cat. 647–652)

cat. 647
AMI inv. 2907.29
Oval-shaped pearl with central bore-hole for the bow

along the longest axis. Chipped sides. Red amber. T 0.4–0.9 cm; D 1.1 cm; D hole 0.5 cm.

cat. 648 **pl. 63, 648**
AMI inv. 2907.38
Shapeless pearl with central bore-hole for the bow along the shortest axis. Cracked on one side. Yellow amber. L 1.9 cm; H 1cm; W 1.3 cm; D hole 0.35 cm.

cat. 649 **pl. 63, 649**
AMI inv. 2909.6
Shapeless pearl with central bore-hole along the longest axis. The surface is convex. Red amber. L 5.2 cm; H 2.35 cm; W 4.15 cm; D hole 0.35 cm.
Lit.: Hogarth 1908, 214 pl. 47, 11.

cat. 650 **pl. 63, 650**
AMI inv. 2911.8
Shapeless pearl with central bore-hole along the longest axis. Partially preserved, chipped on one side. Red amber. L 2.4 cm; W 1.6 cm; D hole 0.4 cm.
Lit.: Hogarth 1908, 214 pl. 47, 19.

cat. 651 **pl. 63, 651**
AMI inv. 2915
Shapeless core with central bore-hole along the longest axis. May be also interpreted as raw amber partially worked. Flat lower and convex and concave upper surface. Partially preserved, regular line engravings on the lower surface (no scratches). Red amber. L 6 cm; W 4 cm; D hole 0,4 cm.
Lit.: Hogarth 1908, 214 pl. 47, 13.

cat. 652 **pl. 64, 652**
AMI inv. 2924
Elongated pearl with four parallel perforations along the longest axis, three smaller ones above and one larger one below. The lower bore-hole for the bow showed remains of the bronze bow (Hogarth 1908) which has not survived. Gradable gap between the holes: 0.1–0.3 cm. The lower section shows a flat surface, while the upper section shows a convex one. Partially preserved, chipped on one side. Red amber. L 3.1 cm; H 1.6 cm; W 1.6 cm; D holes 0.35–0.4 cm.
Lit.: Hogarth 1908, 214, pl. 47, 10.

Nunzia Laura Saldalamacchia

Inlays (cat. 653–655)

cat. 653 **pl. 64, 653**
BM inv. 1907.12–1.596d
Disc-shaped, not perfectly round artefact, flat and rough on one side (base [?]), convex and smooth on the other side (upper surface [?]). Horizontal bore-hole. Dark red amber. D 0.75 cm; D hole 0.15 cm.

cat. 654 **pl. 64, 654**
AMI inv. 2916
Disc-shaped amber, flat and rough on one side (base [?]), convex and smooth on the other (upper surface [?]). Five through-borings, the middle one is larger (0.4 cm), the side ones smaller (0.25–0.3 cm); one of the lateral borings is not correctly distanced from the others. On the smooth side there are small ancient gaps, with the same patina as the surface. Almost intact. Red amber. D 3.7 cm; H 0.8–1 cm.
Lit.: Hogarth 1908, 215 pl. 47, 2.

cat. 655 **pl. 64, 655**
AMI inv. 2918
Disc-shaped amber, not perfectly round, flat and rough on one side (base [?]), convex and smooth on the other (upper surface [?]). Three vertical through-borings in the middle; a further horizontal boring connects two vertical borings. Red amber. D 2.5 × 2.3 cm; H 0.6–0.4 cm.
Lit.: Hogarth 1908, 215 pl. 47, 9.

Alessandro Naso

Pinheads (cat. 656–658)

cat. 656 **pls. 25, 2b; 64, 656**
BM inv. 1907.12–1.510
Globular amber pinhead with an inserted neck, followed by a circular rosette button-top, which is partly fractured. The base of the object is also deeply fractured. The artefact features a central boring at its base which perforates about a quarter of the object's thickness. The object features a rather thick patina. Dark red amber. H 1.5 cm; D 0.9 cm.
Lit.: Hogarth 1908, 216 pl. 47, 12; Strong 1966, 45.

cat. 657 **pls. 25, 2a; 64, 657**
BM inv. 1907.12–1.515
Globular pinhead with an inserted neck, followed by a circular floral button-top. The artefact's lowest section features a cylindrical ending, characterised by a bulge. The pinhead shows a vertical boring, which does not perforate the whole object. Rough patina, dark red amber. H 1.25 cm; L 0.9 cm; D 0.7 cm; D hole 0.18 cm.
Lit.: Hogarth 1908, 216 pl. 48, 19; Strong 1966, 45 pl. 2 c.

cat. 658 **pl. 64, 658**
AMI inv. 2909.7
Globular pinhead with a grooved surface, followed by a protruding neck and a flat cylindrical bottom. At its base is a vertical blind hole. Red amber. H 0.4 cm; D 0.7 cm; D hole 0.3 cm.
Lit.: Hogarth 1908, 216 pl. 48, 15.

Indeterminable item

cat. 659 **pl. 64, 659**
AMI inv. 2911.1
Carved, cylindrical amber artefact with a flat base which forms a peg, probably to attach the object to a base. It features a large horizontal perforation of the cylindrical-shaped portion, probably to insert a bolt made of wood, bone or ivory. The object itself could be part of a hinge or the sheath of an unknown polymateric object. Its surface is very smooth and lightly chipped in some places. Red transparent amber. L 2.3 cm; W 1.7 cm; D hole 0.5 cm; L peg 2.1 cm; H peg 0.4 cm; W peg 0.3 cm.
Lit.: Hogarth 1908, 215 pl. 47, 14.

Caroline Posch

7 SUMMARY/ÖZET

Almost 700 amber objects, which are outstanding both in number and quality, have been found in the sanctuary of Artemis at Ephesos during the excavations of the British Museum in 1905 and the research campaigns carried out by the Austrian Archaeological Institute from the 1960s.

M. Kerschner and A. M. Pülz discuss the stratigraphy and the context of the amber finds (chap. 1). Two large assemblages have been discovered in the rectangular foundations of the hearth in the sanctuary. Periodical flooding damaged the earliest stone buildings of the temple of Artemis and necessitated reparations on the structures by raising the floor levels with clay layers. Subsequent phases and subphases of the structures called Naos 1, Naos 1a, and Naos 2 have been recognized and dated from 660–640 BC onwards. On the floor of the Naos 1a, several objects belonging to a hoard were deposited as a foundation offering around 650–640 BC, and they include precious materials such as gold jewels and amber finds. The hoard, which also contained amber objects, belongs definitively to an earlier construction phase than the so-called Foundation Deposit found by D. G. Hogarth in 1905 and connected to the temple Naos 2, built around 640–620 BC. Further amber finds have been recovered in smaller clusters inside the sanctuary.

L. Ambrosini, A. Naso, M. Ott, C. Posch and N. L. Saldalamacchia review the amber finds from the Artemision according to the typology (chap. 2). The finds include 6 shaped figures, 342 beads, 92 pendants, 143 spacers, 52 fibulae, 14 inlays, 4 pin heads, 2 raw amber pieces and 4 indeterminable remains (**cat. 537**–**539**. **659**). Including tiny fragments, 659 entries are classified, and the total number of the amber finds, although not exactly determinable, is almost 700 items. Among the figured amber (**cat. 1**–**5**. **540**), the earliest datable objects (**cat. 2**–**3**) belong to the late Geometric style and show the skill of Greek carvers able to work a new material. As usually happens with amber, the high value of the exotic material from the Baltic Sea (see below) propelled the reuse of these objects, reworking them to a new shape (**cat. 1**–**3**).

The beads, pendants, spacers, fibulae, inlays, and pinheads are of different shapes. The shapes are documented mostly in the western and eastern coasts of the Adriatic basin, where from the Bronze Age onwards Baltic amber came into the Central Mediterranean. In the 8th and 7th centuries BC, the Etruscan Verucchio in modern-day Romagna, was the main hub for the amber trade in all the Italian peninsula and local workers developed particularly high capacities in amber carving.

Beads are the most numerous amber artefacts (**cat. 6**–**296**. **541**–**591**), and they can belong to a necklace, collar, pectoral, or girdle. The beads themselves have been divided into eight types. The comparisons identified for each shape demonstrate the substantial coincidence in the chronology among main types because beads of different shapes often belong to the same ornament also outside Ephesos.

Pendants feature the third largest amber artefact group in the Artemision (**cat. 297**–**349**. **592**–**630**). The pendants themselves have been divided into six types. Depending on the direction of the through-borings, one can distinguish between horizontal and vertical pendants, which might occur in different positions in the same ornament.

Spacers are amber plates of various shapes which show parallel through-borings drilled from side to side through their thickness (**cat. 350**–**488**. **631**–**634**). The purpose of the spacer-plates is to act as intermediary pieces and separate the different strings of beads of a suspended ornament, such as a necklace, collar, pectoral, girdle.

Among the fibulae (**cat. 489**–**523**. **635**–**650**. **652**) two examples (**cat. 489**–**490**), whose bows are decorated with alternated segments of amber and bone, filled with amber discs, are very similar to objects from Verucchio and they might have been imported to Ionia from Verucchio.

The amber inlays (**cat. 524**–**534**. **653**–**655**) from the Artemision are stylistically rooted in the

Eastern Greek tradition of ornaments for wooden furniture (*klinai* [?], boxes [?]). As the recovered inlays are too few to belong to a complete ornamentation set, they probably testify to the work in progress of a local workshop for wooden inlaid artefacts.

Pins are a peculiar votive offering to Artemis; the Heraion at Argos and the Artemision at Ephesos yielded the largest ensembles of bronze pins in the Aegean belonging to the Archaic Period. At Ephesos, next to pins made from electrum, gold, silver, bronze, ivory, and bone, four examples of amber heads (**cat. 534**. **656**–**658**) for ivory (?)-, bone (?)-pins were found.

Two raw ambers are enough to show that, with high probability, the Baltic amber was imported raw to Ephesos and cut in the Artemision (**cat. 535**. **651**).

V. Estridge, S. Kaur, T. Kaur and E. Stout analyze the results of infrared spectroscopy on amber samples from Ephesos and prove the amber is of Baltic origin (chap. 3).

S. Alaura and M. Bonechi review the amber in the cuneiform sources from the Ancient Near East (chap. 4). Sumerian, Akkadian, and Old Babylonian texts datable to the 2nd and the 1st millennium BC mention the word *elmēšu(m)* and derivated terms, referring with high probability to amber.

A. Naso summarizes the main knowledges about the use of amber in pre-Roman time in the Central and Eastern Mediterranean and suggests a general interpretation of the finds from the Artemision (chap. 5). Beads, pendants, and spacers make up a total of 577 specimens and are the most numerous of all: 426 of them have been found in the hoard of the Naos 1a. They characterize this hoard as the main amber context in the sanctuary of Artemis at Ephesos, and the largest in all the Eastern Mediterranean. The shapes of the amber finds, particularly regarding the spacers, are similar to one another and are closely connected to beads, pendants, and spacers from Southern Italy. From the late 8th century BC amber became very popular in Southern Italy among the native people in the modern-day Basilicata, the Oenotrians. Rich female Oenotrian graves yielded very elaborate parures of amber ornaments still in their original position and can include necklaces, pectorals, and girdles in the same burial. The richest ornaments are composed by several rows of hundreds of amber items. The original presence of a multi-row ornament in the Artemision provides an explanation for both the high number and similar shapes of amber carvings: they belong to one and the same object. The most probable identifiable ornament is a girdle, a common votive offering to Artemis at Ephesos from the 7th century BC. Greek women offered girdles, mostly in bronze, to the female deity as a symbol of one of their most important capacities, the generation of a human life. The discovery of an amber ornament, probably a girdle, in the Artemision at Ephesos throws new light on this sanctuary that is traditionally connected to votive offerors from Ionia and Anatolia, allowing to identify close relationship also with the Central Mediterranean area, particularly with southern Italy, where amber was popular among native people from the Early Iron Age. A connection between Southern Italy and Ionia is not surprising due to the role played by the colony of Siris, which was founded in 7th century BC in Southern Italy in the modern-day Basilicata by Ionian settlers from Colophon. Archaeological finds from Southern Italy show native Oenotrians on the hinterland were in touch with Greeks settled on the coast. The relationship between Siris and Ionia favoured the dissemination of the Oenotrian taste for amber ornaments to Ephesos. Raw Baltic amber (**cat. 535** and **651**) came from Italy to Ionia and skilled workers composed a multi-row ornament, according to Italic tradition but developed new shapes for the beads (beads types 4b and 4c) and pendants (pendants types 4 and 6), and new decoration for the spacers (spacers type 7). The new shapes of beads, pendants, and spacers together with other finds from the Artemision, like the aforementioned inlays, show the activity of an amber workshop at Ephesos.

A. Naso, M. Ott, C. Posch, S. Privitera and N. L. Saldalamacchia describe the amber items in the catalogue, according to the place of conservation and to the typology: the finds from the 1905 excavation are preserved in the Archaeological Museum in Istanbul and in the British Museum in London, while the finds from the recent Austrian excavations are in the Ephesos Museum in Selçuk (chap. 6).

Alessandro Naso

ÖZET

Efes Artemis Kutsal Alanı'nda, 1905 yılında British Museum'un kazılarında ve 1960'lı yıllardan itibaren ise Avusturya Arkeoloji Enstitüsü'nün araştırma kampanyalarında hem sayı hem de kalite bakımından dikkat çeken 700'e yakın kehribar obje bulunmuştur.

M. Kerschner ve A. M. Pülz kehribar buluntuları konteksleri ve stratikrafileri bakımından ele almaktadırlar (Bölüm 1). Kutsal Alanın ocağının dikdörtgen temelinde iki büyük buluntu grubu ele geçirilmiştir. Periodik olarak gerçekleşen su baskınları Artemis Tapınağı'nın en erken taş yapılarına zarar vermiş ve yapılarda kil kullanılarak zeminin yükseltilmesi yoluyla onarım yapılmasını gerektirmiştir. Bunu takip eden ve Naos 1, Naos 1a ve Naos 2 olarak adlandırılan evreler ve alt evreler tanımlanabilmiş ve MÖ. 660–640 itibaren olan döneme tarihlendirilmiştir. Naos 1a'nın zemininde MÖ. 650–640 tarihlenen bir gömüye ait çok sayıda obje yapı adağı olarak depolanmıştır. Bunların arasında kehribar objeler ve altın takılar gibi değerli malzeler de bulunur. İçinde kehribar buluntuların da yer aldığı gömü, 1905'de D. G. Hogarth tarafından bulunan ve MÖ. 640–620 yıllarına inşa edilen Naos 2 ile bağdaştırılan yapı adak gömüsünden kesin olarak daha erken bir yapım evresine aittir. Diğer kehribar buluntular, Kutsal Alanın içerisinde küçük gruplar halinde bulunmuşlardır.

L. Ambrosini, A. Naso, M. Ott, C. Posch ve N. L. Saldalamacchia Artemision'dan gelen kehribar buluntuları tipolojilerine bakımından ele almaktadırlar (Bölüm 2). Buluntular 6 figürlü kehribar, 342 boncuk, 92 pandantif, 143 ara parça, 52 fibula, 14 kakma, 4 iğne başı, 2 ham kehribar parçası ve 4 tanımlamamış kalıntıyı kapsamaktadır (**Kat. 537**–**539. 659**). Minik parçalarla beraber 659 kayıtlı parça sınıflandırılmıştır. Kehribar buluntuların toplam sayısı kesin olarak tespit edilemese de 700'e yakındır. Figüratif kehribarlar (**Kat. 1**–**5. 540**) arasındaki tarihlenebilen en eski parçalar (**Kat. 2**–**3**) Geç Geometrik Dönem stilindedirler ve Yunan oymacıların yeni bir malzemeyi işleyebilme becerilerini gösterirler. Kehribarda genellikle görüldüğü gibi, Baltık Denizi'nden gelen bu egzotik malzemenin çok değerli olması (bkz. aşağıda), yeniden şekil verilip dönüştürülerek tekrar kullanılmasına yol açmıştır (**Kat. 1**–**3**).

Boncuklar, pandantifler, ara parçalar, fibulalar, kakma işleri ve iğne başları farklı formlara sahiptirler. Bu formlar özellikle, Bronz Çağı'ndan itibaren Baltık Bölgesinden gelen kehribarların Akdeniz bölgesine ulaştığı Adria'nın batı ve doğu havzasında kayda geçirilmiştir. İtalya Yarımadasında bulunan ve bugün Romagna olarak adlandırılan Etrüks kenti Verucchio MÖ. 8. ve 7. Yüzyılda kehribar ticaretinin ana aktarım yeridir ve buradaki zanaatkarlar kehribar işlemede yüksek yetenekler geliştirmişlerdir.

Boncuklar, en fazla ele geçen kehribar buluntu grubunu oluştururlar (**Kat. 6**–**296. 541**–**591**). Bunlar bir kolyeye, tasma kolyeye, bir göğüs/vücut takısına ya da bir kemere ait olabilirler. Boncuklar altı alt gruba ayrılmışlardır. Her bir form için bulunan karşılaştırma örnekleri, ana tiplerin kronolojide büyük oranda uyuştuğunu ve farklı formdaki boncuların Efes dışında da sıklıkla aynı süs bezemesine ait olduğu görülür.

Pandantifler Artemision'dan gelen üçüncü büyük kehribar buluntu grubunu oluşturur (**Kat. 297**–**349. 592**–**630**) ve bu grup altı alt tipe ayrılmıştır. Deliğin açıldığı yöne göre yatay ve dikey pandantifler ayırt edilebilir. Bunlar aynı takıda farklı yerlerinde kullanılmış olabilirler.

Ara parçalar, bir taraftan diğer tarafa kalınlıkları boyunca uzanan paralel deliklere sahip farklı şekillerdeki kehribar plakalardır (**Kat. 350**–**488. 631**–**634**). Ara parçalar, ayırıcı olarak hizmet eder ve örneğin kolye, tasma kolye, göğüs/vücud takısı ya da kemer gibi sarkan bir takının farklı boncuk dizilerini birbirinden ayırırlar.

Efes'ten gelen fibulalar (**Kat. 489**–**523. 635**–**650. 652**) arasında kavisli kısmı dönüşümlü olarak kehribar ve kemik süslemelerle bezenmiş ve kehribar disklerle doldurulmuş iki örnek (**Kat. 489**–**490**) bulunmaktadır. Bunlar Verucchio'dan gelen objelere çok benzerlik gösterirler ve İonia'ya Verucchio'dan ithal edilmiş olabilirler.

Artemision'daki kehribardan yapılmış kakma işlerinin (**Kat. 524**–**534. 653**–**655**) stilistik bakımdan kökleri, ahşap mobilyalarda (Klineler [?], Kutular [?]) görülen Doğu Yunan süsleme

geleneğine dayanmaktadır. Ele geçen kakma parçalarının sayısı bir süslemenin tamamını oluşturamayacak kadar az olduğundan, ahşap kakma işleri yapan yerel bir atölyesinin devam eden henüz bitmemiş çalışmaları yansıtıyor olabilirler.

İğneler Artemis için özel adak hediyeleridir. Argos'taki Heraion ve Efes Artemis Kutsal Alanı Ege Bölgesi Arkaik dönemine ait en kapsamlı bronz iğne buluntu gruplarını sağlarlar. Efes'te elektron, altın, gümüş, bronz, fildişi ve kemikten yapılmış iğnelerin yanı sıra fildişi (?) ve kemik (?) iğnelere ait dört adet kehribar iğne başı (**Kat. 534. 656**–**658**) örneği bulunmuştur.

İki ham kehribar parçası, Baltık Bölgesi'nden gelen kehribarın büyük olasılıkla işlememiş olarak Efes'e geldiğini ve Artemision'da (**Kat. 535. 651**) işlendiğini kanıtlamak için yeterlidir.

V. Estridge, S. Kaur, T. Kaur ve E. Stout, Efes'ten alınan kehribar örnekleri üzerinde yapılan kızılötesi spektroskopi sonuçlarını analiz ederek kehribarın Baltık kökenli olduğunu kanıtlamaktadırlar (Bölüm 3).

S. Alaura ve M. Bonechi, Antik Yakın Doğu'nun çivi yazısı kaynaklarındaki kehribar kullanımını kanıtlayan belgeleri ele alırlar (Bölüm 4). MÖ. 2. ve 1. bin yıllara tarihlenen Sümer, Akad ve Eski Babil metinlerinde, büyük olasıkla kenhribar ile ilişkili olan elmēšu(m) sözcüğü ve bu sözcükten türetilmiş terimlerden bahsedilmektedir.

A. Naso, Roma Dönemi öncesi, Orta ve Doğu Akdeniz bölgesindeki kehribar kullanımına ilişkin en önemli bulguları özetlemekte ve Artemision'dan gelen buluntular için genel bir yorum önermektedir (Bölüm 5). Toplam 577 örnek ile boncuklar, pandantifler ve ara parçalar en çok bulunan buluntu parçarıdır: Bunlardan 426'sı Naos 1a'da ele geçen gömüde bulunmuştur. Bu buluntular gömüyü Efes Artemis Kutsal Alanı'ndaki en önemli kehribar buluntu konteksi ve bütün Doğu Akdeniz'in en büyük Kehribar buluntu konteksi haline getirir.

Ara parçalar başta olmak üzere kehribar buluntuların formları birbirlerine benzerler ve Güney İtalya'dan gelen boncuk, pandantif ve ara parçalarla sıkı bir bağlantı içindedirler. Kehribar, MÖ. 8. yüzyılın sonundan itibaren Güney İtalya'da bugünkü Basilicata'nın yerlileri olan Oenotrialı'lar arasında çok popüler hale gelmiştir. Oenotrialı zengin kadın mezarlarından, hala orjnal yerlerininde bulunan ve kolyeler, göğüs/vücut takıları ve kemerlerden oluşan, çok ince işlenmiş kehribar takı setleri ortaya çıkarılmıştır.

En zengin takı parçaları yüzlerce kehribar parçasının kullanıldığı bir çok sıradan oluşur. Artemision'da aslen çok sıralı bir mücevherin varlığı, kehribar oymaların hem çok sayıda olmasını hemde benzer şekillere sahip olmalarını açıklar. Bu parçaların hepsi aynı objeye aittirler. Bu obje büyük bir olasılıkla, MÖ 7. yüzyılda Efes Artemis'ine sunulan geleneksel bir adak hediyesi olan kemerdir. Yunan kadınları tanrıçaya, onun en önemli yeteneklerinden biri olan insan yaşamının yaratılışını simgeleyen, genellikle bronzdan yapılmış kemerler sunarlar. Efes Artemision'unda, olasılıkla bir bel kemeri olan, kehribar bir takının bulunması bu kutsal alana yeni bir ışık tutar. Geleneksel olarak İonia ve Anadolu'dan gelen adak hediyelerinden yola çıkılırken, artık Orta Akdeniz bölgesi, özellikle de kehribarın yerli halk arasında Erken Demir Çağı'ndan itibaren popüler olduğu Güney İtalya ile sıkı bağlantılar kurulabilmesini mümkün kılar.

Özellikle İtalya'da bugünkü Basilikata'da bulunan Siris Kolonisinin MS. 7. Yüzyılda Kolophon'dan gelen İonia'lı yerleşimciler tarafından kurulduğu ve bu koloni şehrinin o dönemde önemli bir oynadığı göz önüne alınırsa Güney İtalya ve İonia arasındaki bağlantı şaşırtmaz. Güney İtalya'dan gelen arkeolojik buluntular, hinterlandta yaşayan Oinotrialılar'ın kıyıda yaşayan Yunanlılarla temas halinde olduğunu gösterir.

Siris ve İonia arasındaki bağlantı, Oinotrialırın kehribar takılara olan düşkünlerinin Efes'e yayılmasını kolaylaştırmıştır. Baltık kehribarı ham olarak (**Kat. 535** ve **651**) İtalya'dan İonia'ya gelmiş ve tecrübeli zanaatkarlar İtalyan geleneğine bağlı kalarak çok sıralı bir süsleme yapmışlardır, ancak bunu yaparken boncuklar (Boncuk Tip 4b und 4c) ve pandantiflerde (Pandantif Tip 4 und 6) yeni formlar ve ara parçalarda ise yeni bir süslemler (Ara Parça Tip 7) geliştirmişlerdir. Boncuk, pandantif ve ara parçalarda görülen yeni formlar ile daha önce de bahsi geçen Artemision'da bulanan kakma işler, Efes'de bulanan bir kehribar atölyesinin etkinliğini göstermektedirler.

A. Naso, M. Ott, C. Posch, S. Privitera ve N. L. Saldalamacchia, katalogda listelenen kehribarları korundukları yerlere ve tipolojilerine göre tanımlamaktadırlar: 1905 kazısında elde geçen

buluntular, İstanbul Arkeoloji Müzesi'nde ve Londra'daki British Museum'da bulunmaktadır. Efes'te son yapılan Avusturya kazılarından gelen buluntular ise Selçuk'taki Efes Müzesi'ndedir (Bölüm 6).

Tercüme: Neşe Kul-Berndt

8 REFERENCES AND INDEXES

CONCORDANCE LISTS

1 Ephesos Archaeological Museum Selçuk
2 Archaeological Museum Istanbul
3 British Museum London

1 Amber finds in the Ephesos Archaeological Museum Selçuk

The inventory number of the Artemision excavation (ART) consists of six numbers. The first two refer to the year of excavation, indicated by the last two numbers, and the remaining four are the serial numbers of the excavated metrical unit, in German called the »Fundkiste« (= metrical excavation box). In the following list the serial number of the object found in every metrical unit, usually put at the end of the six numbers and separated by a dot, has been omitted. This number is listed in the catalogue entries.

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870348	44. 76. 112. 174. 175. 176. 198. 211. 231. 232. 254. 255. 307. 336
870349	57. 75. 216. 251. 252. 274. 288. 289. 416
870352	2. 3. 5. 28. 40. 41. 85. 103. 104. 110. 181. 182. 183. 184. 185. 217. 218. 236. 237. 249. 250. 253. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 277. 313. 314. 321. 322. 323. 324. 325. 326. 327. 328. 331. 335. 337. 338. 350. 351. 353. 356. 358. 359. 360. 361.417. 419. 420. 421. 422. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 475. 485. 491. 502. 506. 508. 511. 512. 513. 515. 516. 517. 519. 520. 522. 523.
870353	235. 320. 340. 344. 345. 504. 509
870354	58. 59. 177. 295
870362	315
870374	60. 178
870409	316
88/Basis A 115	6
880128	525
880170	83
880443	32
880594	308
880807	212. 319
880822	329
880915	505
880943	220. 309. 535
880946	31. 239. 240
880947	219. 510
880949	495
880974	186
892609	341. 343
892645	187. 496
900374	296. 349
900380	310. 536. 537
900402	61. 299
900427	493
900434	62. 179
900483	113
900486	292. 293. 357. 539
901329	298
910496	81. 199
910584	82
910611	530
930672	532
930697	188
930984	213
931010	259
931107	492
931289	63
940014	311
940085	84
940110	260
940135	339
940146	474
940242	64
940268	533
Unknown	490

2 Amber finds in the Archaeological Museum Istanbul

AMI Inv.	**Cat.**
2907	591
2907.1	548
2907.7	636
2907.10	637
2907.15	638
2907.18	639
2907.22	640
2907.29	647
2907.34	641
2907.38	648
2907.43	642
2907.45	570
2907.49	546
2907.50	574
2907.53	541
2907.56	643
2907.59	644
2907.65	645
2907.66	549
2907.71	550
2907.75	542
2907.76	646
2907.79	576
2909.2	584
2909.3	585
2909.4	571
2909.5	579

2909.6	649
2909.7	658
2910.1	596
2910.2	597
2910.3	623
2910.4	624
2911.1	659
2911.2	631
2911.3	632
2911.4	551
2911.5	593
2911.6	552
2911.7	586
2911.8	650
2911.9	587
2911.10	588
2911.11	589
2911.12	590
2912	540
2914	578
2915	651
2916	654
2917	630
2918	655
2919	595
2921	633
2923	634
2924	652
2931.1	558
2931.2	559
2931.3	560
2931.4	561
2931.5	562
2931.6	563
2931.7	564
2931.8	553
2931.9	565
2931.10	554
2931.11	555
2931.12	556
2931.13	580
2931.14	566

3 Amber finds in the British Museum London

BM Inv.	**Cat.**
1907.12–1.496	544
1907.12–1.497	567
1907.12–1.498	572
1907.12–1.499	573
1907.12–1.500	568
1907.12–1.501	581
1907.12–1.502	582
1907.12–1.504	583
1907.12–1.505	569
1907.12–1.506	547
1907.12–1.508	592
1907.12–1.509	594
1907.12–1.510	656
1907.12–1.511	628
1907.12–1.512	625
1907.12–1.513	626
1907.12–1.514	627
1907.12–1.515	657
1907.12–1.516	629
1907.12–1.517	611
1907.12–1.518	612
1907.12–1.519	609
1907.12–1.520	598
1907.12–1.521	613
1907.12–1.522	599
1907.12–1.523	610
1907.12–1.524	614
1907.12–1.525	615
1907.12–1.526	616
1907.12–1.527	617
1907.12–1.528	600
1907.12–1.529	601
1907.12–1.530	602
1907.12–1.531.5h	603
1907.12–1.532.5c	604
1907.12–1.533	605
1907.12–1.534	606
1907.12–1.535	607
1907.12–1.536	608
1907.12–1.537	618
1907.12–1.538	619
1907.12–1.539	620
1907.12–1.596a	621
1907.12–1.596b	622
1907.12–1.596d	653
1907.12–1.626	545
1907.12–1.641	577

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EDITIONS AND ABBREVATIONS OF CUNEIFORM DOCUMENTS

The abbreviations used in chapter 4 »Ancient Near Eastern Amber« follow the guidelines of the »Reallexikon der Assyrologie und Vorderasiatischen Archäologie« (2017), available at <https://rla.badw.de/reallexikon/abkuerzungslisten.html>.

AbB	Altbabylonische Briefe in Umschrift und Übersetzung, hrsg. von F. R. Kraus (Leiden 1964 ff.).
AHw	W. von Soden, Akkadisches Handwörterbuch (Wiesbaden 1959–1981).
BA	Beiträge zur Assyrologie (Lepizig).
BATSH	Berichte der Ausgrabung Tall Šēh Ḥamad/Dūr katlimmu (Berlin).
BIN	Babylonian Inscriptions in the Collection of James B. Nies (New Haven).
CAD	The Assyrian Dictionary of the Oriental Institute of the University of Chicago (Chicago 1956?2010).
CDA	J. Black – A. George – N. Postgate, A Concise Dictionary of Akkadian, SANTAG. Arbeiten und Untersuchungen zur Keilschriftkunde V ²(Wiesbaden 2000).
CHD	The Hittite Dictionary of the Oriental Institute of the University of Chicago (Chicago 1980–).
CT	Cuneiform Texts from Babylonian Tablets in the British Museum (London).
CTH	E. Laroche, Catalogue des textes hittites (Paris 1971).
CUA	Catholic University of America Cuneiform Texts (Washington).
CUSAS	Cornell University Studies in Assyriology and Sumerology (Bethesda).
DP	M.-F. Allotte de la Fuÿe, Documents présargoniques (Paris 1908–1920).
ePSD2	The Electronic Pennsylvania Sumerian Dictionary. Project of the Babylonian Section of the University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum) (2004 ff.) <http://oracc.museum.upenn.edu/epsd2/> (12. 04. 2020).
ETCSL	Electronic Text Corpus of Sumerian Literature (Oxford 2006) <https://etcsl.orinst.ox.ac.uk> (12. 04. 2020).
Hh.	Lexical series HAR.ra = hubullu (= MSL V–XI).
HW²	J. Friedrich – A. Kammenhuber – I. Hoffmann (hrsg.), Hethitisches Wörterbuch. Zweite, völlig neu bearbeitete Auflage auf der Grundlage der edierten hethitischen Texte (Heidelberg 1975 ff.).
IBoT	Istanbul Arkeoloji Müzelerinde bulunan Boğazköy tabletlerinden seçme metinler (Istanbul 1944 ff.).
ICK	Inscriptions cunéiformes du Kultépé. 1: B. Hrozný (= Monografie Archívu Orientálního 14, Prag 1952); 2: L. Matouš (Prague 1962).
ISET	İstanbul Arkeologji Müzelerınde bulunan Sumer edebî tablet ve parçaları (Sumerian Literary Tablets and Fragments in the Archaeological Museum of Istanbul), 1: M. Çığ – H. Kızılyay – S. N. Kramer (= TTKY 6/13, 1969); 2: S. N. Kramer (TTKY 6/13a, 1976).
IV R²	T.G. Pinches, The Cuneiform Inscriptions of Western Asia, vol. IV: A selection from the miscellaneous inscripttiond of Assyria, prepared … by … Sir H. C. Rawlinson ²(London 1891).
JCSSS	Journal of Cuneiform Studies Supplemental Series.
KAR	E. Ebeling, Keilschrifttexte aus Assur religiösen Inhalts I. II (Leipzig 1919–1923).
KBo	Keilschrifttexte aus Boghazköi (Leipzig 1916 ff.).
KpT	E. Rieken (ed.), Keilschrifttafeln aus Kayalıpınar 1. Textfunde aus den Jahren 1999–2017 (Wiesbaden 2019).
KUB	Keilschrifturkunden aus Boghazköi (Berlin 1921–1990).
LKA	L. Ebeling, Literarische Keilschrifttexte aus Assur (Berlin 1953).
MHET	Mesopotamian History and Environment: Texts (Ghent).
MSL	Materialien zum sumerischen Lexikon/Materials for the Sumerian Lexicon (Rome).
MKT	O. Neugebauer (Hrsg.), Mathematische Keilschrift-Texte (Berlin 1935–1937).
Nik 1	M. V. Nikol'skij, Dokumenty chozjajstvennoj otčetnosti drevnejšej ĕpochi Chaldei iz sobranija N. P. Lichačeva (St. Petersburg 1908).
OBGT	Old Babylonian Grammatical Texts (MSL 4/2).
OBO	Orbis Biblicus et Orientalis (Fribourg)
OECT	Oxford Editions of Cuneiform Texts (Oxford).

SAA	SAA (Helsinki).
SF	A. Deimel, Schultexte aus Fara (Leipzig 1923).
STT	The Sultantepe Tablets. 1: O. R. Gurney – J. J. Finkelstein; 2: O. R. Gurney – P. Hulin (= Occasional Publications of the British Institute of Archaeology at Ankara 3, 1957, and 7, 1964) (London).
TCL	Textes cunéiformes. Musée du Louvre, Département des Antiquités Orientales (Paris 1910 ff.).
TEBA	M. Birot, Tablettes économiques et administratives d'époque babylonienne ancienne conservées au Musée d'art et d'histoire de Genève (Paris 1969).
TMH	Texte und Materialien der Frau Professor Hilprecht Collection of Babylonian Antiquities im Eigentum der (Friedrich Schiller-) Universität Jena (Leipzig 1932–1935); NF 1–2 (Leipzig 1937); 3–5 (Berlin 1961–1976); 6–7 (Wiesbaden 2003–2005).
TSA	H. de Genouillac, Tablettes sumériennes archaïques: matériaux pour servir à l'histoire de la société sumérienne (Paris 1909).
UCLMA	Tablets in the collection of the Robert H. Lowie Museum of Anthropology of the Univ. of California at Berkeley.
UET	Ur Excavations. Texts (London 1928 ff.).
UVB	Vorläufiger Bericht über die von der Notgemeinschaft der Deutschen Wissenschaft in Uruk-Warka unternommenen Ausgrabungen (Berlin).
VAT	Vorderasiatische Abteilung der Staatlichen Museen zu Berlin.
VS	Vorderasiatische Schriftdenkmäler der Königlichen (Staatlichen) Museen zu Berlin (Leipzig).
YBC	Yale Babylonian Collection (Yale University, New Haven).
YOS	Yale Oriental Series, Babylonian Texts (New Haven/London/Oxford 1915 ff.)

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PLATES



1 Artemision of Ephesos, excavation 1988, trench 583 east of Naos 1/2, view from northeast. In the left lower corner, the western part of Naos 1/2, enclosing the Large Western Basis of Sekos 1. At the upper edge, workmen leaning against the Inner Sekos Enclosure of Dipteros 1. At the right, workmen hoeing the earth with big hoes within the metric excavation units (»Fundkisten«) outlined by red cord and marked by wooden pegs with the number of the individual unit



2 Artemision of Ephesos, excavation 1987. Green Schist Basis of Naos 2, seen from southwest. At the lower edge, the well-preserved western wall of green schist blocks (consolidated with concrete on top). Left of the workman's left foot, the emerging Rectangular Basis of Naos 1. Right of the workman's right foot, scarce remains of the former eastern wall of the Green Schist Basis before their removal: limestone slabs, possible of the foundation layer, and two reversed blocks of green schist. At the background, north and east walls of the cella of Naos 1 and 2

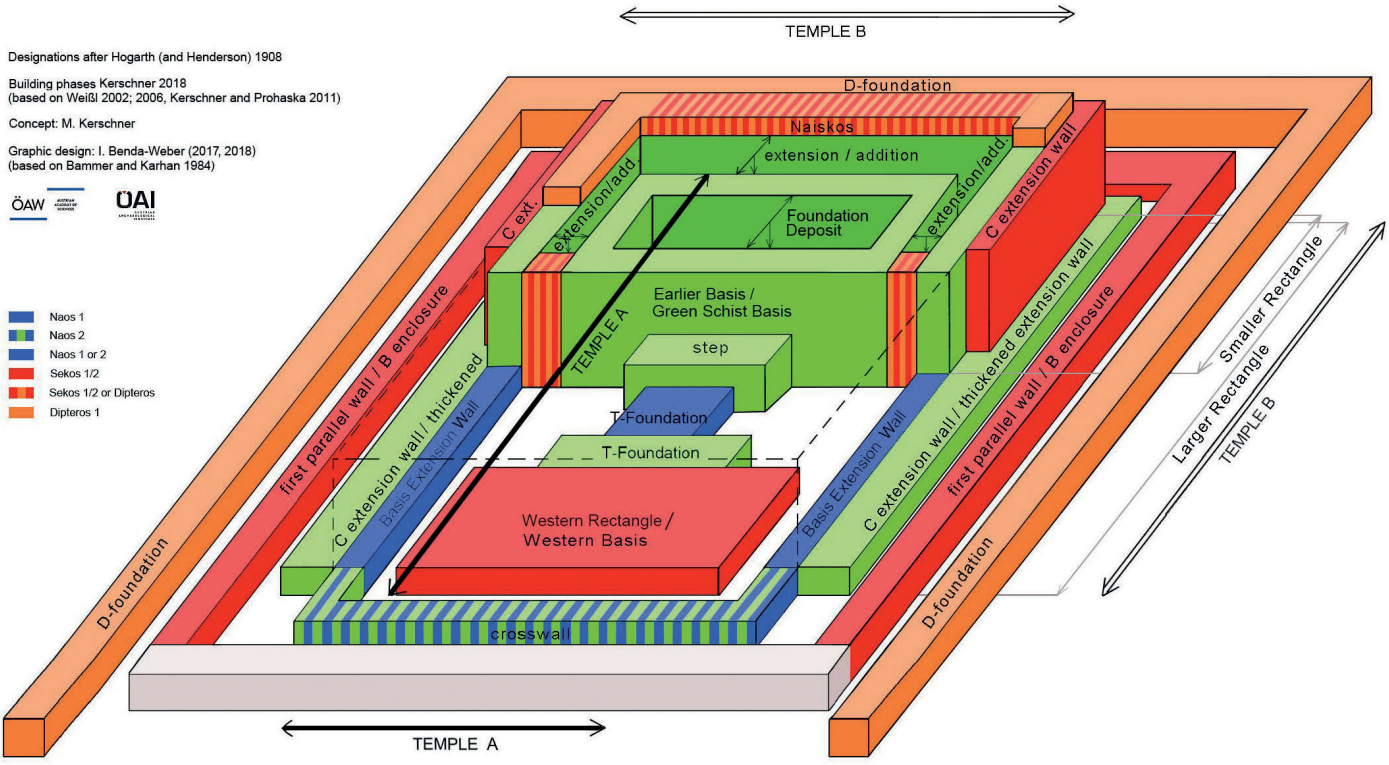
Plate 2



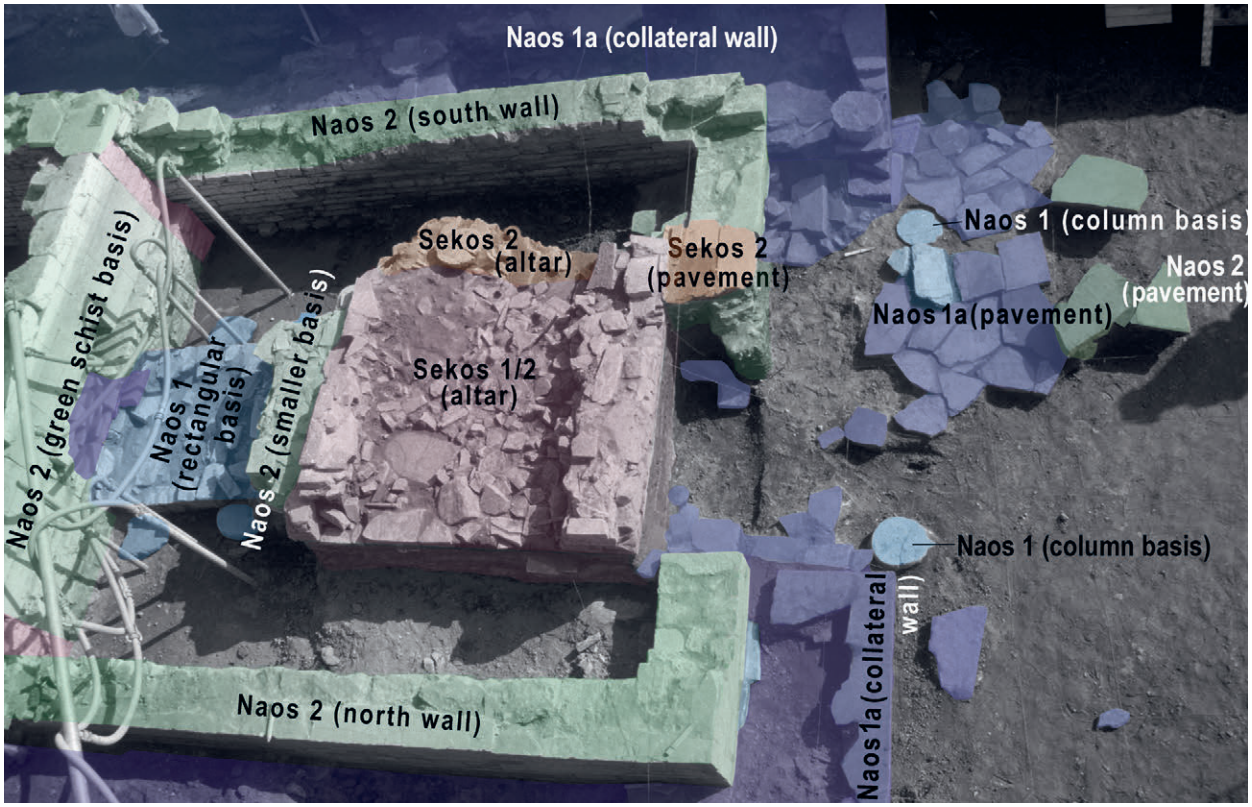
1 Artemision of Ephesos, excavation 1987. Green Schist Basis of Naos 2, seen from northwest. At the lower right corner, part of the western wall of green schist blocks. Left of it, the eastern part of the Rectangular Basis of Naos 1. In the centre, scarce remains of the former eastern wall of the Green Schist Basis before their removal: limestone slabs, possible of the foundation layer (under the wooden box), and two reversed blocks of green schist (left of the hacking workman). At the lower left corner, north wall, at the background, east and south walls of the cella of Naos 1 and 2



2 Artemision of Ephesos, excavation 1986–1991. Excavated earth from the metrical excavation units (»Fundkisten«), prepared for wet-sifting and stored temporarily in the area between Dipteros 2 and the Classical altar



1 Artemision of Ephesos. Schematic representation of the Central Basis. Labelling according to Hogarth – Henderson 1908a. The colour of a certain structure indicates to which of the five successive Archaic temples it belongs



2 Artemision of Ephesos, excavation 1988. Western part of the Central Basis, seen from the north. Structures belonging to Naos 1 (highlighted in blue), Naos 2 (green) and Sekos 1/2 (red)

Plate 4



1 Artemision of Ephesos. Excavation of the Central Basis in 1988. View from the west. In the centre, cella of Naos 1/2, surrounded by the Collateral Wall of Naos 2. On top of the rear part of the cella marble blocks of the naiskos of Dipteros 1. Within the cella, the western side of the Green Schist Basis of Naos 2, in front of it the Large Western Basis of Sekos 1/2. Parallel to the cella at the left and right margins the Inner Sekos Enclosure of Sekos 2 and Dipteros 1



2 Artemision of Ephesos, excavation 1988. Eastern part of Naos 1/2, seen from the north. Left, the rear wall of the cella, on top of it the remains of the naiskos of Dipteros 1. In the centre, the western wall of the Green Schist Basis of Naos 2, later extended to the north and on top of its foundation blocks of the naiskos of Dipteros 1. Beneath the Green Schist Basis, the Rectangular Basis, and column basis of Naos 1. At the eastern fringe, the Small Western Basis of Naos 2



1 Artemision of Ephesos, excavation 1988. Green Schist Basis of Naos 2, seen from the west. In the middle, western wall, and north-western corner of the Green Schist Basis, built on top of the Rectangular Basis of Naos 1. Excavated clay floor of Naos 1. In the lower right corner, Small Western Basis of Naos 2. At the left and upper fringes, cella walls of Naos 1/2



2 Artemision of Ephesos, excavation 1905. Casts of the 19 electrum coins of the Pot Hoard (originals in the Arkeoloji Müzesi, Istanbul) and the original jug (British Museum, inv. 1907.12.1.686) in which they were found

3 Artemision of Ephesos, excavation 1994. Sacrificial deposit in the already dried up riverbed east of east of Naos 2/Sekos 1 seen from south. At the left, rubble embankment. In the centre, depositional layer G (ca. 630 BC) *in situ*, comprising pottery (a stemmed dish of Black-on-Red ware in the middle), cooking utensils (an iron implement, presumably part of a spit, to the left of the dish) and animal bones (a lower jaw at the back). At the right edge, Limestone Basis B which was built atop the infill



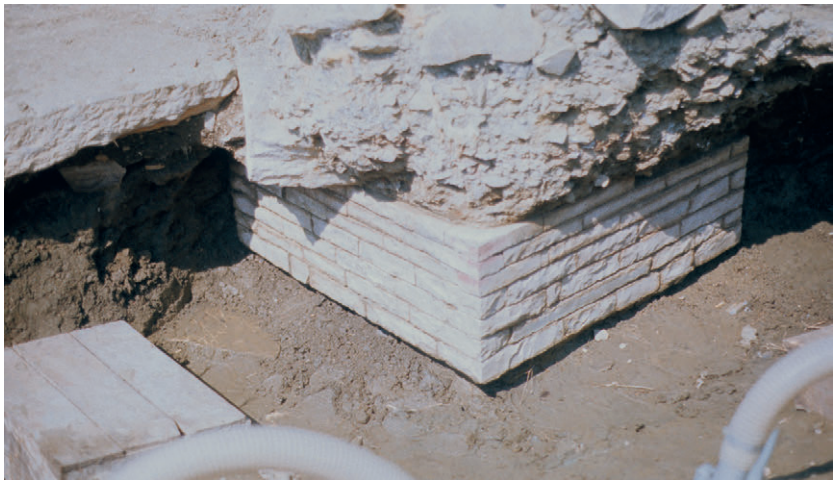
Plate 6



1 Artemision of Ephesos, excavation 1994. Sacrificial deposit in the nearly dried out riverbed east of east of Naos 2/Sekos 1. Central profile seen from southwest. From bottom to top: riverbed, depositional layers C–G (ca. 630–610 BC), infill A–B (ca. 600 BC), and Limestone Basis B on top of it. At the left embankment built of rubble and cobble



2 Artemision of Ephesos, excavation 1990. In the centre, the Limestone Basis D (view from southwest), covered by the foundation of the northern *krepidoma* of Dipteros 1, here preserved its lowest layer. Above it, a longitudinal rib of the grid foundation of the northern *krepidoma* of the Late Classical Dipteros 2. The amber objects were found in the black ashy layer beneath the foundation of Dipteros 1, which adjoins Basis D from both sides, and possibly in the sandy layer beneath, which is just under excavation on this photo. The lowest excavated layer is a pavement of marly limestone slabs



3 Artemision of Ephesos, excavation 1987. Limestone Basis D shortly after its discovery, view from southwest. On top of it, the debris of the construction layer of the northern *krepidoma* of the Late Classical Dipteros 2. In the upper left corner, a block of the foundation of the northern *krepidoma* of Dipteros 1



M. 1,5:1
0 2 cm

1 Female bust cat. 1



2 Human head cat. 2



3 Human head cat. 3

M. 3:1
0 2 cm

Plate 8



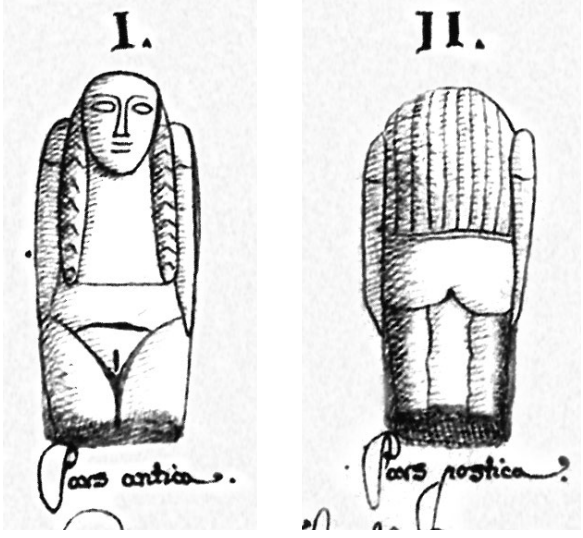
1 Scarab cat. 4



2 Duck-shaped protome cat. 5



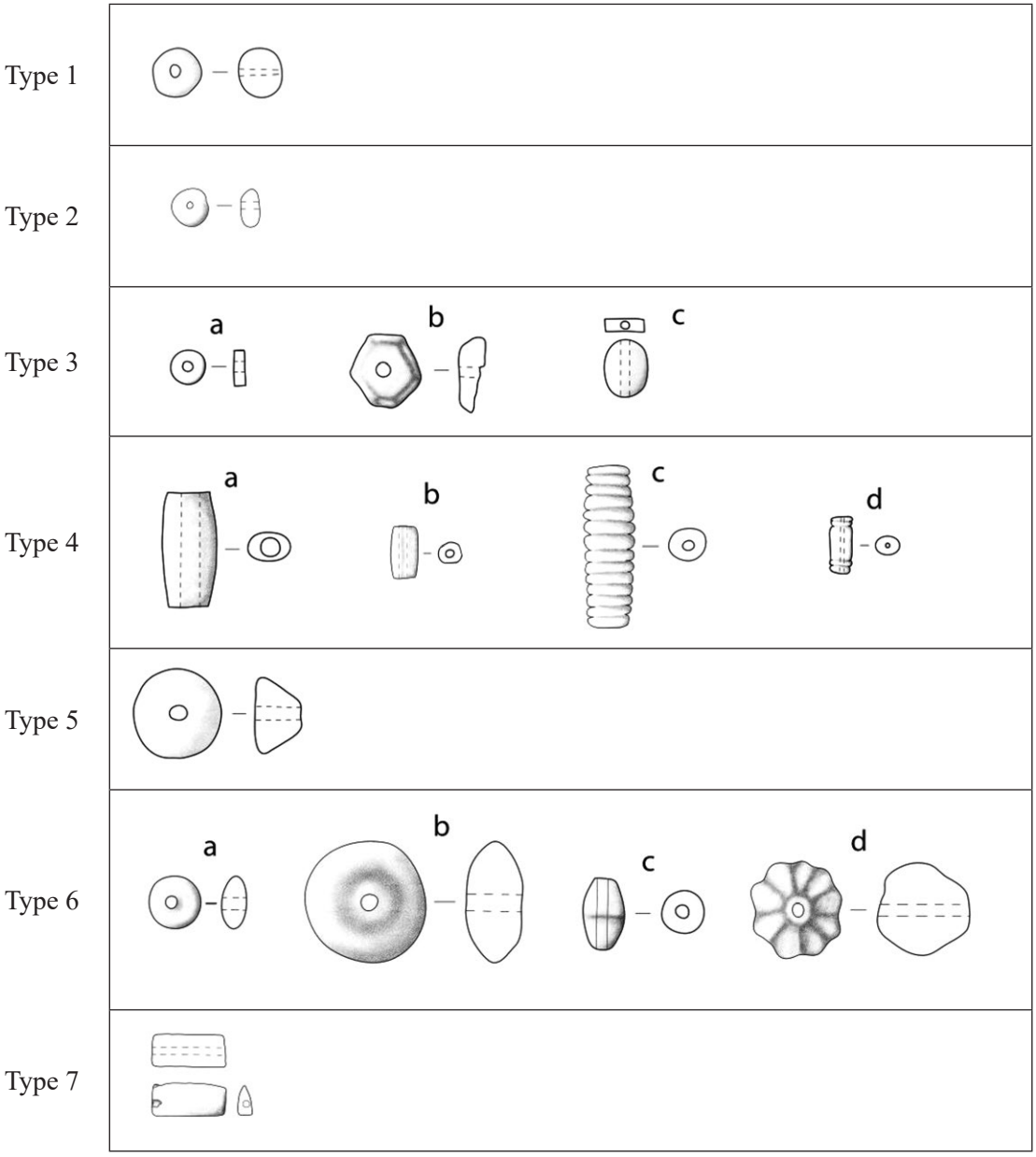
3 Statuette cat. 540



4 Amber statuette from Adria, lost

M. 1,5:1
0 2cm

Beads



Typology of the amber beads from the Artemision

Plate 10



1 Bead cat. 13



2 Side and above views of the bead cat. 32 with the portion of a bone needle in the bore-hole



3 Side view of the bead cat. 33



4 Side and above views of the bead cat. 85



5 Side view of the bead cat. 115



6 Side view of the bead cat. 188



7 Side view of the bead cat. 200



8 Side view of the bead cat. 213



9 Side view of the bead cat. 262



10 Side and above views of the bead cat. 276



11 Side view of the bead cat. 275

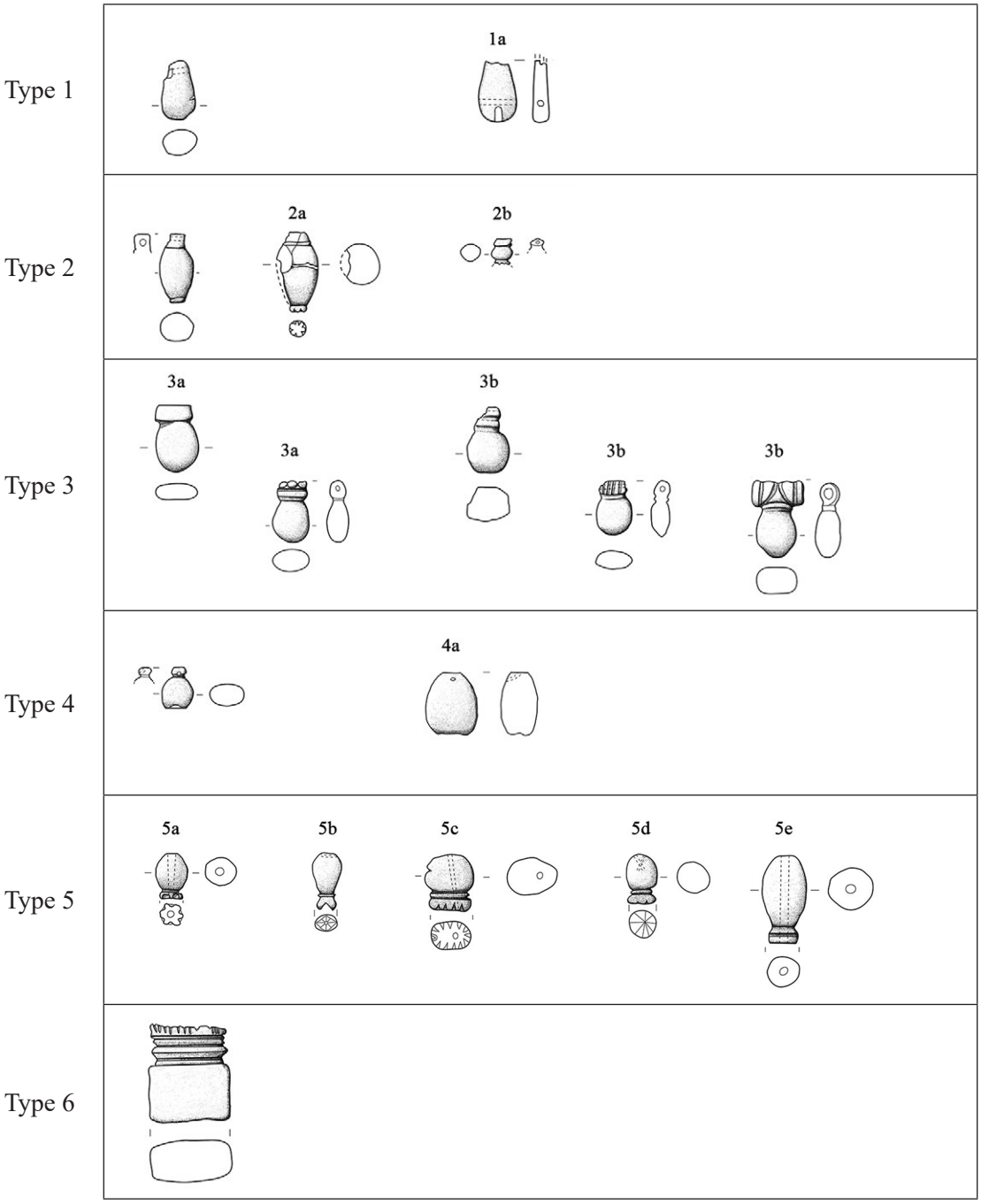


12 Side and above views of the bead cat. 277

M. 1,5:1

0 2cm

Pendants



Typology of the amber pendants from the Artemision

Plate 12



1 Side and above views of the pendant cat. 297



2 Side view of the pendant cat. 592



3 Side view of the pendant cat. 594



4 Side and above views of the pendant cat. 303



5 Side view of the pendant cat. 314



a b

6 Side view of the pendants cat. 605 (a) and 609 (b)



7 Side view of the pendant cat. 319



8 Side and above views of the pendant cat. 341



9 Above, side and below views of the pendant cat. 343

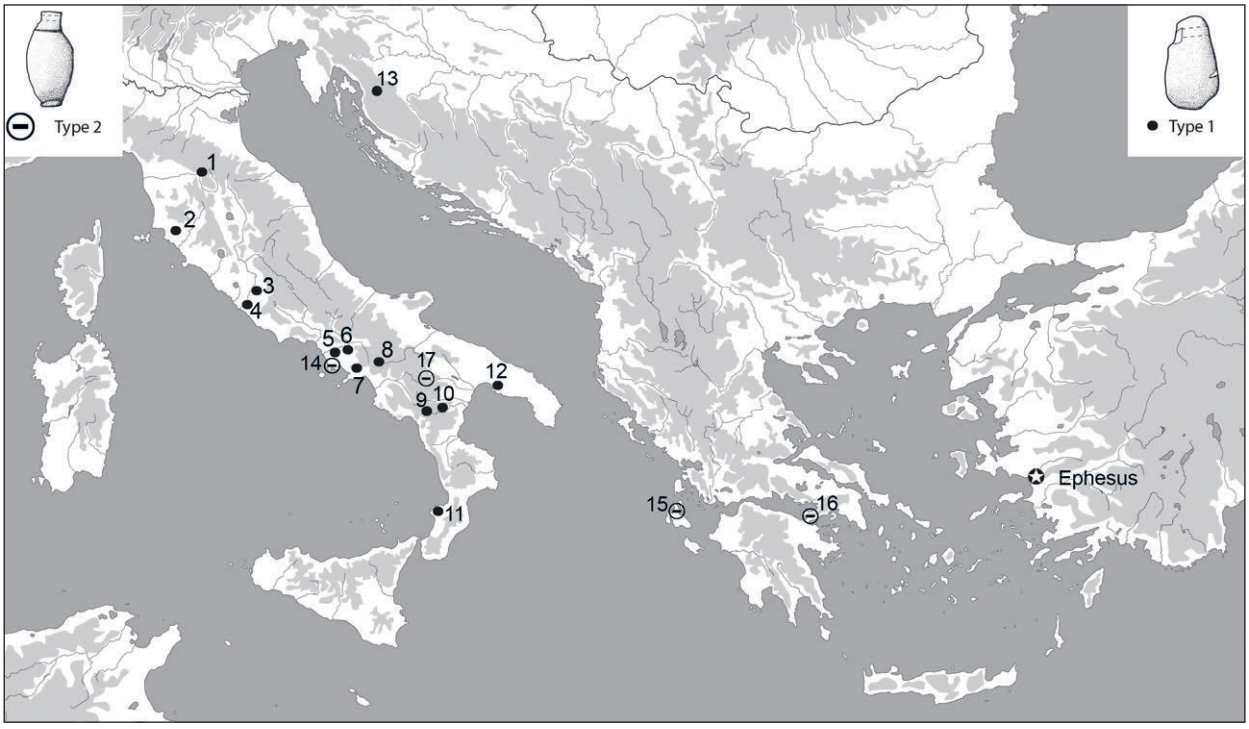


a b

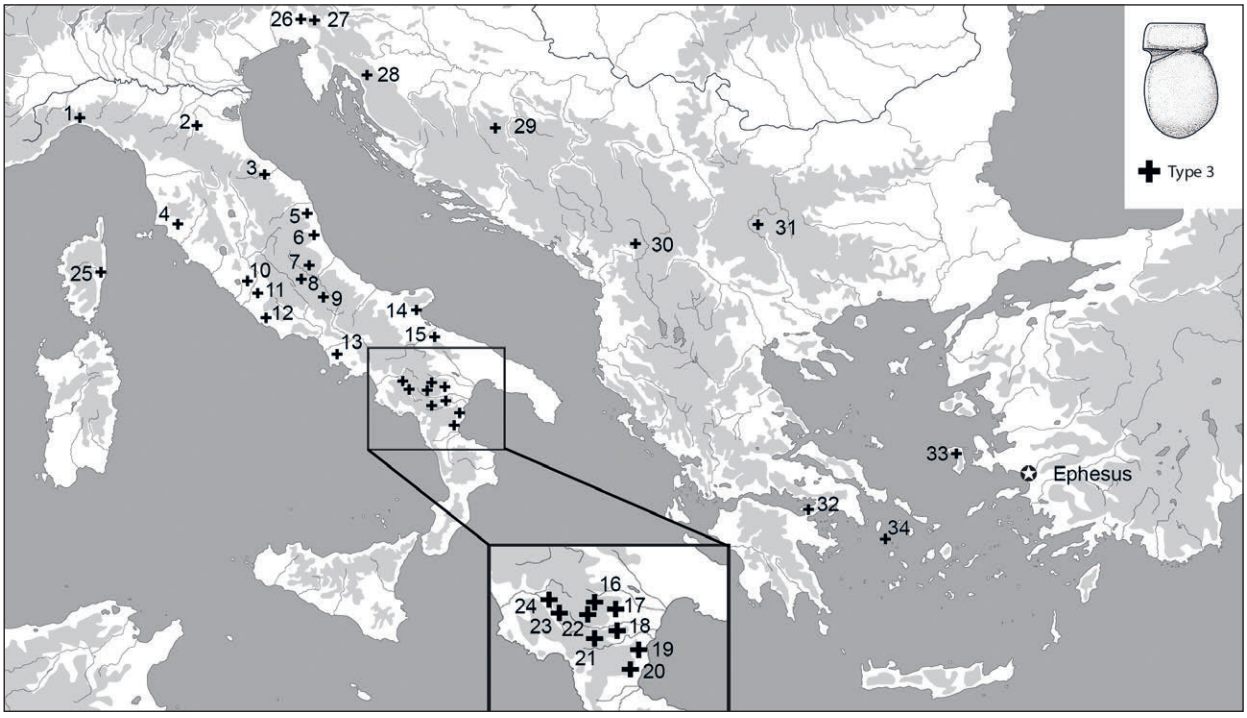
10 Side view of the pendants cat. 627 (a) and 628 (b)

M. 1,5:1

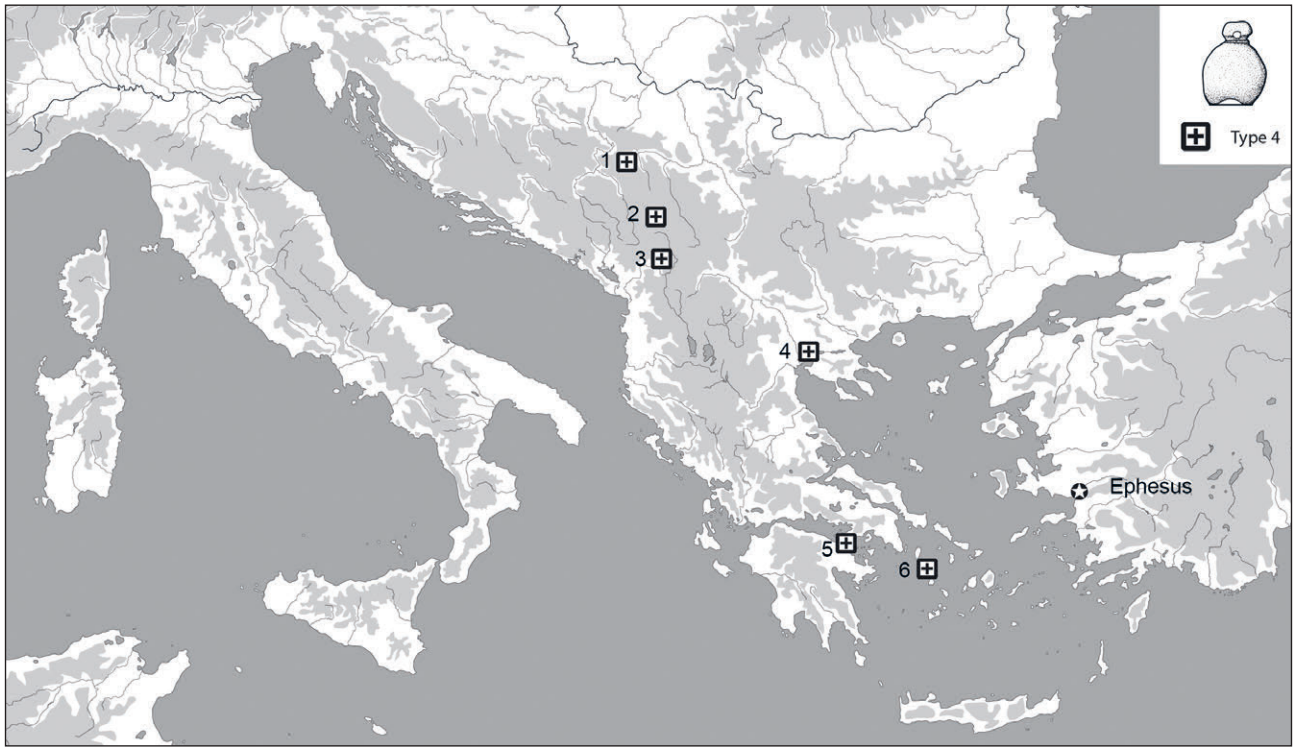
0 2 cm



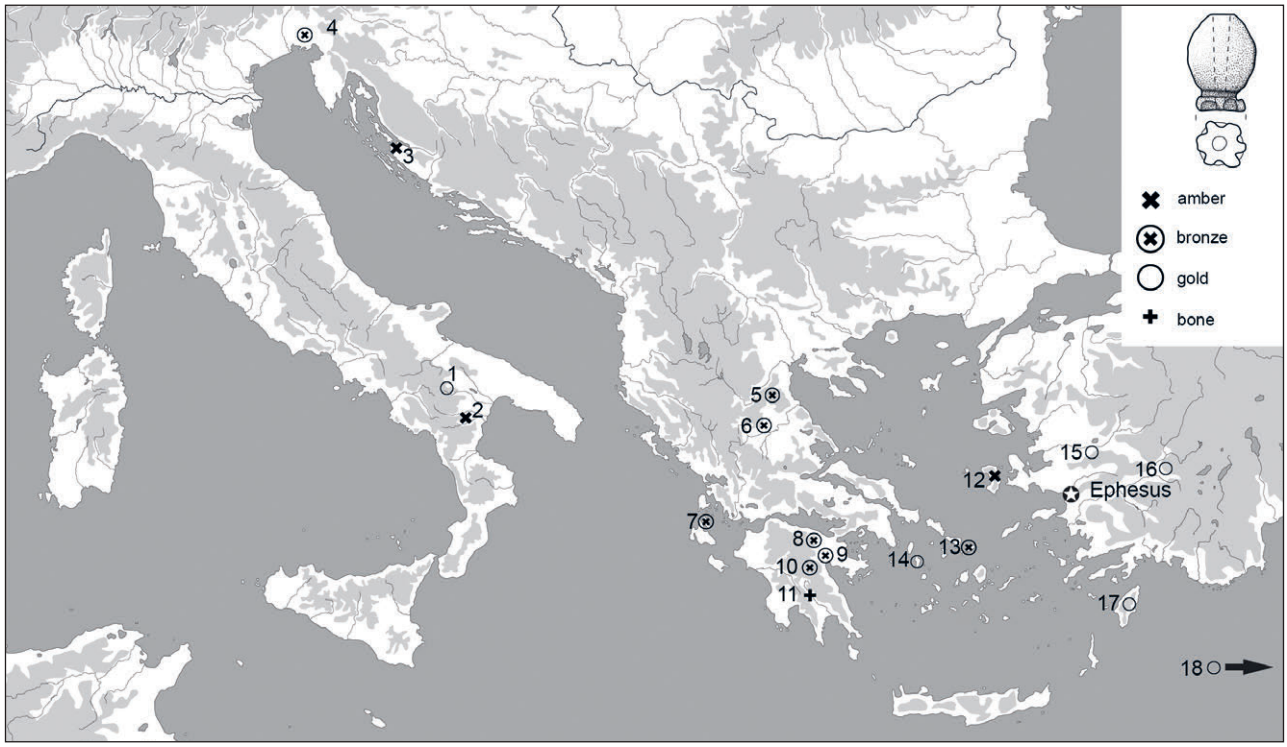
1 Distribution in the Mediterranean of the pendants types 1 and 2
1 Bologna. – 2 Vetulonia. – 3 Osteria dell'Osa. – Colonna (necropoli in località Barberini). – 5 Capua. – 6 Calatia. – 7 Longola, Poggiomarino. – 8 Cairano. – 9 Latronico. – 10 Chiaromonte. – 11 Torre Galli. – 12 Taranto. – 13 Kompolje. – 14 Cumae. – 15 Ithaca. – 16 Perachora. – 17 Braida di Vaglio



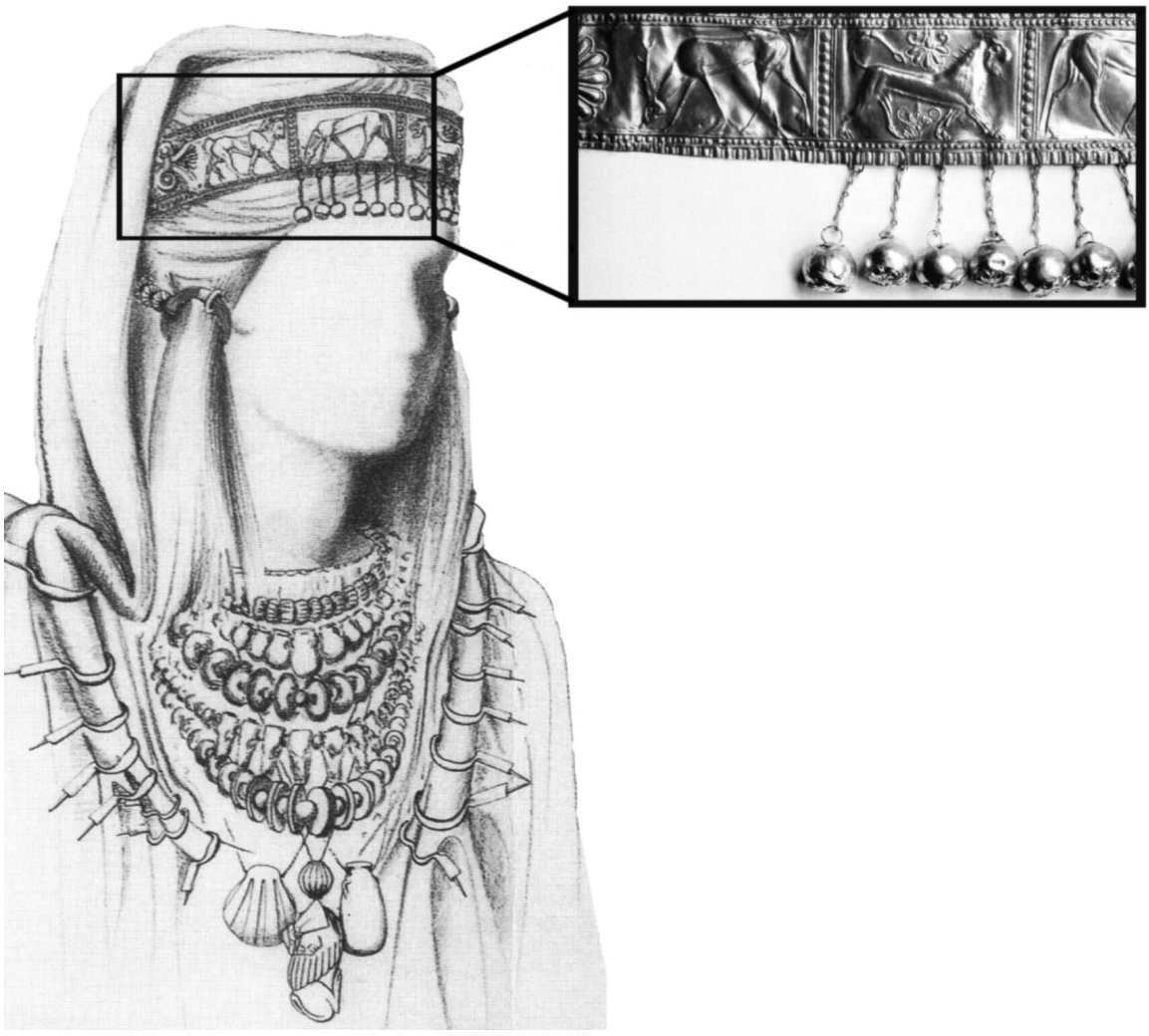
2 Distribution in the Mediterranean of the pendants type 3
1 Genua. – 2 Bologna. – 3 Verucchio. – 4 Vetulonia. – 5 Belmonte Piceno. – 6 Campovalano. – 7 Fossa. – 8 Scurcola Marsicana. – 9 Alfedena. – 10 Veii. – 11 Osteria dell'Osa. – 12 Satricum. – 13 Calatia. – 14 Cupola-Beccarini. – 15 Minervino Murge. – 16 Guardia Perticara. – 17 Alianello Cazzaiola. – 18 Chiaromonte. – 19 Amendolara. – 20 Francavila Marittima. – 21 Latronico. – 22 Armento. – 23 Padula. – 24 Sala Consilina. – 25 Aleria. – 26 Magdalenska Gora. – 27 Stična. – 28 Kompolje. – 29 Galsinac. – 30 Romaja. – 31 Katrishte. – 32 Perachora. – 33 Kato Phana. – 34 Kythnos



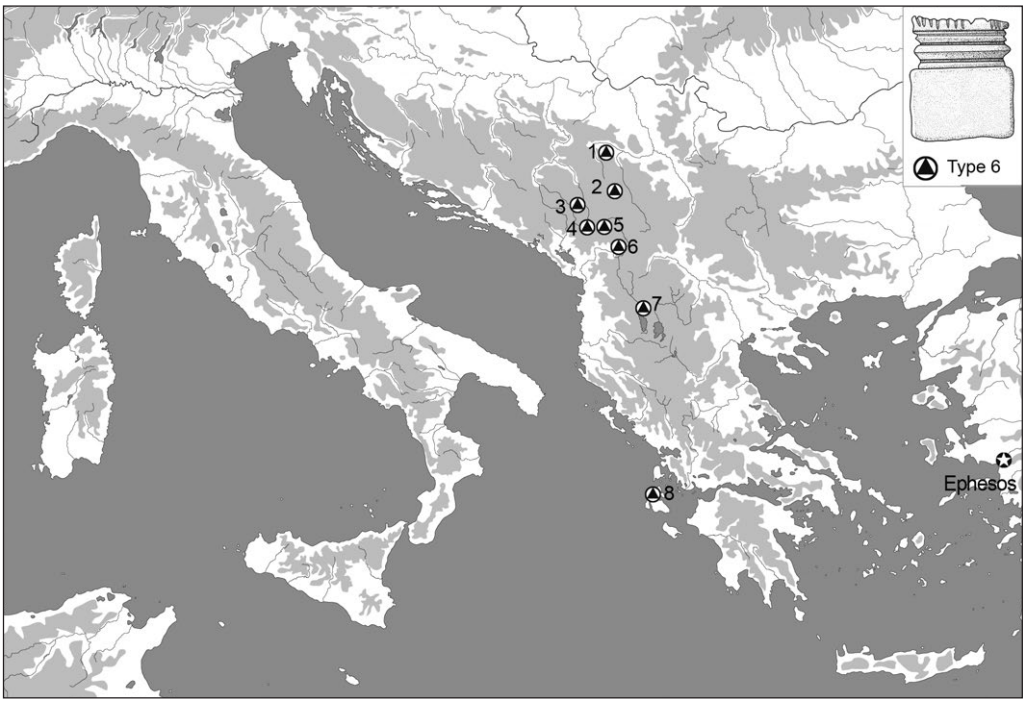
1 Distribution in the Mediterranean of the pendants type 4
1 Atenica. – 2 Novi Pazar. – 3 Romaja. – 4 Aivasil (near Lake Lagkadas). – 5 Perachora. – 6 Kythnos



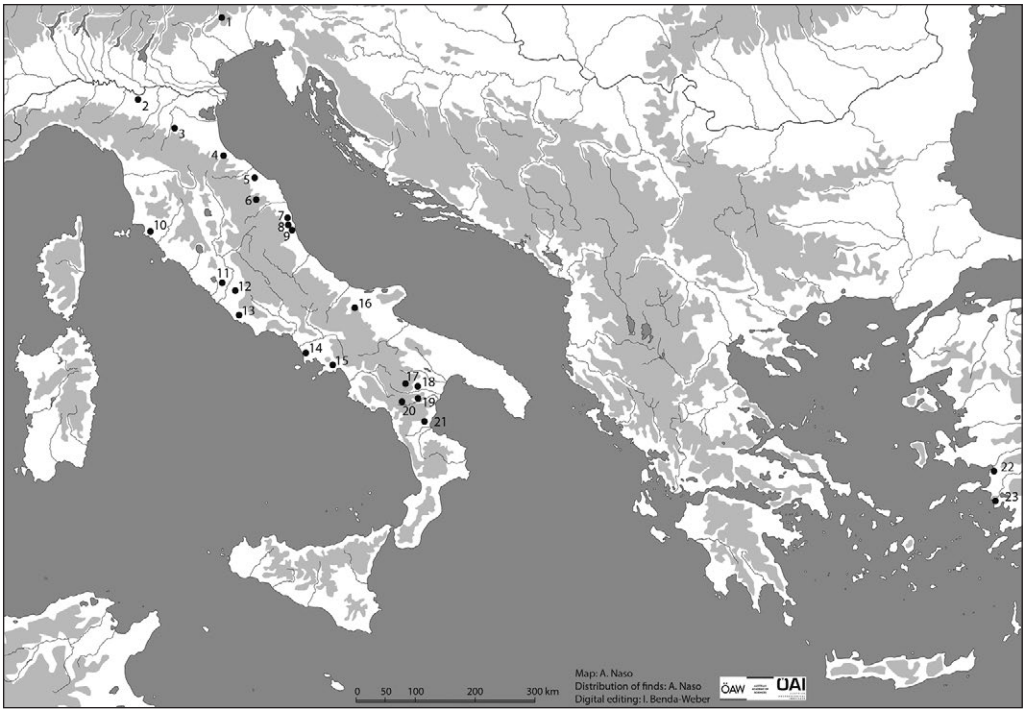
2 Distribution in the Mediterranean of the pendants type 5
1 Braida di Vaglio. – 2 Chiaromonte. – 3 Nin, Zaton. – 4 Magdalenska Gora. – 5 Valanida. – 6 Kardista. – 7 Ithaca. – 8 Corinth. – 9 Argos. – 10 Tegea. – 11 Sparta. – 12 Kato Phana. – 13 Delos. – 14 Kythnos. – 15 Sardis. – 16 Uşak. – 17 Rhodos. – 18 Enkomi (Cyprus)



Reconstruction drawing of the female parure from the grave Braida di Vaglio 102 and detail of the gold diadem

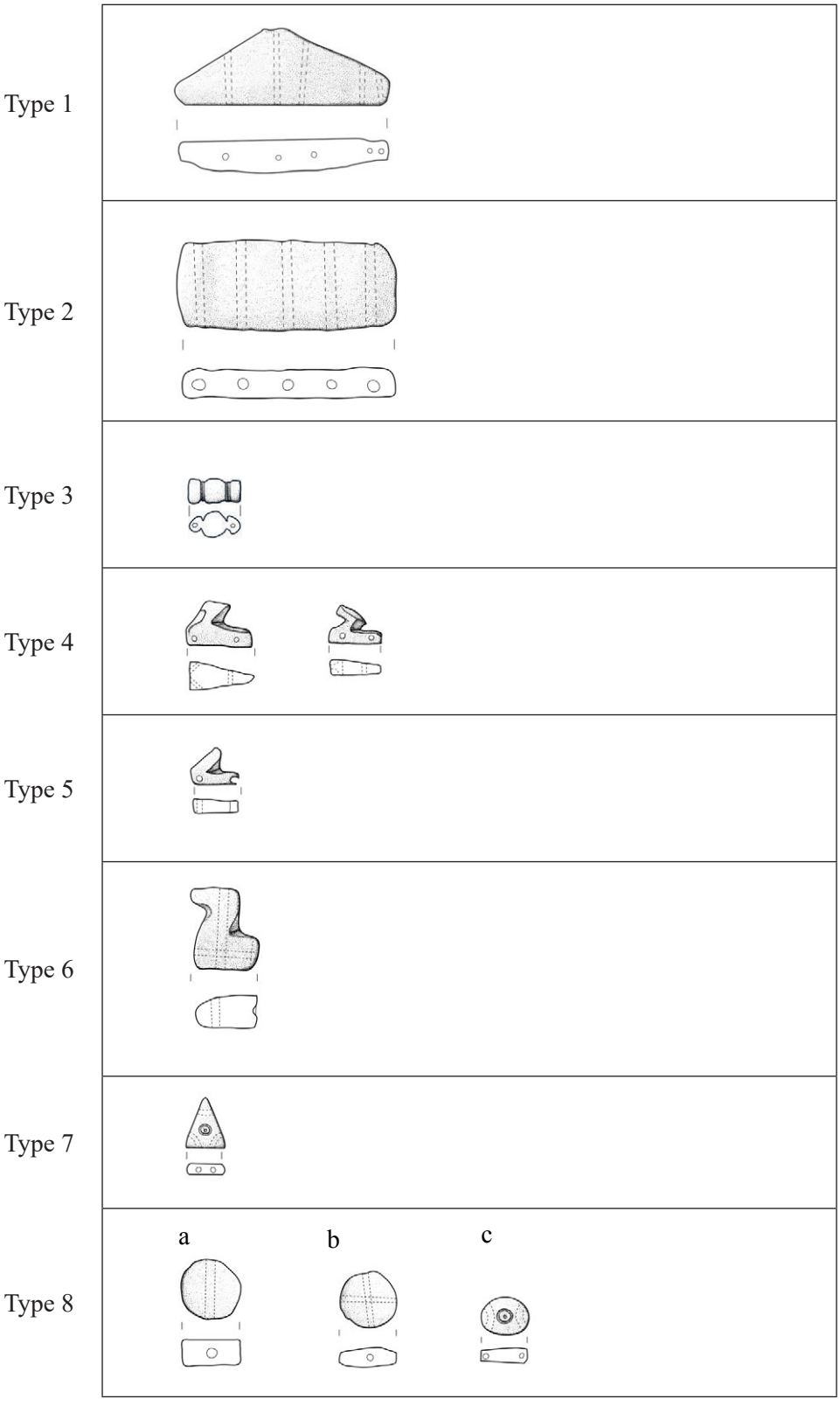


1 Distribution map of the pendants type 6
1 Atenica. – 2 Novi Pazar. – 3 Lisjivo Polje (Donje Luge). – 4 Rogovo Fuse. – 5 Pécha Bonja. – 6 Romaja. – 7 Trebenishte. – 8 Ithaca



2 Distribution map of the amber spacers in Italy and in the Aegean, 8th–6th century BC
1 Pieve d'Alpago. – 2 Brescello. – 3 Bologna. – 4 Verucchio. – 5 Novilara. – 6 Matelica. – 7 Ripatransone. – 8 Colli del Tronto. – 9 Tortoreto. – 10 Vetulonia. – 11 Veii. – 12 Osteria dell'Osa. – 13 Satricum. – 14 Cumae. – 15 Poggiomarino. – 16 Carlantino. – 17 Guardia Perticara. – 18 Alianello. – 19 Chiaromonte. – 20 Latronico. – 21 Francavilla Marittima. – 22 Ephesos. – 23 Miletos

Spacers



Typology of the amber spacers from the Artemision

Plate 18



1 Side view of the spacer cat. 350





2 Side view of the spacer cat. 351

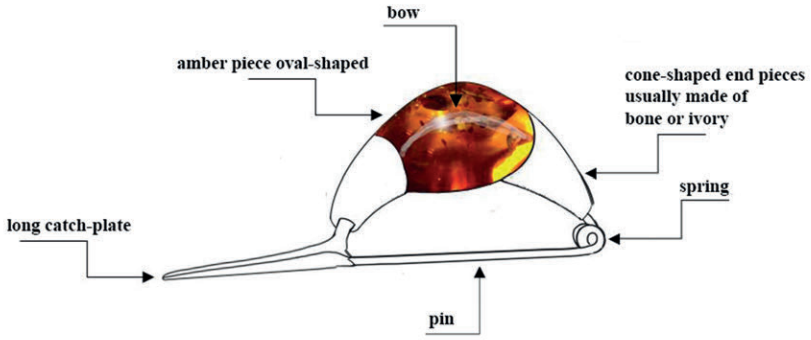




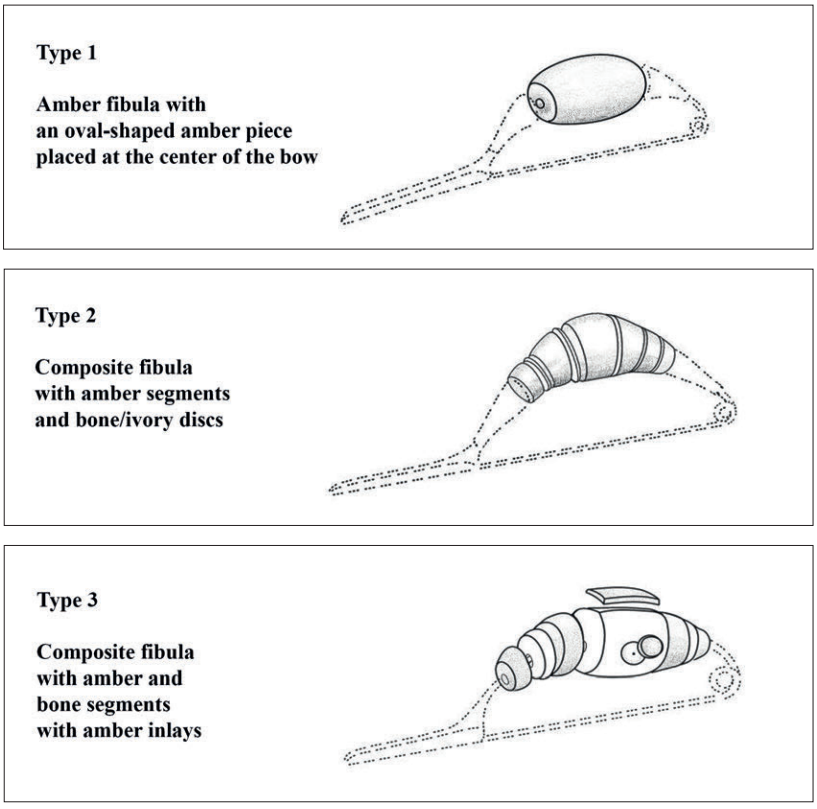
4 Above view of the spacer cat. 430



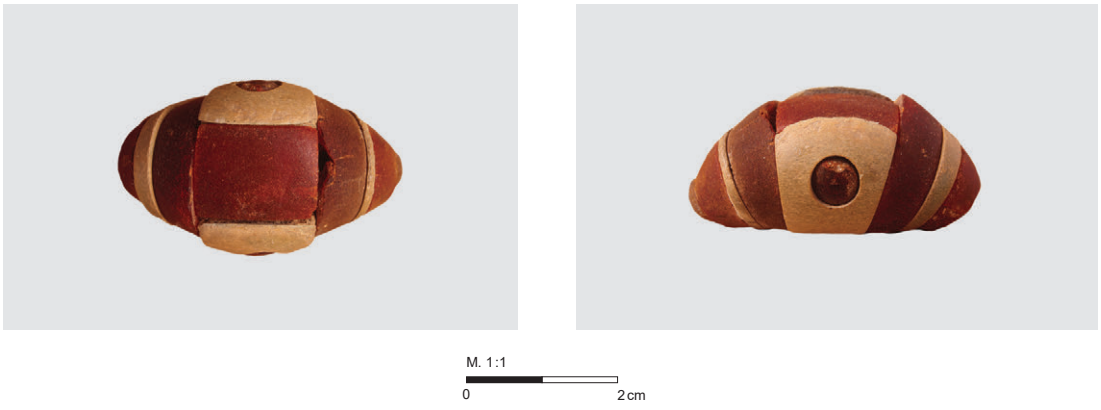
3 Above view of the spacers cat. 362–388 (without scale)



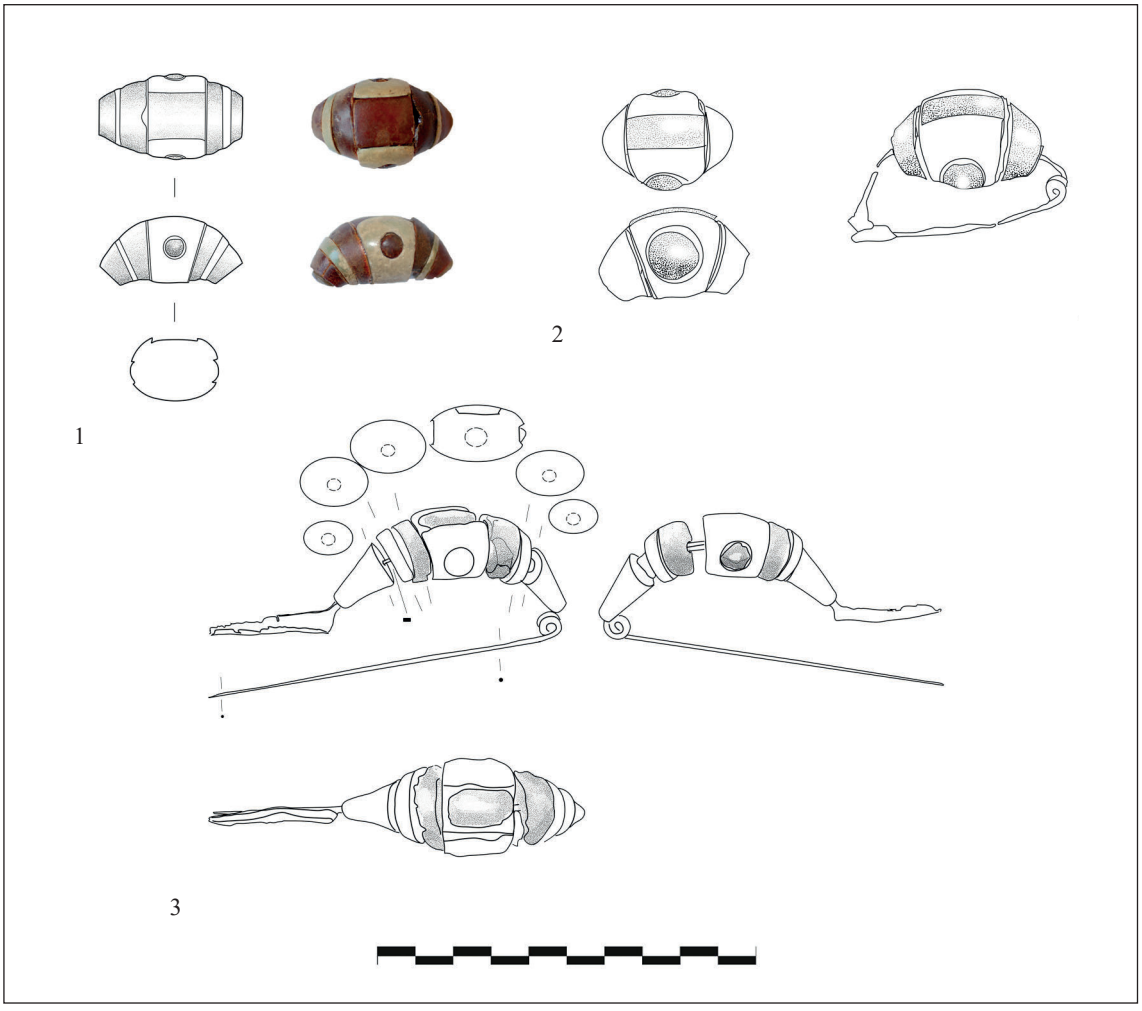
1 Main parts of an amber fibula



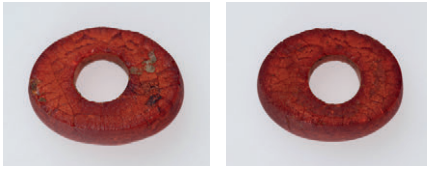
2 Typology of amber fibulae from the Artemision



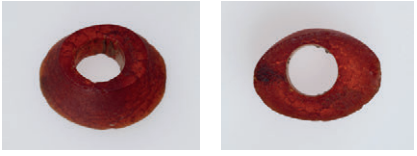
3 Side and above views of the fibula cat. 489



1 Composite fibulae with amber inlays: 1 Ephesos cat. 489. – 2 Verucchio, grave Lippi 40/2006. – 3 Pontecagnano, grave Casella 4898



2 Both sides of the fibula segment cat. 497



3 Both sides of the fibula segment cat. 498

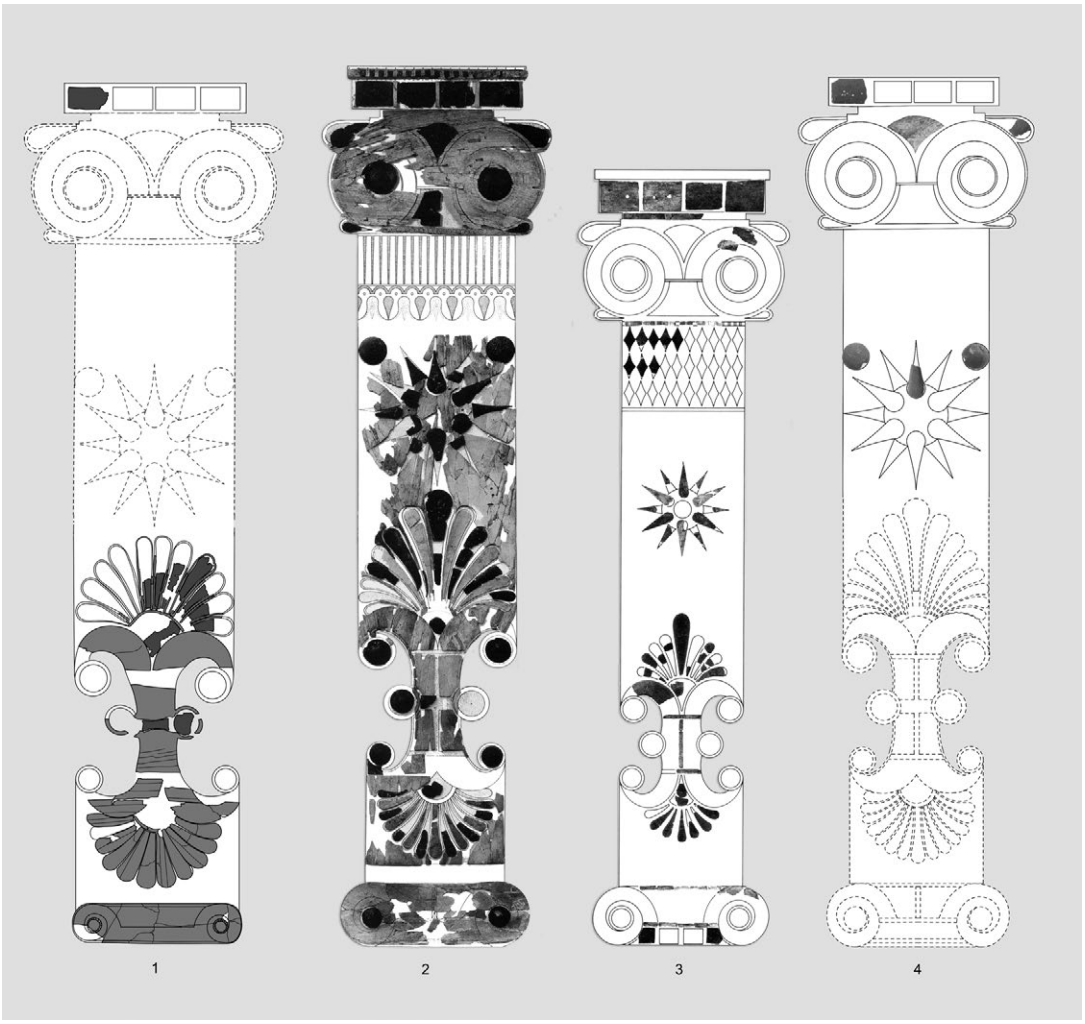


4 Both sides of the fibula segment cat. 499

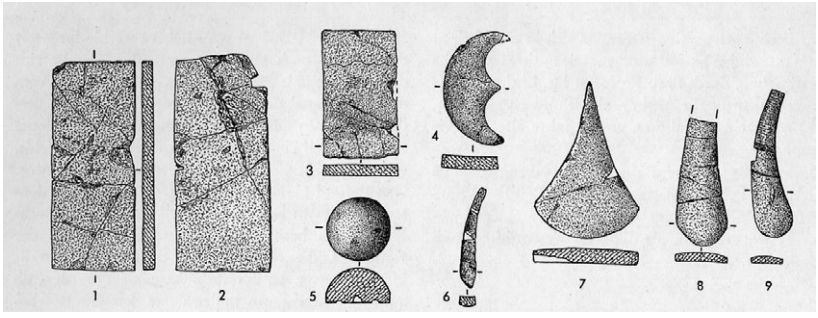


5 Both sides of the fibula segment cat. 500

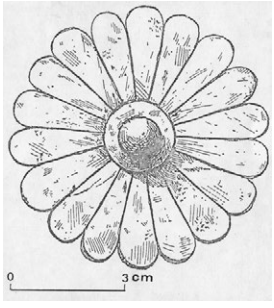
M. 1,5:1
0 2 cm



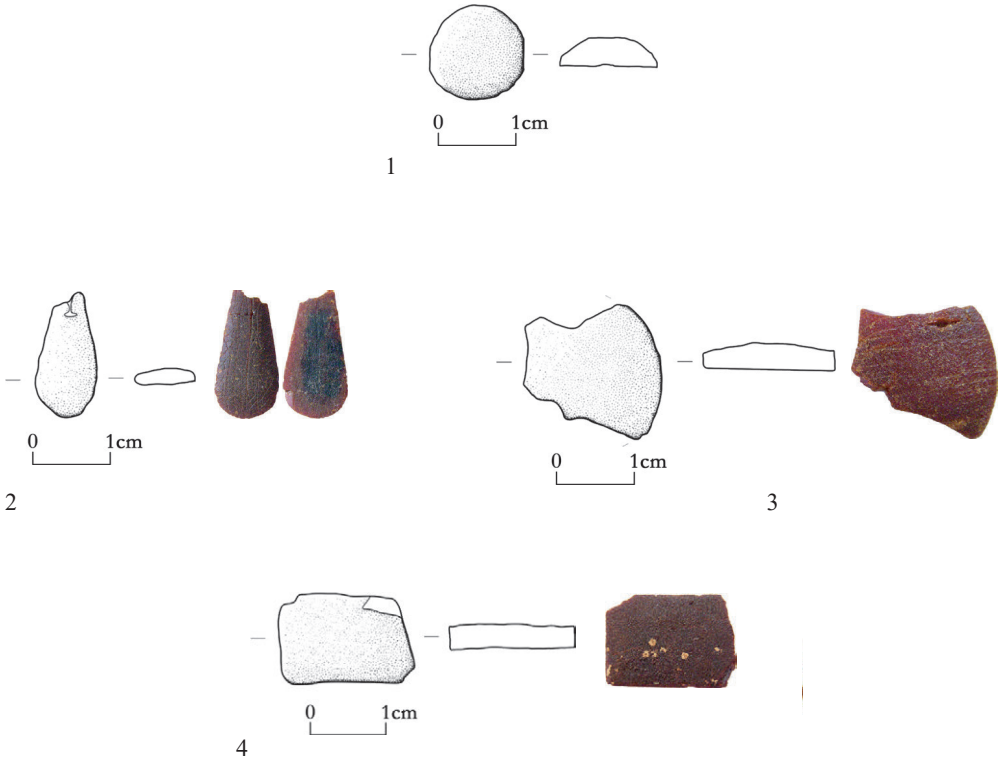
1 Ornamental furniture inlays of amber and ivory: 1 Polizzello. – 2 Athens. – 3 Asperg. – 4 Artemision



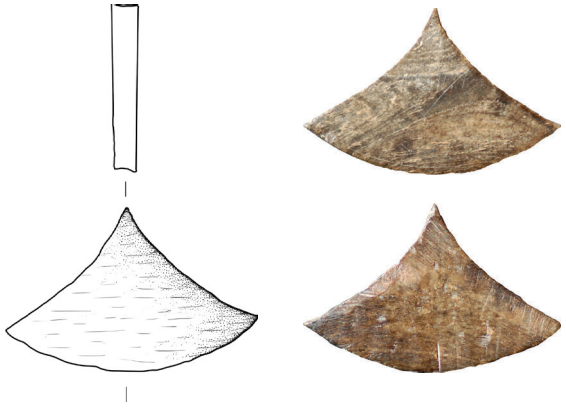
2 Amber inlays from Hundersingen (nos. 1–7) and Ludwigsburg (nos. 8–9)



3 Bone and amber inlay from the Löwengrab at Miletos, lost



1 Shapes of the amber inlays from the Artemision: 1 cat. 526. – 2 cat. 529. – 3 cat. 530. – 4 cat. 531



2 Leaf-shaped ivory inlay: ART 940260.1a–c



ART 840055.1

1



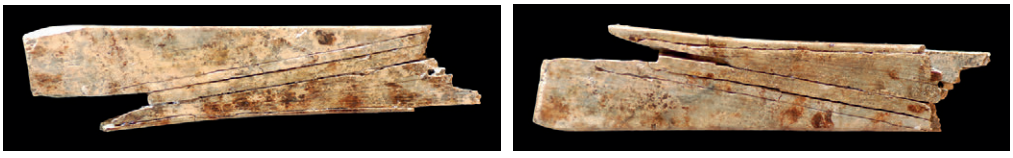
ART 850562.1

2



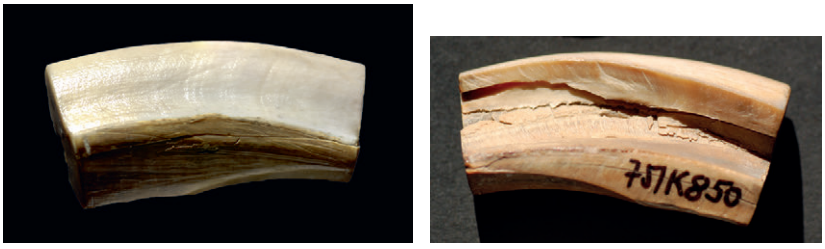
ART 770007.1

3



ART 760176.1

4



ART 750850.1

5



ART 720057.1

6

Selection of unfinished ivory remains at various working stages
1 ART 840055.1. – 2 ART 850562.1. – 3 ART 770007.1. – 4 ART 760176.1.– 5 ART 750850.1. – 6 ART 720057.1

Plate 24



ART 720060.1

1



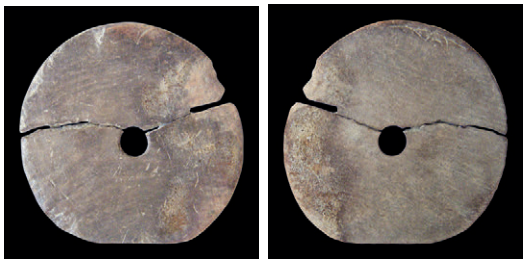
ART 730085.1

2



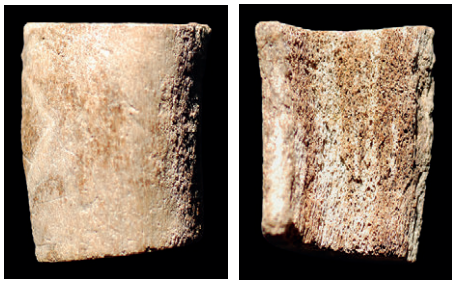
ART 750419.1

3



ART 820226.1

4



ART 750308.1

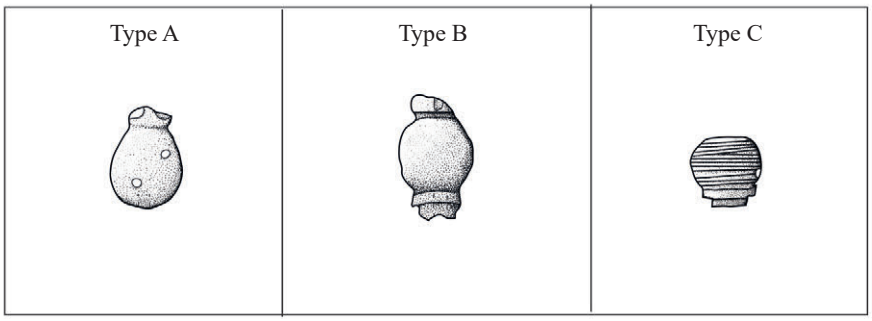
5



ART 710826

6

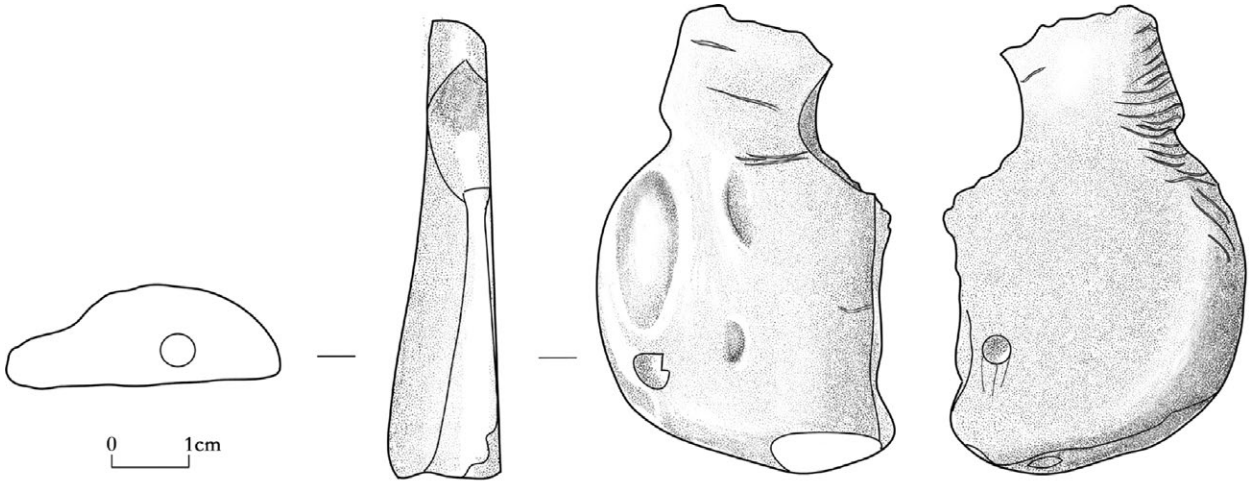
Selection of unfinished bone remains at various working stages
1 ART 720060.1. – 2 ART 730085.1. – 3 ART 750419.1. – 4 ART 820226.1. – 5 ART 750308.1 (deer antler). – 6 ART 710826



1 Typology of the amber pinheads from the Artemision



2 Amber pinheads cat. 657 (a) and 656 (b)



cat. 651

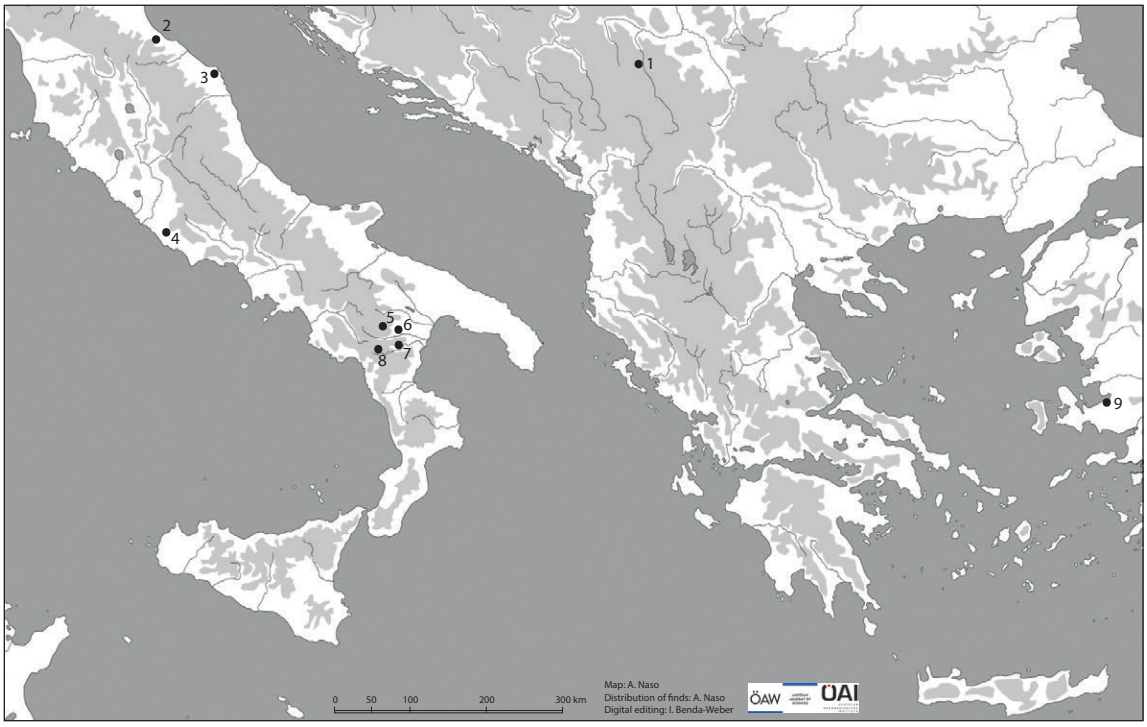


cat. 535

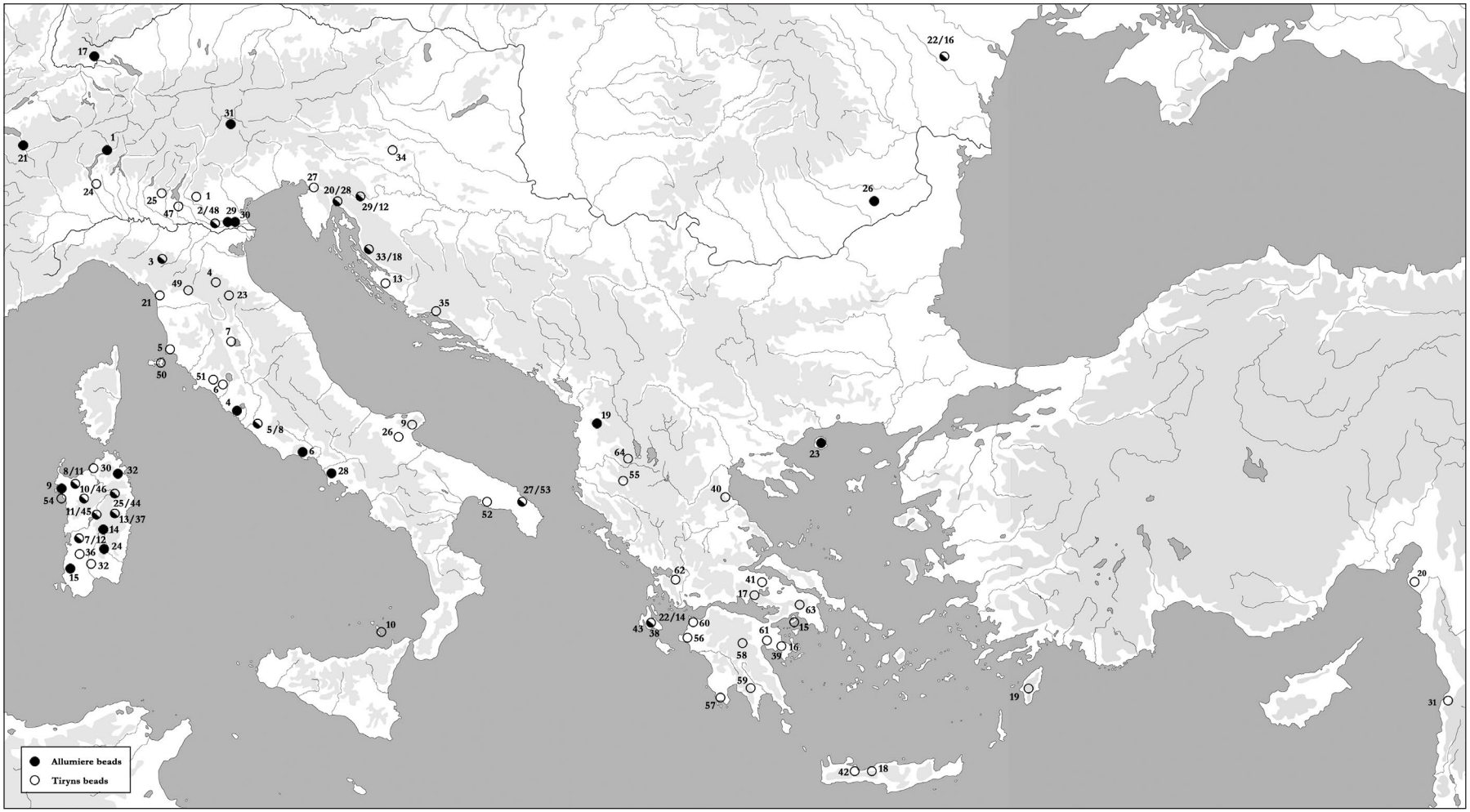
3 Side and above views of the raw amber cat. 535; line-drawing of cat. 651



1 Amber lion-headed cup with lid from Qatna, 15th–14th century BC



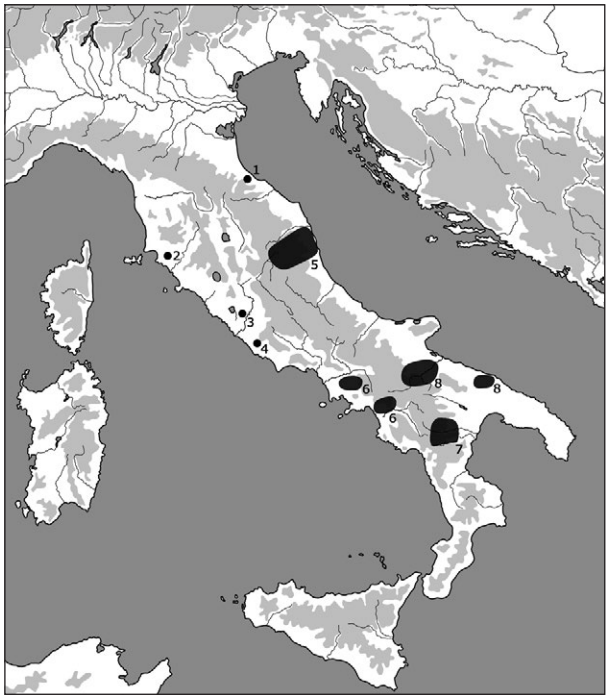
2 Single amber finds containing more than 500 pieces, 8th–6th century BC
1 Novi Pazar. – 2 Verucchio. – 3 Numana. – 4 Satricum. – 5 Guardia Perticara. – 6 Alianello. – 7 Chiaromonte. – 8 Latronico. – 9 Ephesos



Distribution map of beads Tiryns and Allumiere types

Tiryns beads: 1 Fondo Paviani. – 2 Frattesina. – 3 Bismantova. – 4 Borgo Panigale. – 5 Populonia. – 6 Ponte San Pietro Valle. – 7 Panicarola. – 8 Osteria dell'Osa. – 9 Capitanata. – 10 Lipari. – 11 Nuraghe Attentu, Flumenargia. – 12 Motrox'e Bois. – 13 Vrsi Nin. – 14 Metaxata, Cephalonia. – 15 Salamis. – 16 Tiryns, treasure. – 17 Thisbhe. – 18 Dikteon Cave. – 19 Jalysos. – 20 Ras Shamra. – 21 Camaiore. – 22 Gordievka-Vinnica. – 23 Monte Battaglia. – 24 Clanezzo. – 25 Ponte San Marco. – 26 Coppa Nevigata. – 27 Debeli. – 28 Baska. – 29 Golubnjaca. – 30 Serra Niedda. – 31 Akhziv. – 32 Santa Vittoria Serri. – 33 Privlaka-Nin. – 34 Kritevci. – 35 Vranjic. – 36 Forraxi-Nioi. – 37 Sa Sedda'e Sos Carros, Oliena. – 38 Diakata, Cephalonia. – 39 Ayos Elias, Tiryns. – 40 Elateia. – 41 Zeli. – 42 Pilos. – 43 Lakkithra, Cephalonia. – 44 Romanzesu Bitti. – 45 Nurdòle. – 46 Monte Sant'Anonio, Siligo. – 47 Peschiera. – 48 Campestrin. – 49 Fossa Nera di Porcari. – 50 Riparo dell'Omo Masso, Elba. – 51 Scarceta. – 52 Torre Castelluccia. – 53 Rocavecchia. – 54 Nuraghe Flumenelongu, Alghero. – 55 Prodan. – 56 Elis. – 57 Kallithea. – 58 Klauss. – 59 Agios Ioannis, Leontion. – 60 Teichos Dymaion. – 61 Profitis Elias, grave VI, Tiryns. – 62 Medeon. – 63 Golemi, Agios Georgios. – 64 Barç.

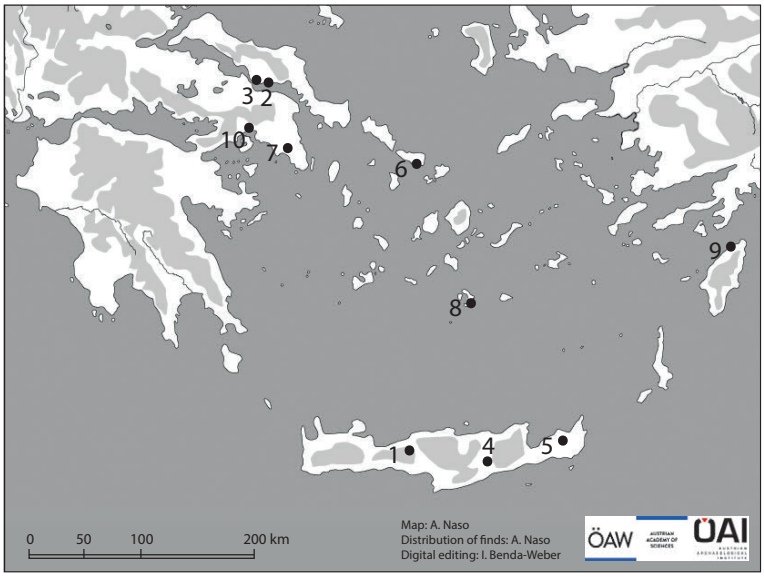
Allumiere beads: 1 Isolino. – 2 Frattesina. – 3 Bismantova. – 4 Allumiere. – 5 Osteria dell'Osa. – 6 Campo del Fico, Ardea. – 7 Motrox 'e Bois. – 8 Nuraghe Attentu. – 9 Palmavera. – 10 Monte Sant'Antonio, Siligo. – 11 Nurdòle. – 12 Golubnjaca. – 13 Sa Sedda 'e Sos Carros. – 14 Gremanu. – 15 Antas. – 16 Gordievka-Vinnica. – 17 Montlingerberg. – 18 Privlaka, Nin. – 19 Valley of Mati. – 20 Baska. – 21 Hauterive-Champréveyres. – 22 Metaxata, Cephalonia. – 23 Thasos. – 24 Sa Carcaredda-Villagrande Strisaili. – 25 Romanzesu Bitti. – 26 Dridu. – 27 Rocavecchia. – 28 Poggiomarino. – 29 Narde. – 30 Cona. – 31 Doss Castel Fai della Paganella. – 32 Su Monte



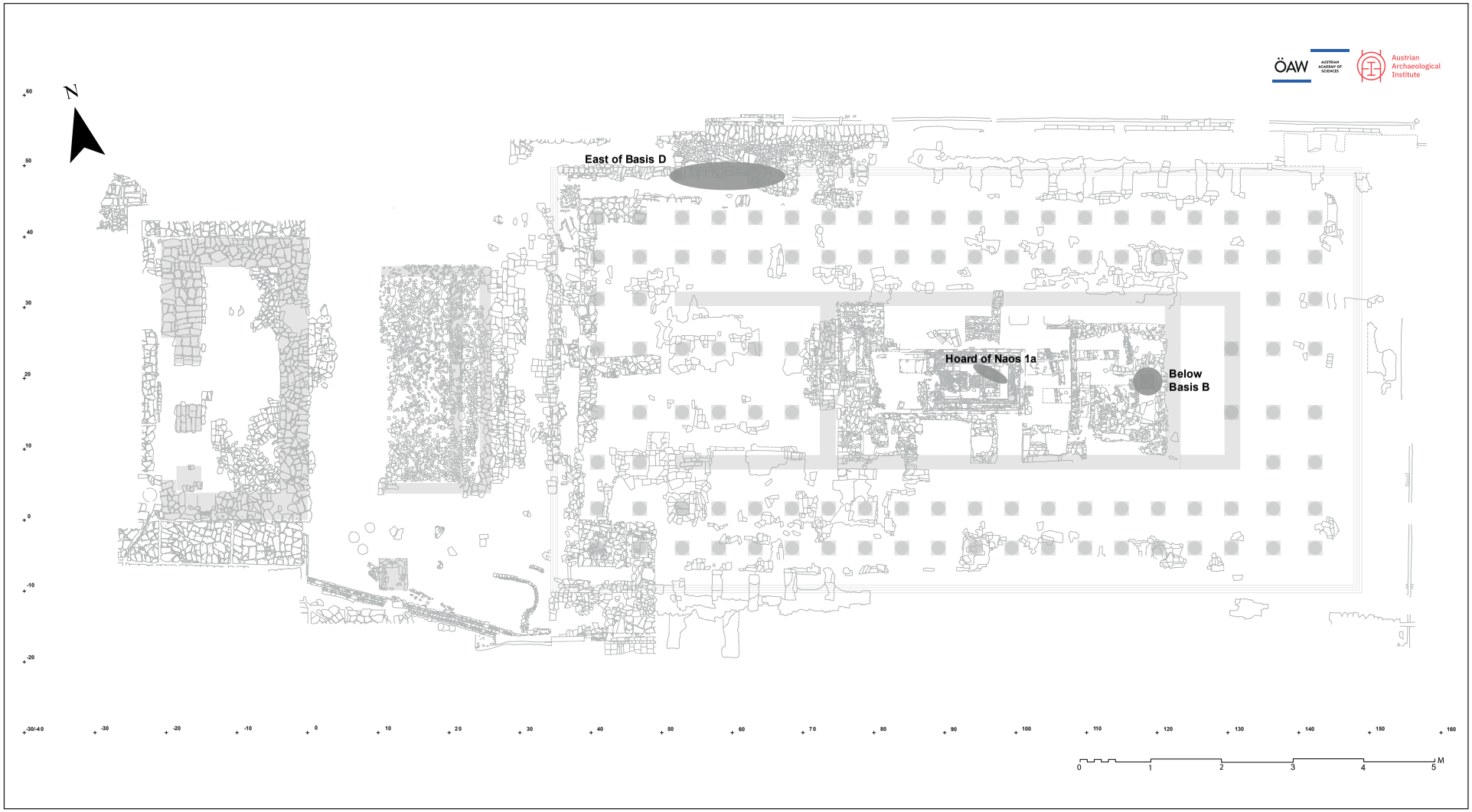
1 Main amber finds in the Italian peninsula
1 Verucchio. – 2 Vetulonia. – 3 Veii. – 4 Satricum. – 5 Piceno. – 6 Campania. – 7 Basilicata. – 8 Apulia



2 Amber from Greek sanctuaries in the Aegean and North Africa
1 Ephesos. – 2 Lindos. – 3 Miletos. – 4 Perachora. – 5 Sparta. – 6 Crete, Idaean Cave. – 7 Aetos. – 8 Kythnos. – 9 Chios, Harbour. – 10 Philia. – 11 Chios Phanai. – 12 Eretria. – 13 Pherai. – 14 Cyrene. – 15 Delos. – 16 Claros. – 17 Olympia. – 18 Crete, Dictaean Cave. – 19 Samos. – 20 Tocra – 21 Siphnos

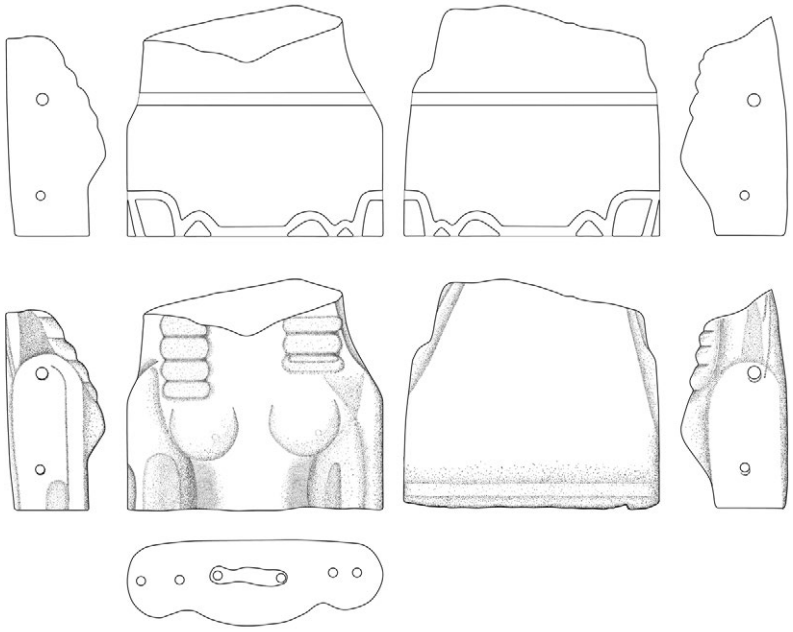


3 Amber from Greek cemeteries in the Aegean
1 Fortetsa. – 2 Eretria. – 3 Lefkandi. – 4 Archades. – 5 Praisos. – 6 Tinos. – 7 Athens. – 8 Thera. – 9 Ialysos. – 10 Eleusis

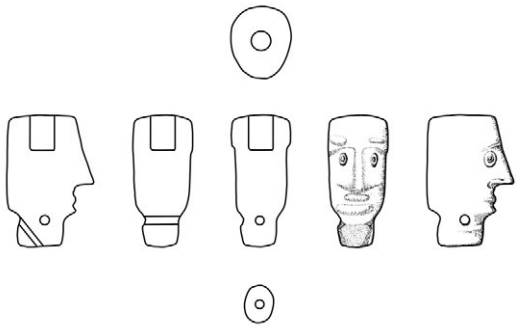


Most important find spots of amber artefacts in the Artemision

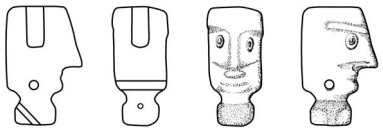
Plate 30



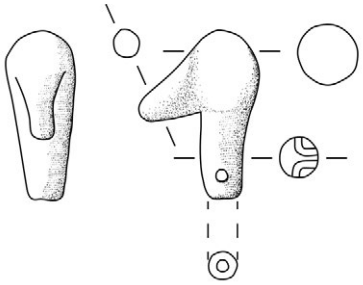
1



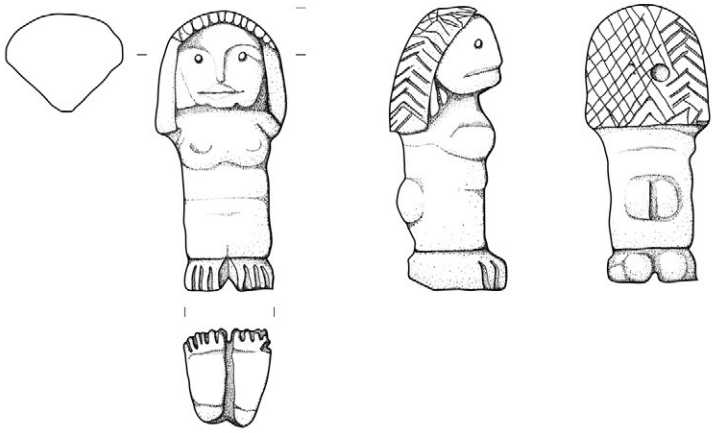
2



3



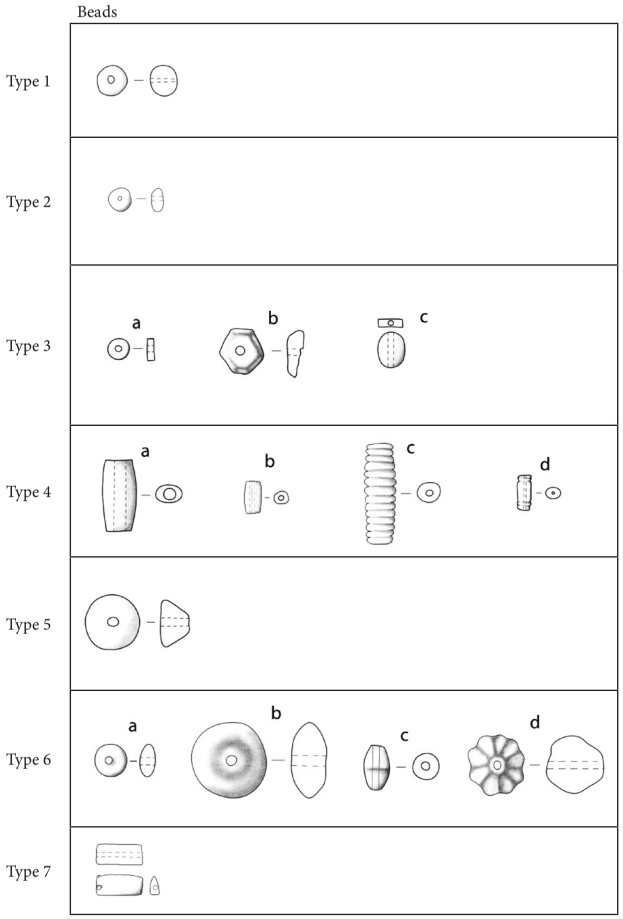
5



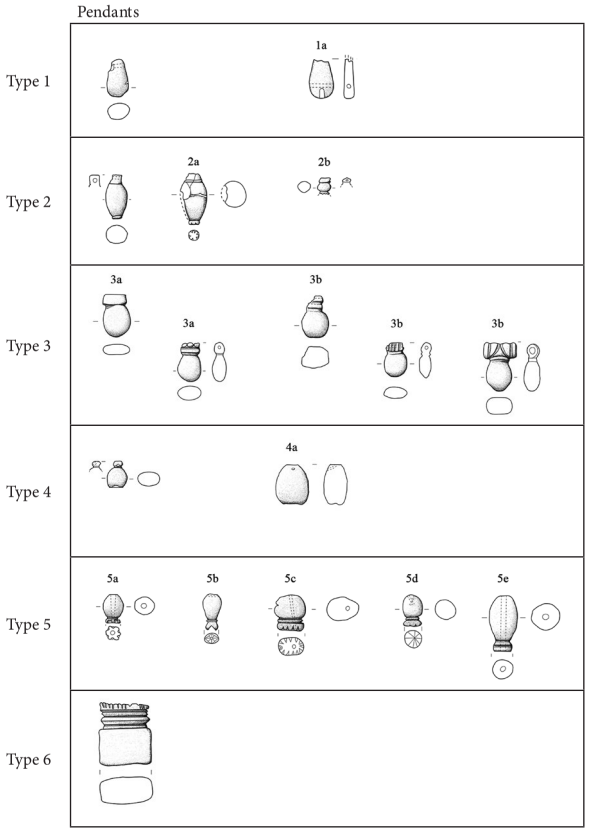
540

0 5 cm

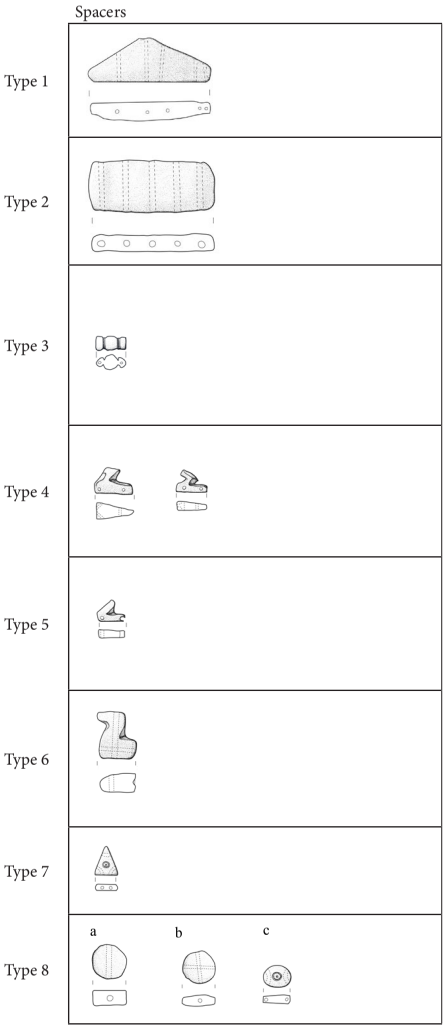
Amber figured finds from the Artemision, cat. 1. 2. 3. 5. 540



1



2

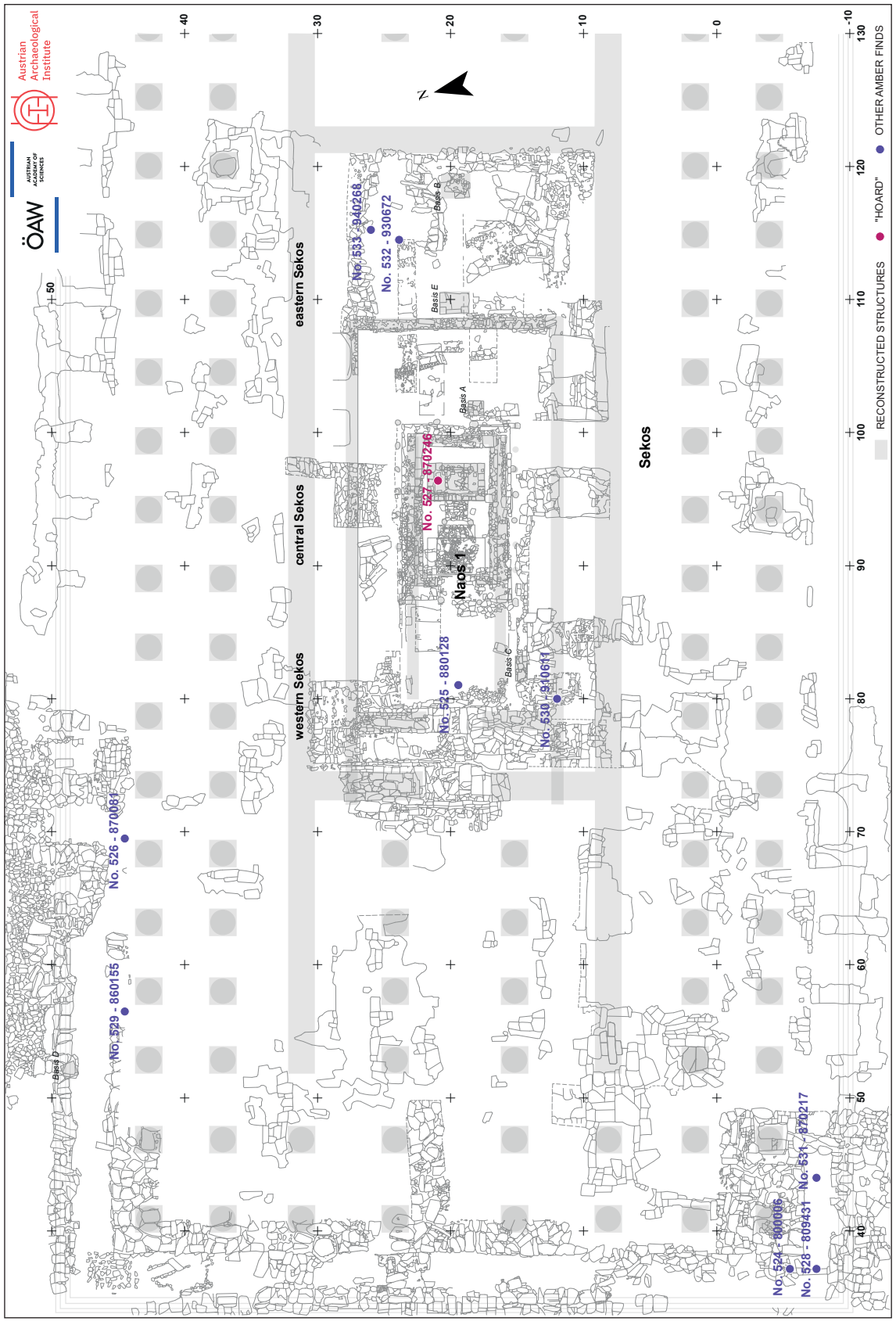


3

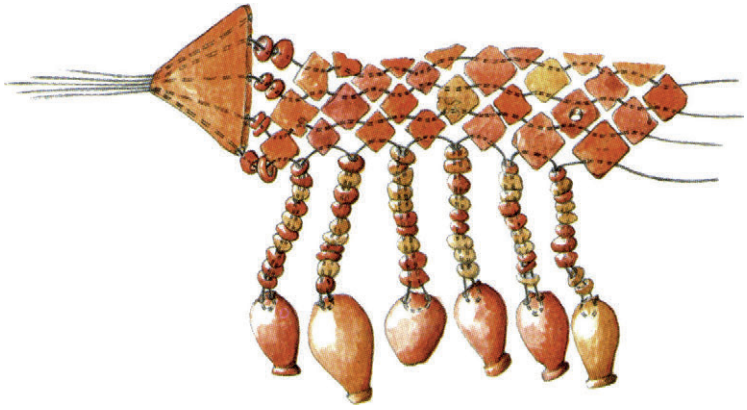
Amber beads, pendants and spacers from the Artemision (cf. pls. 9. 11. 17)

Plate 31

Plate 32



Find spots of amber inlays in the central part of the Artemision



1

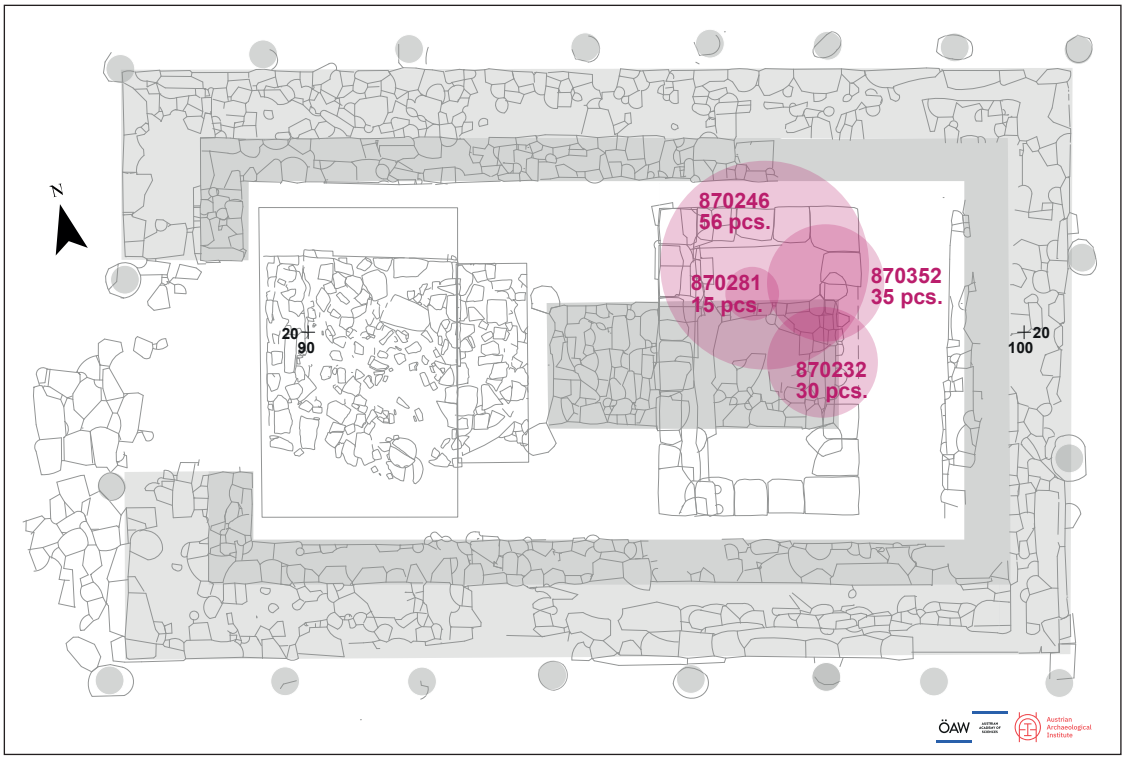


2

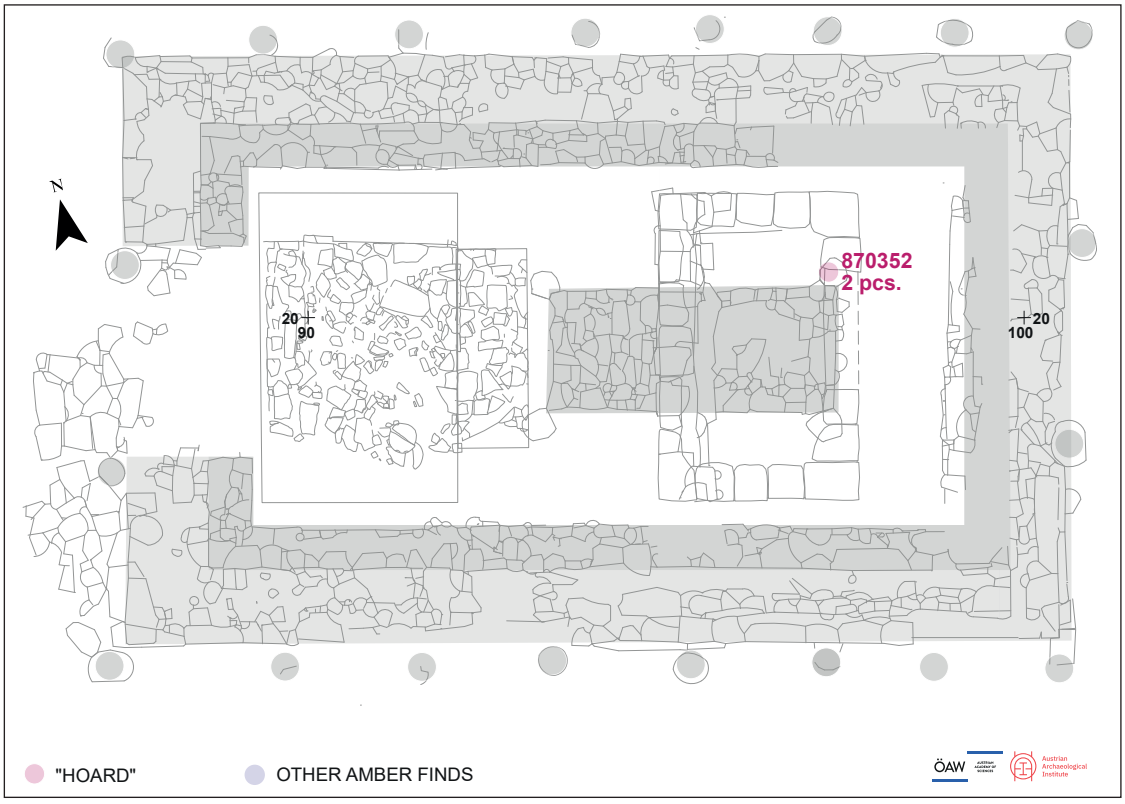


3

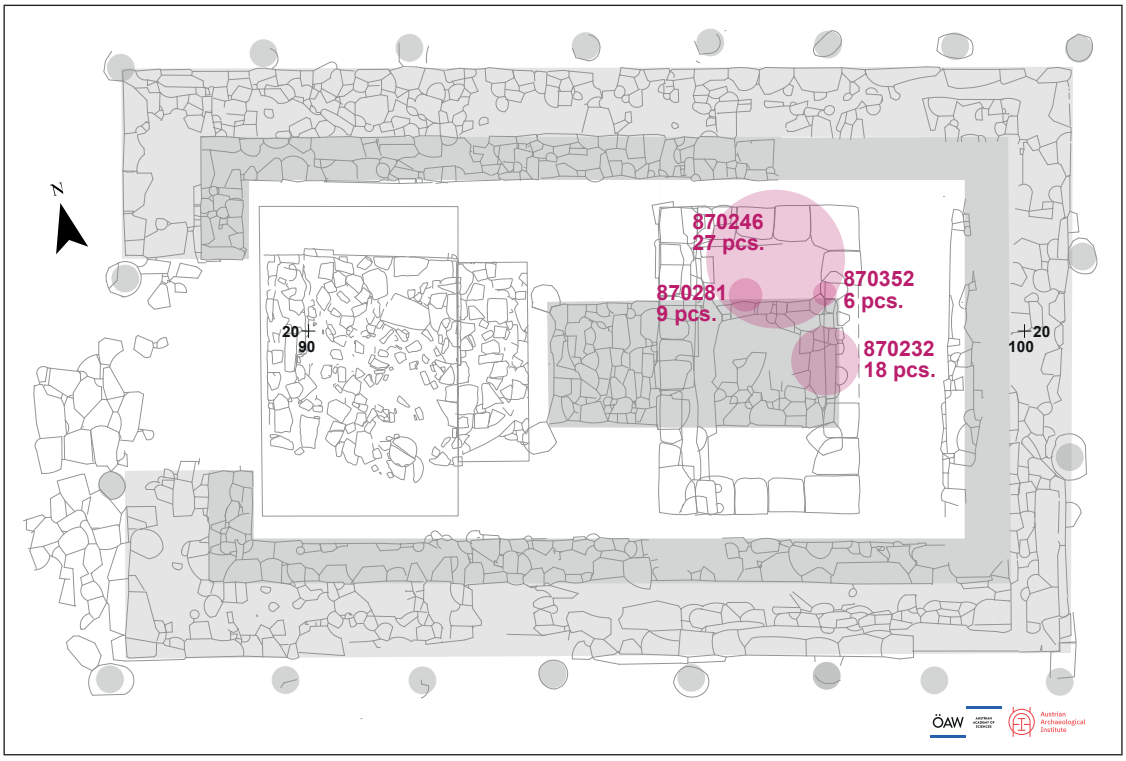
Girdles from Oenotrian female graves in Basilicata, late 8th–early 7th century BC – 1 Chiaromonte grave 152. – 2 Chiaromonte grave 156. – 3 Latronico grave 83



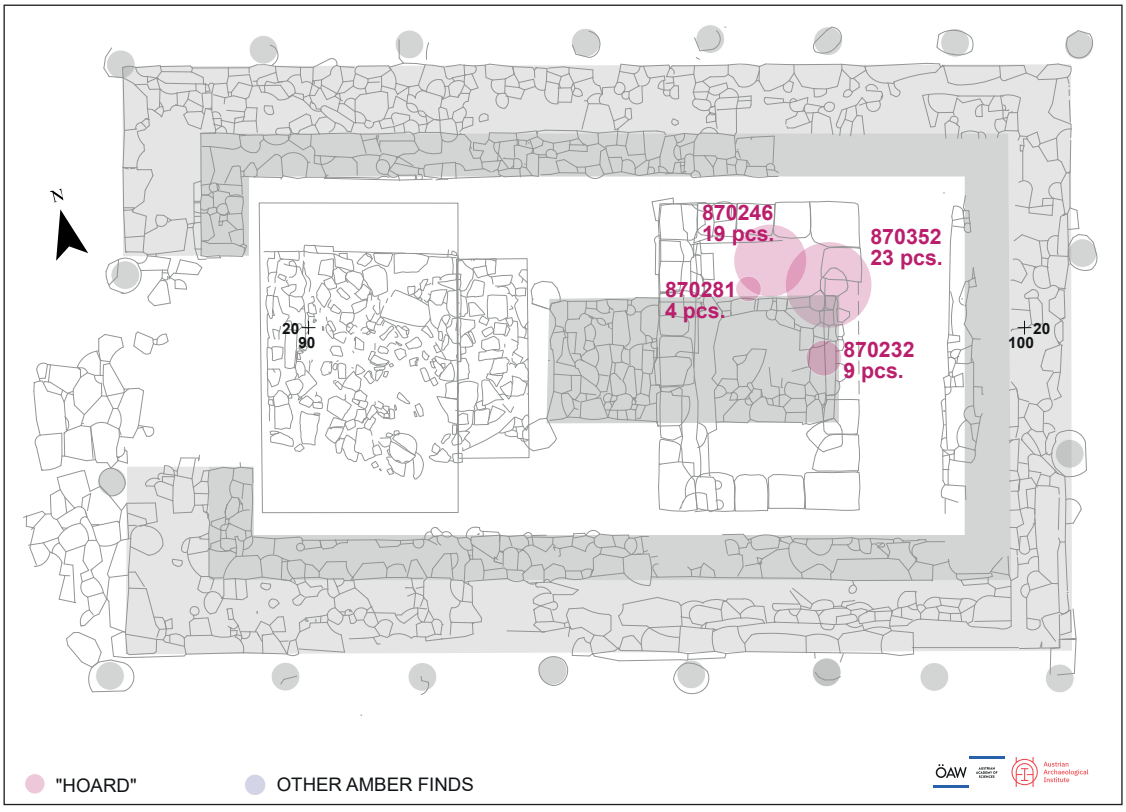
1 Find spots of spacers inside Naos 1a and Naos 2



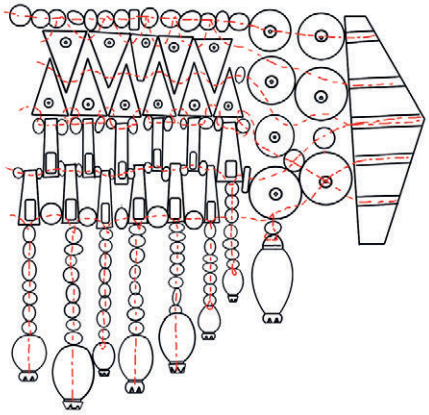
2 Find spots of end-spacers type 1 inside Naos 1a



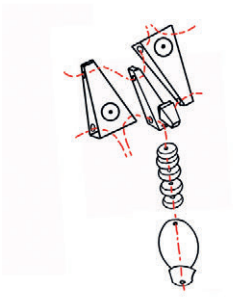
1 Find spots of bird-shaped types 4–5 spacers inside Naos 1a and Naos 2



2 Find spots of triangle-shaped spacers type 7 inside Naos 1a and Naos 2



1 Reconstruction drawing of a possible composition of the girdle from the Artemision



2 Details of a reconstruction of the girdle from the Artemision: triangular and bird-shaped spacers



3 Reconstruction of the original aspect of the girdle offered to Artemis



1 2 3

1 Artefacts reproducing spinning women with precious tools
1 Stone stele from Maraş. – 2 Ivory statuette from the Artemision of Ephesos. – 3 Bronze rattle from Bologna



2 Spindle from Verucchio, grave Lippi 24/2005



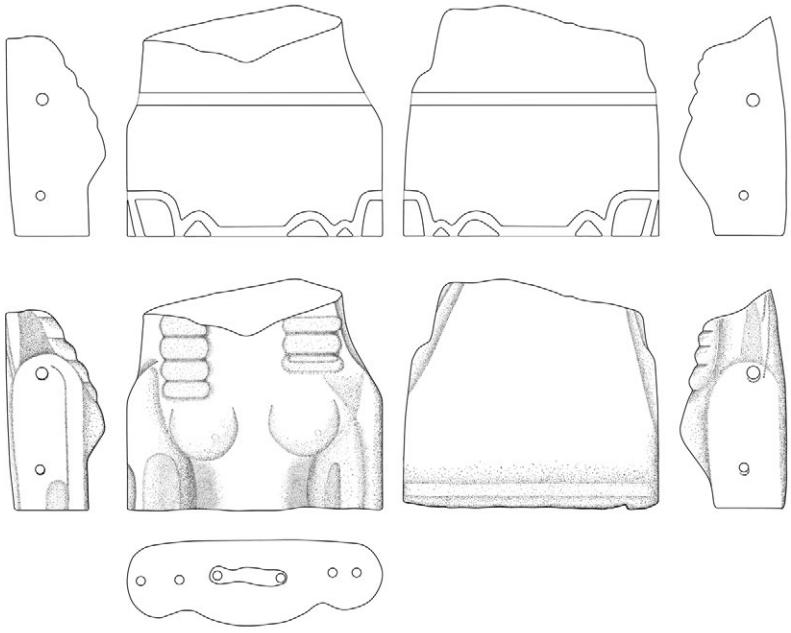
3 Spindle from Verucchio, grave Lippi 47/2006



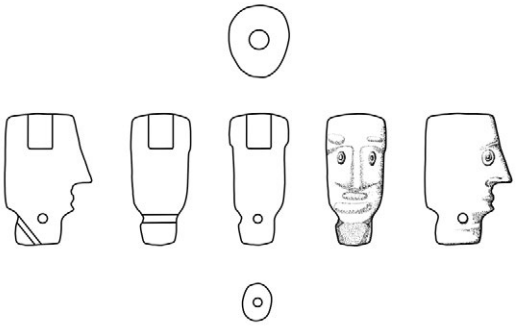
4 Spindle (left) and distaff (right) from Verucchio, grave Lippi 23/2005

Figures without scale.

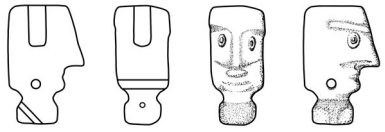
Plate 38



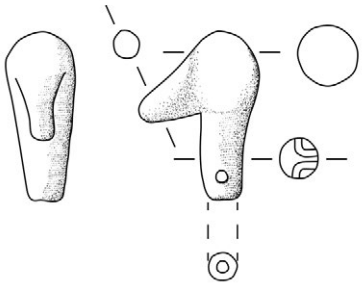
1



2



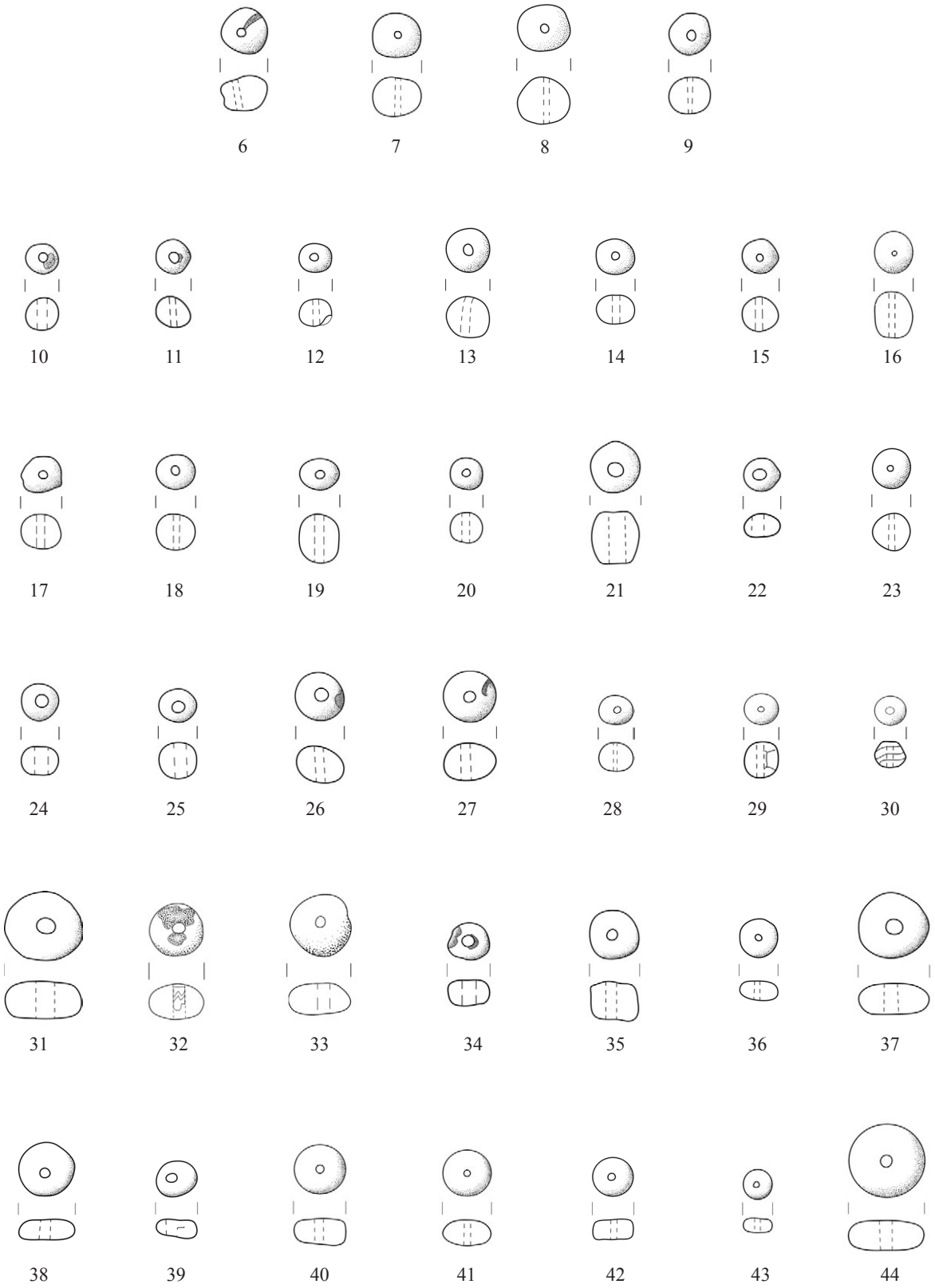
3



5

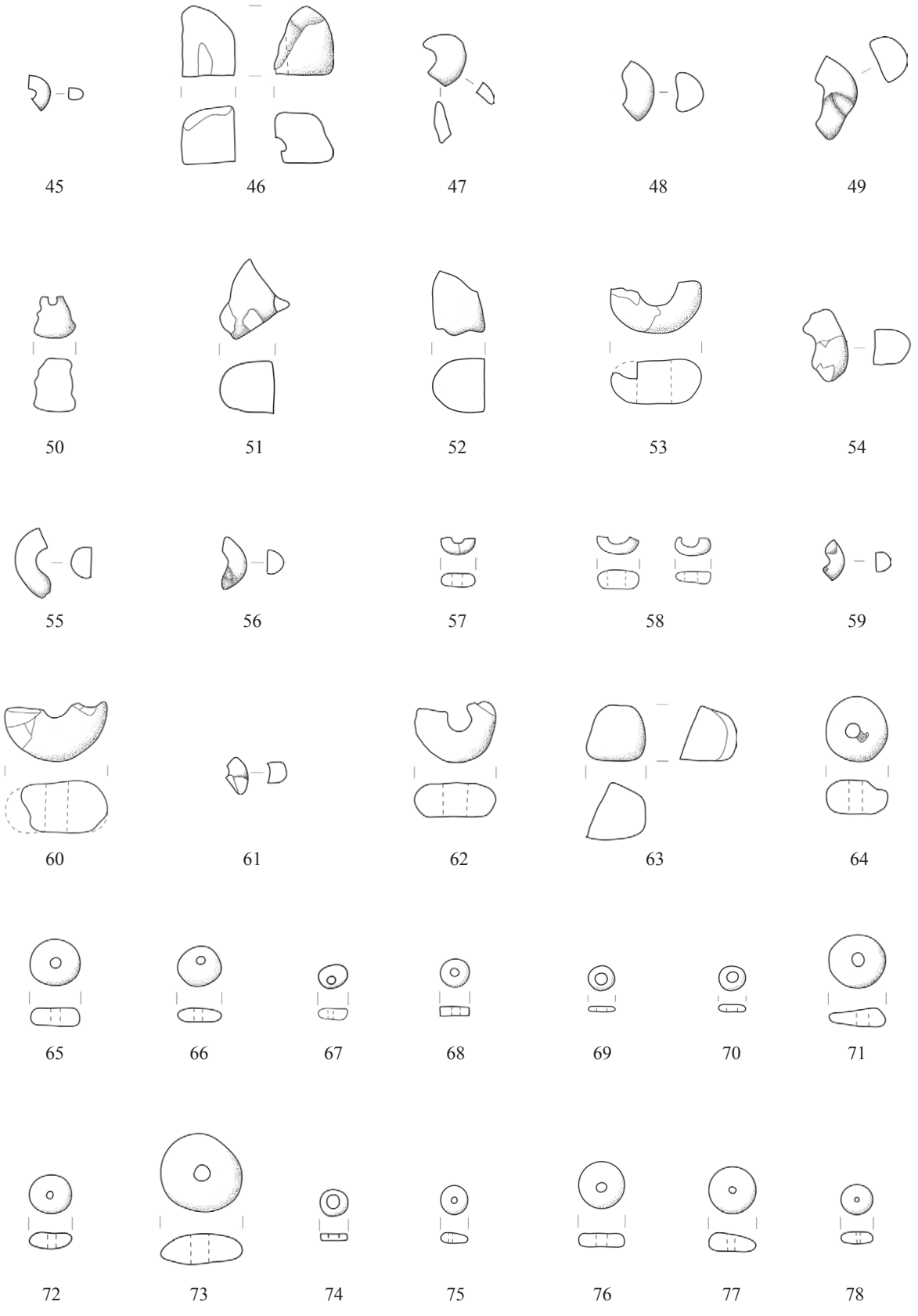
0 5 cm

Figured finds cat. 1–3. 5

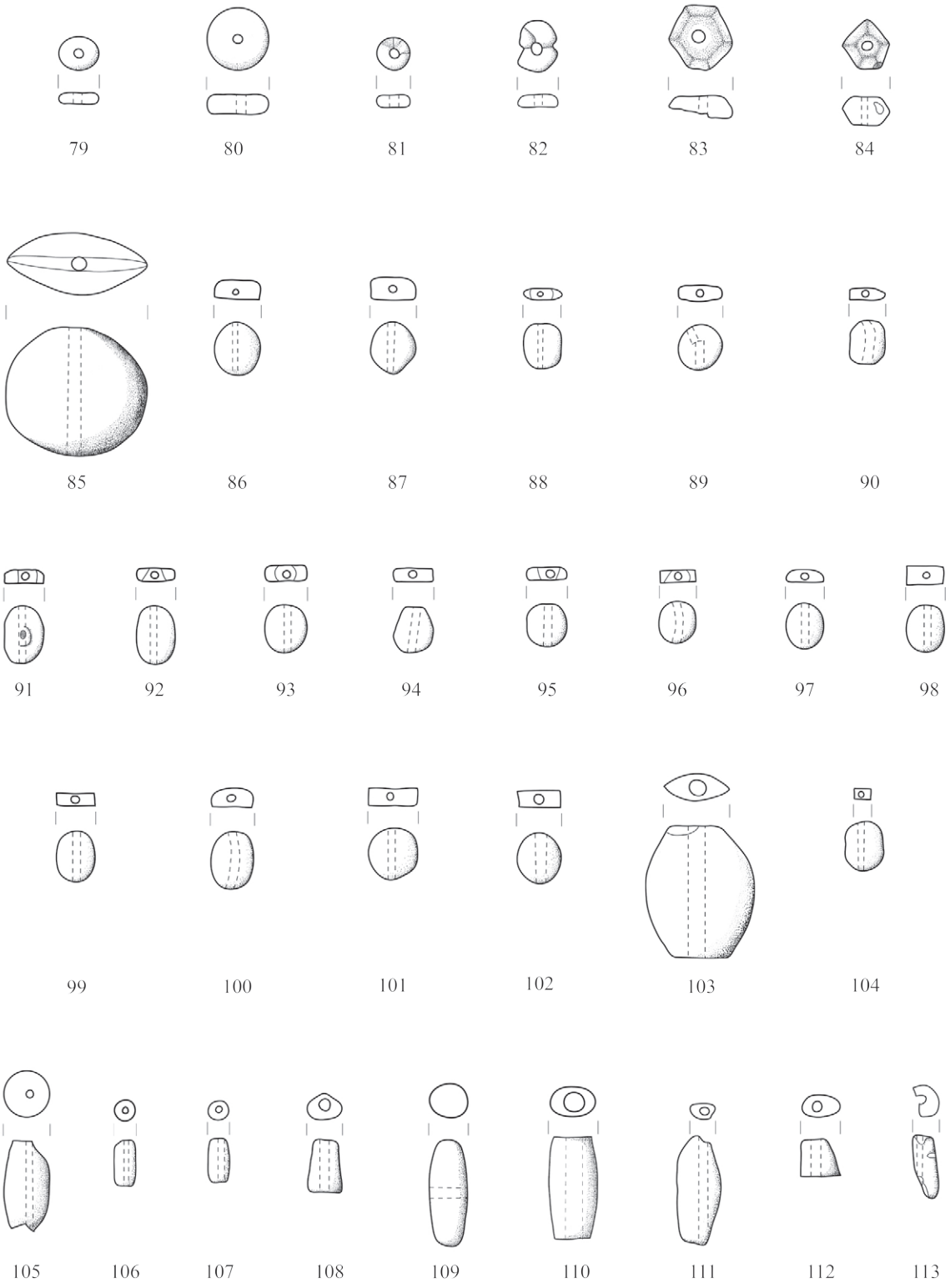


Beads cat. 6–44

Plate 40

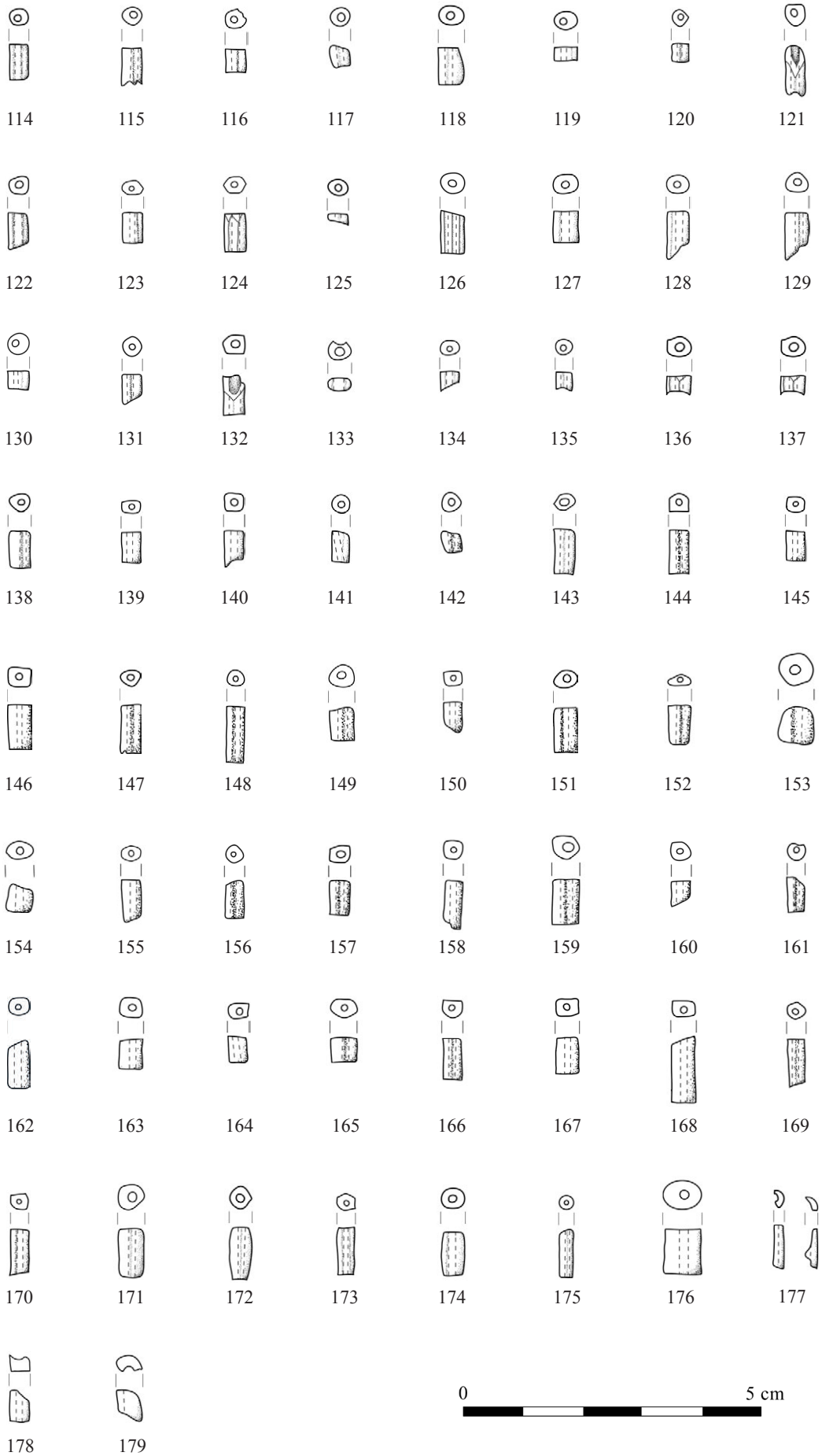


Beads cat. 45–78

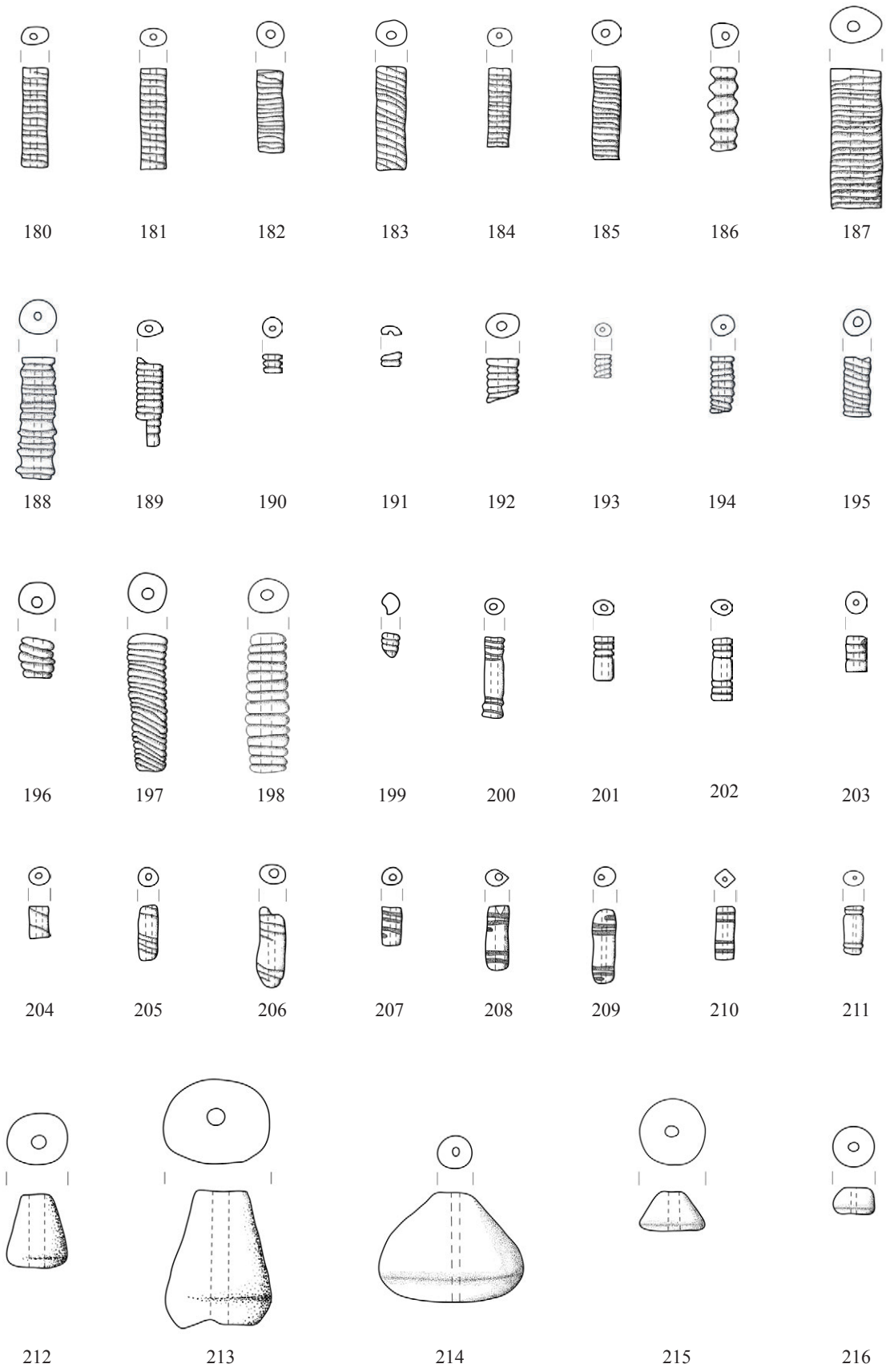


Beads cat. 79–113

Plate 42

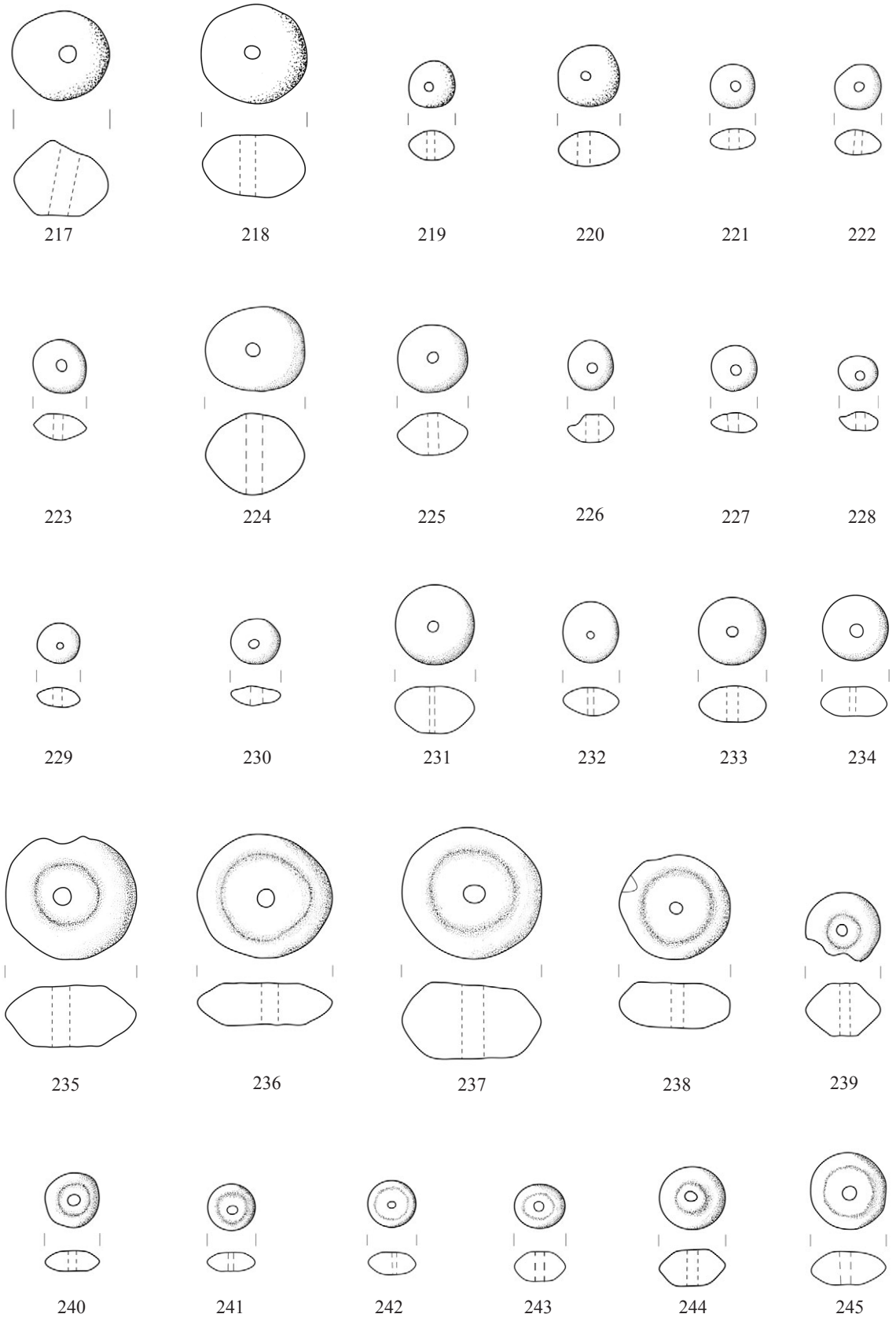


Beads cat. 114–179

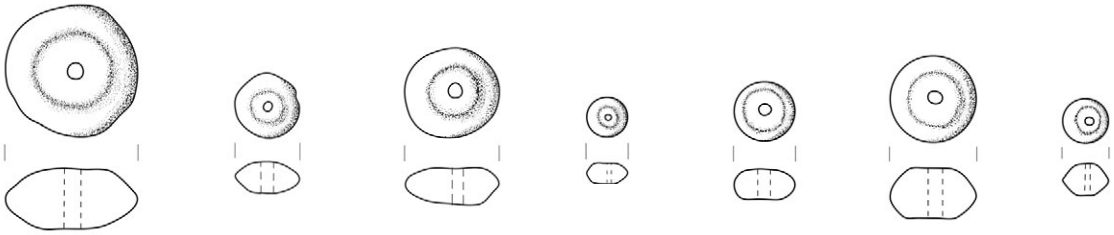


Beads cat. 180–216

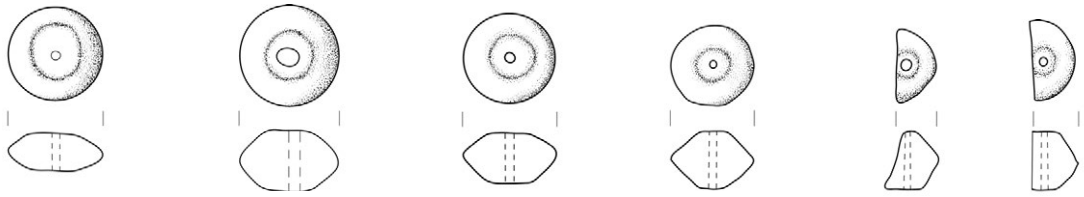
Plate 44



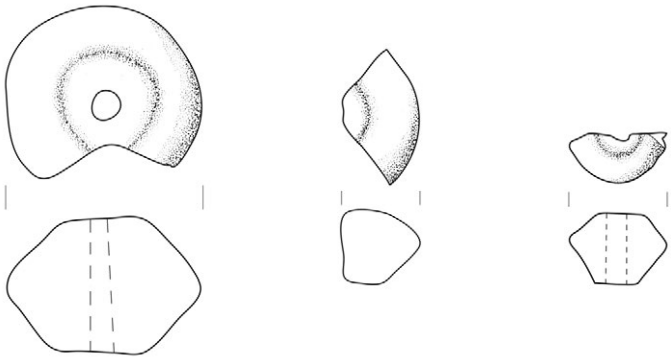
Beads cat. 217–245



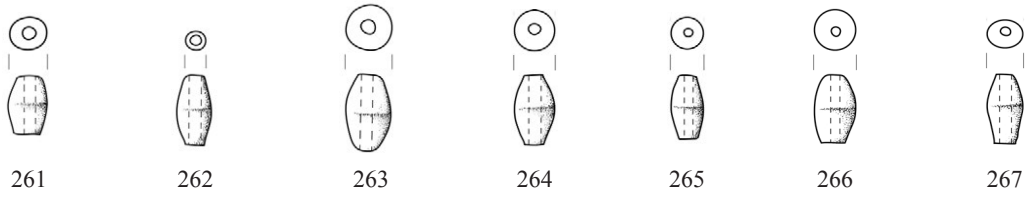
246 247 248 249 250 251 252



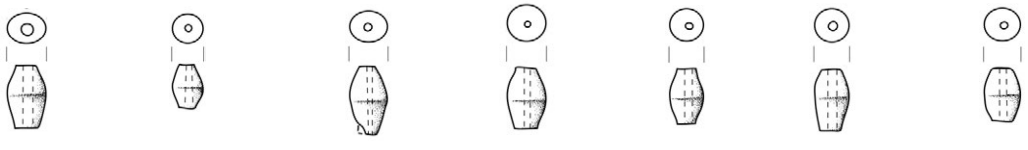
253 254 255 256 257



258 259 260



261 262 263 264 265 266 267

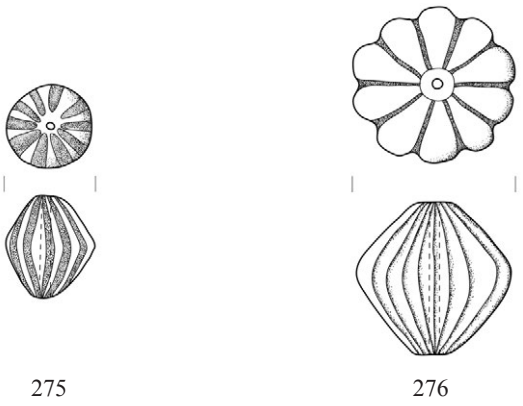


268 269 270 271 272 273 274

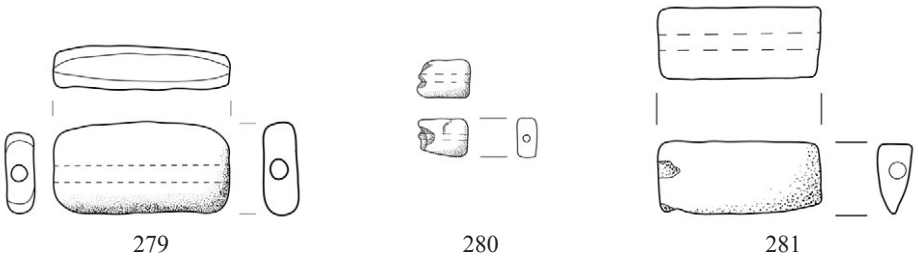


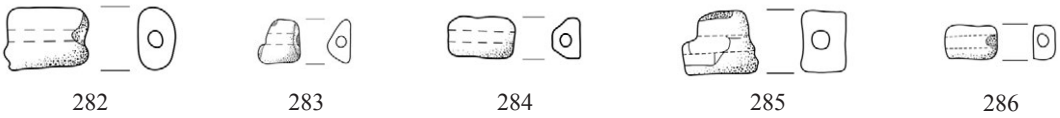
Beads cat. 246–274

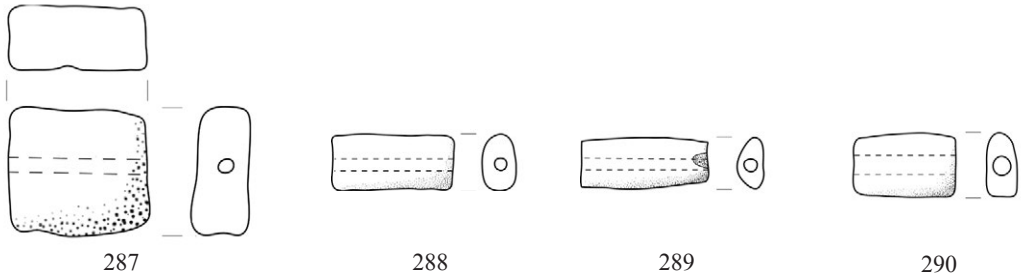
Plate 46

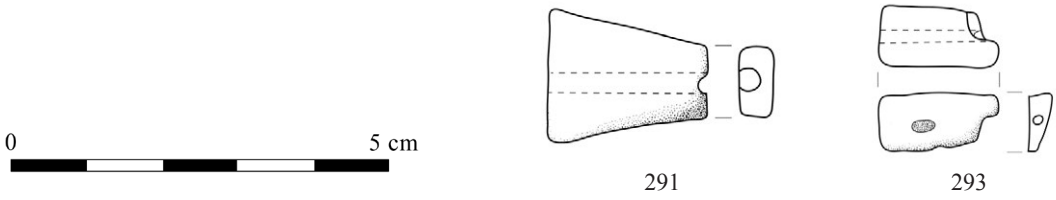




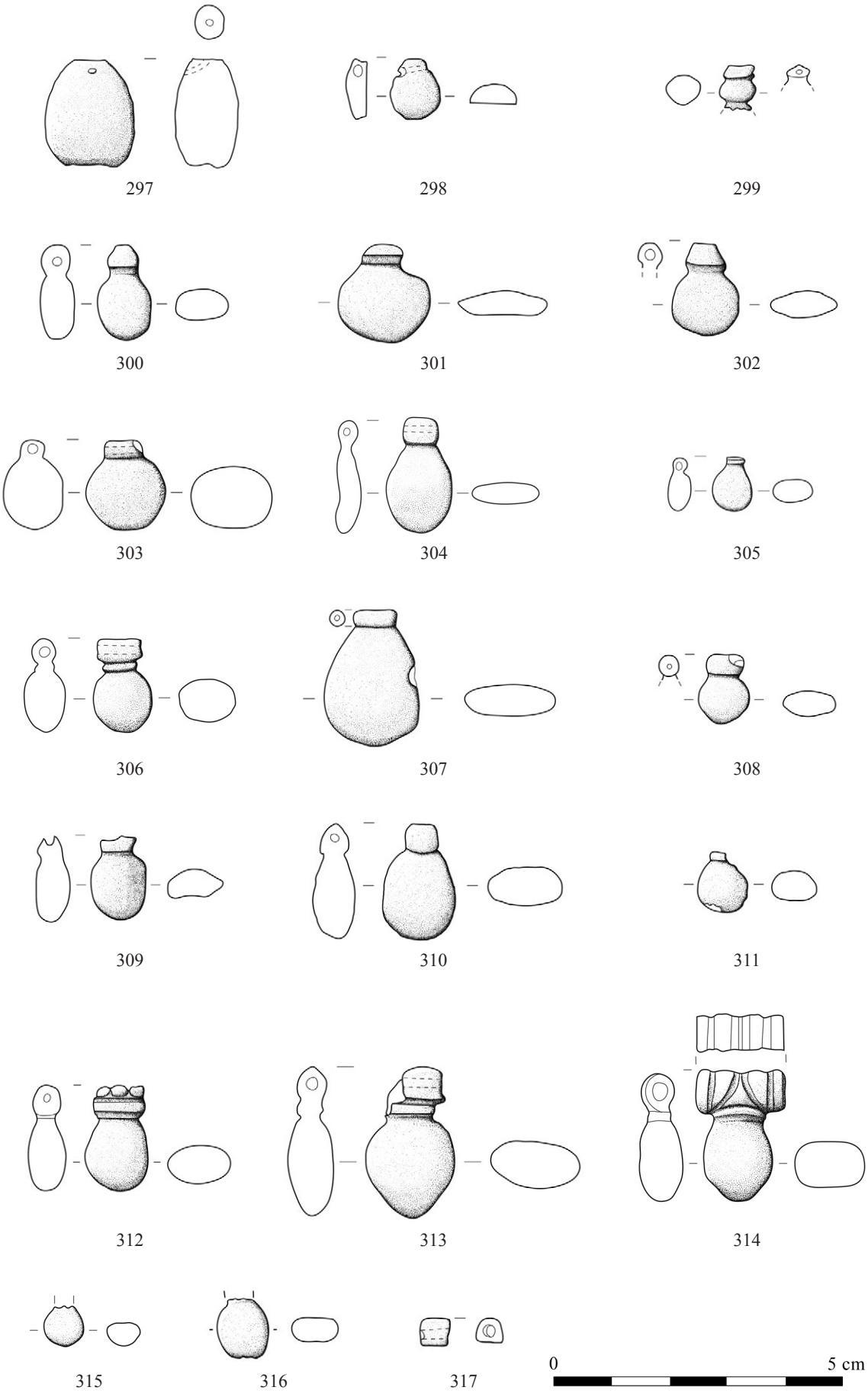






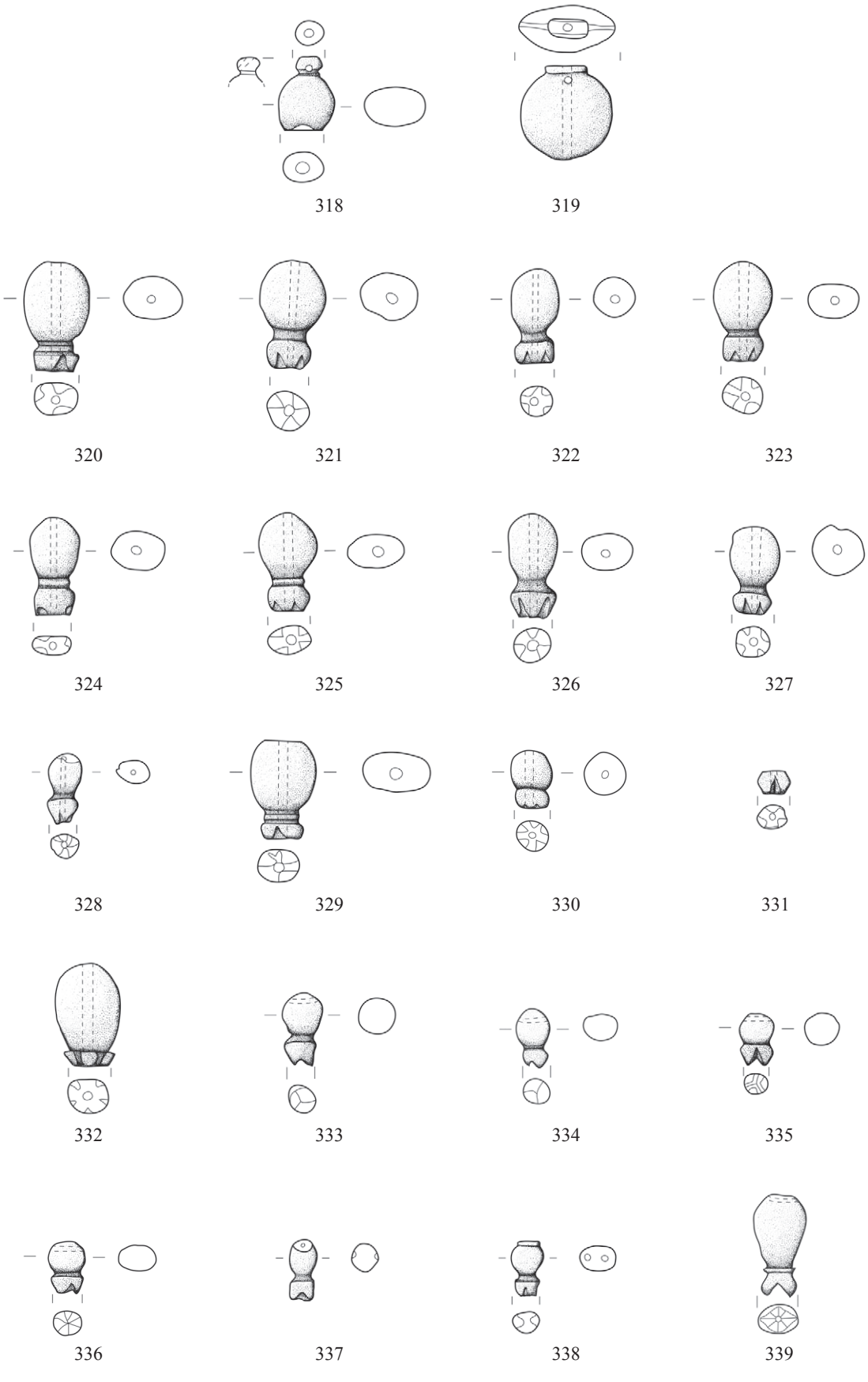


Beads cat. 275–293

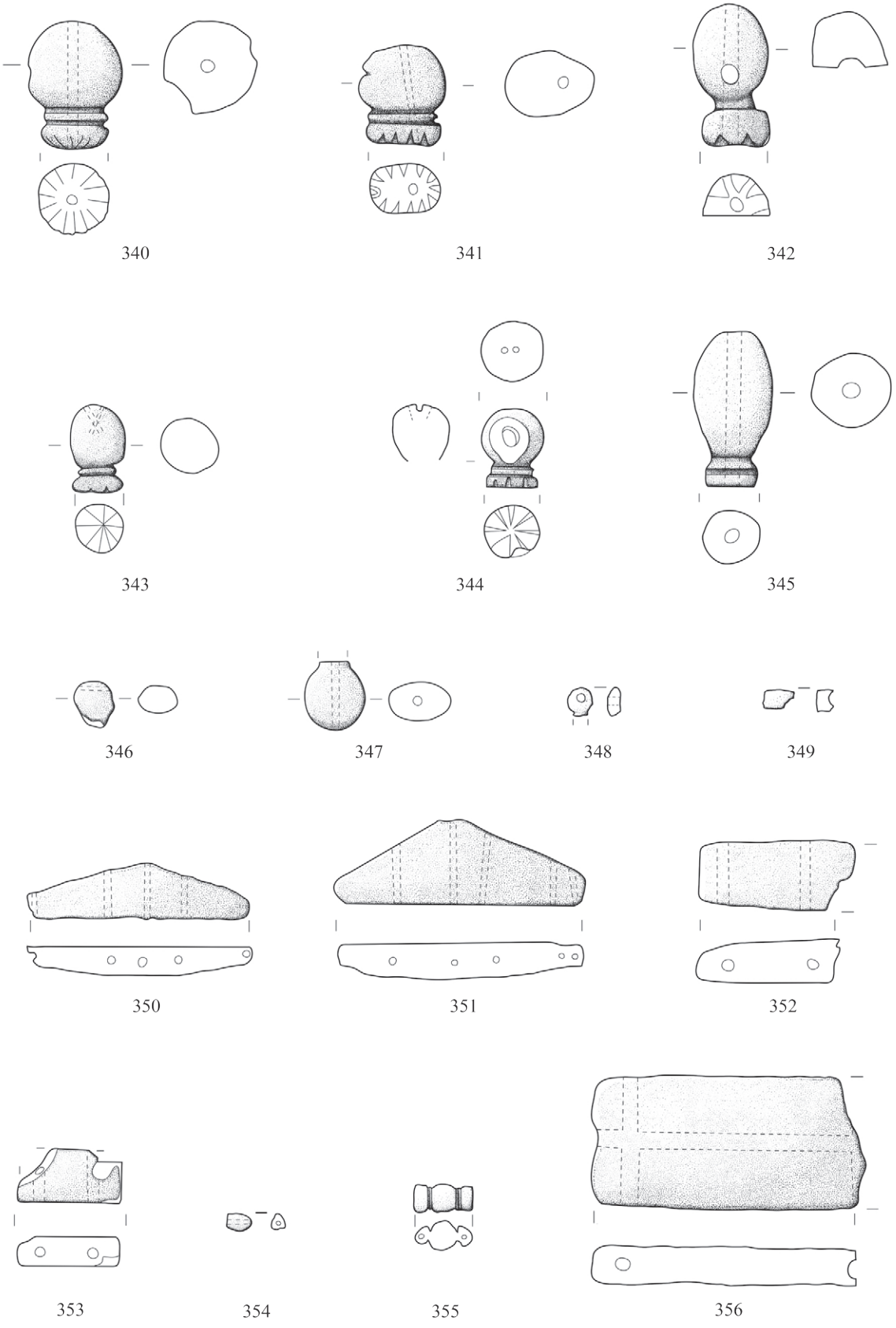


Pendants cat. 297–317

Plate 48



Pendants cat. 318–339

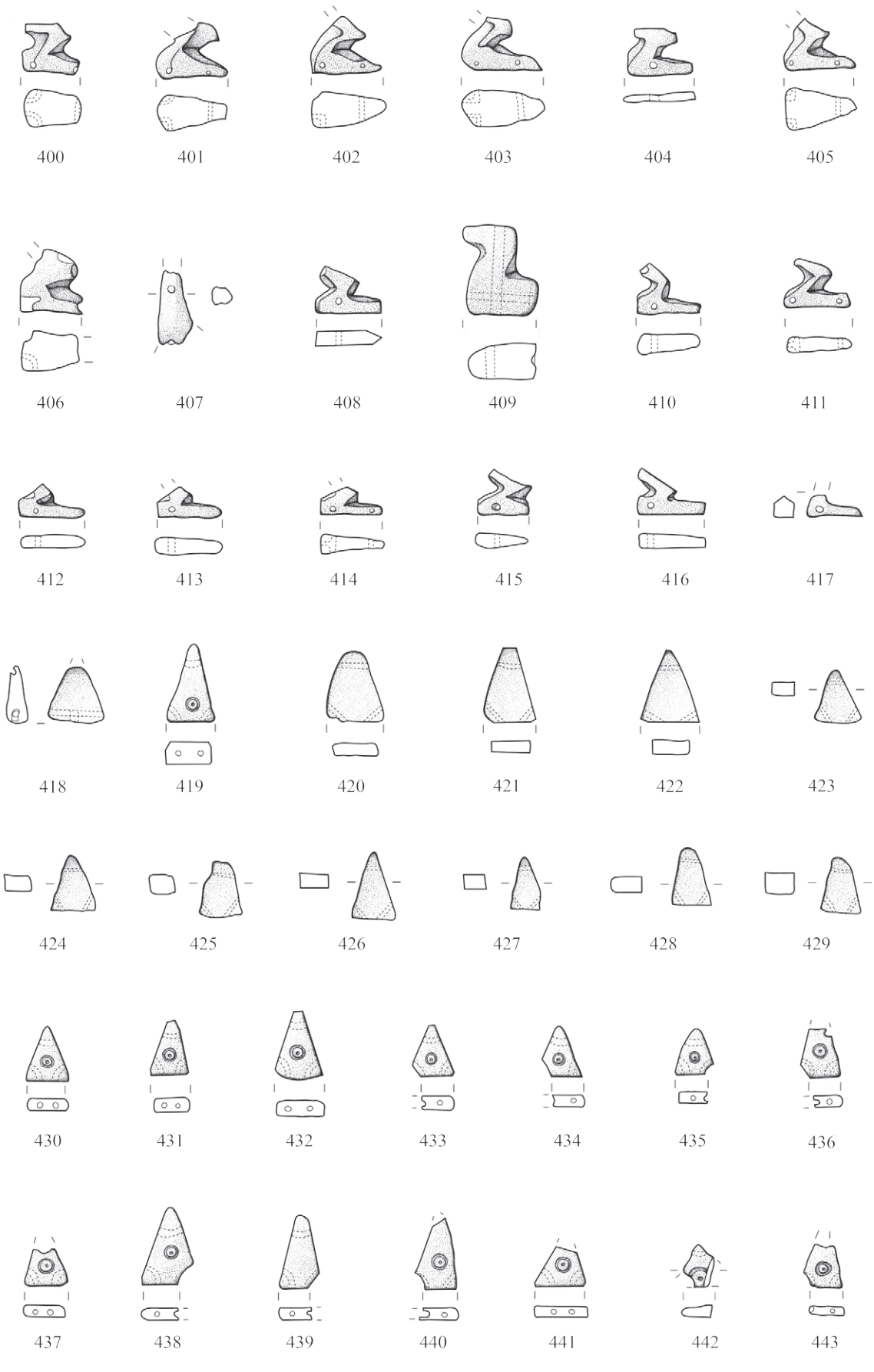


Pendants cat. 340–349; spacers cat. 350–356

Plate 50

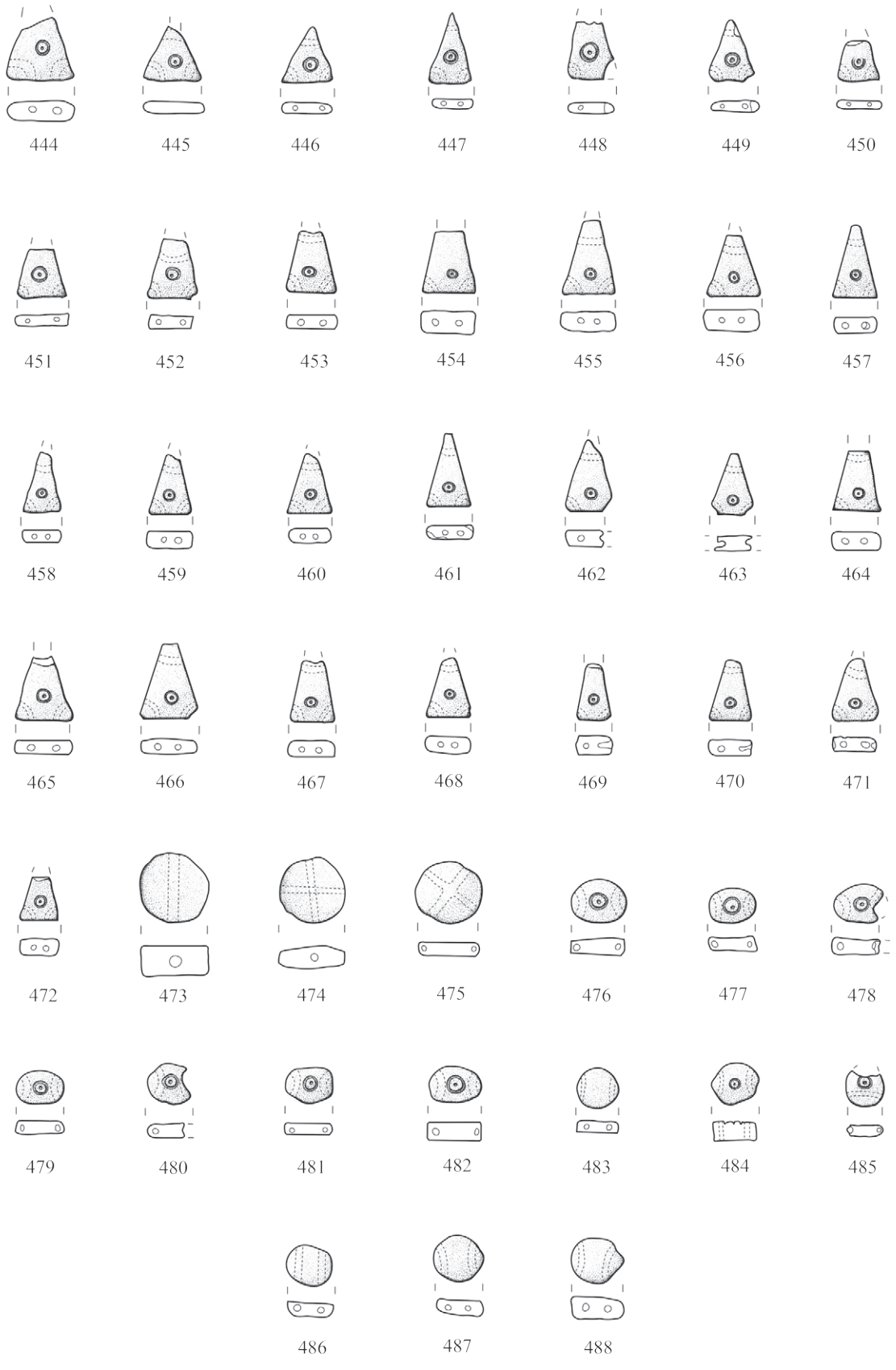


Spacers cat. 357–399

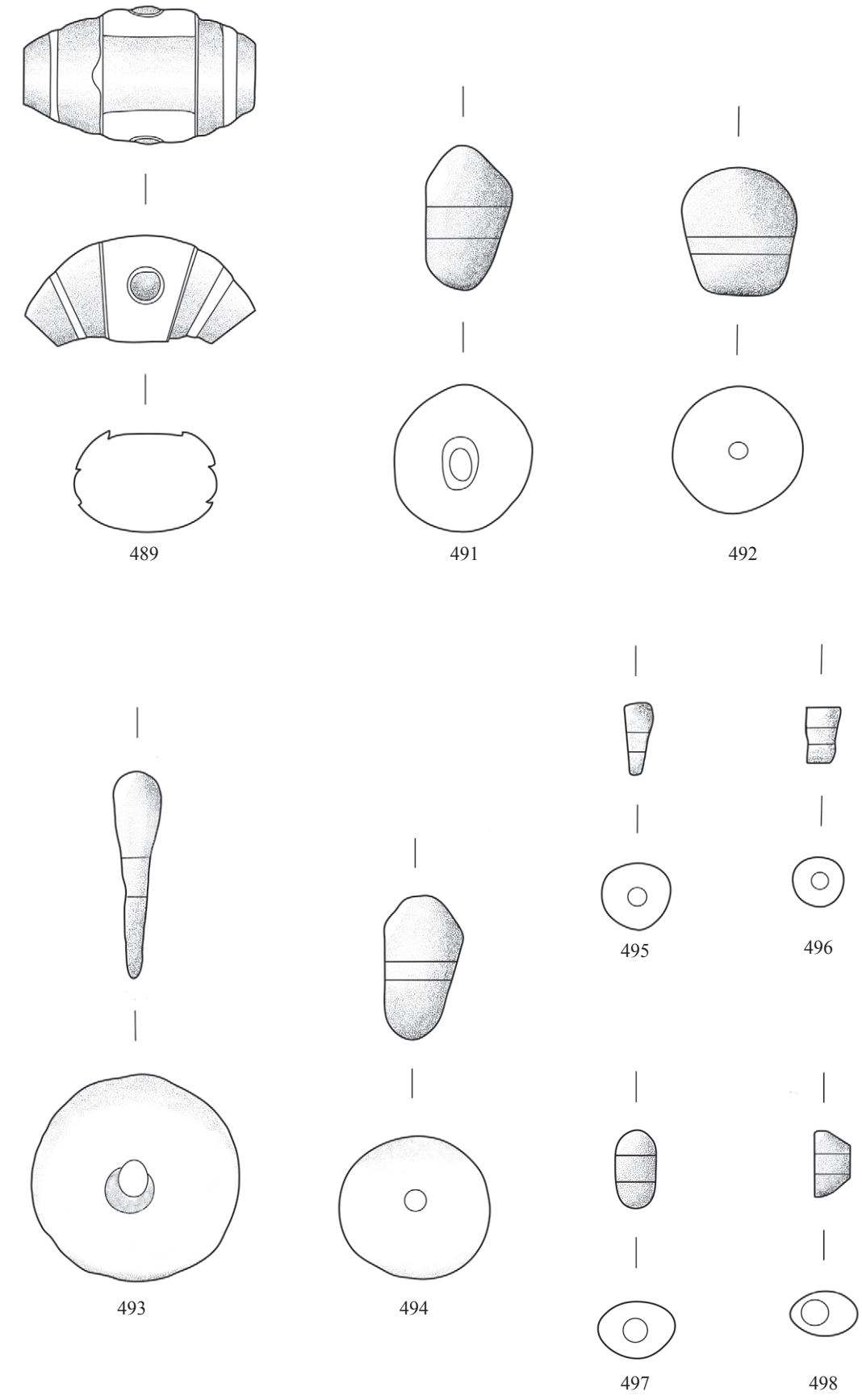


Spacers cat. 400–443

Plate 52

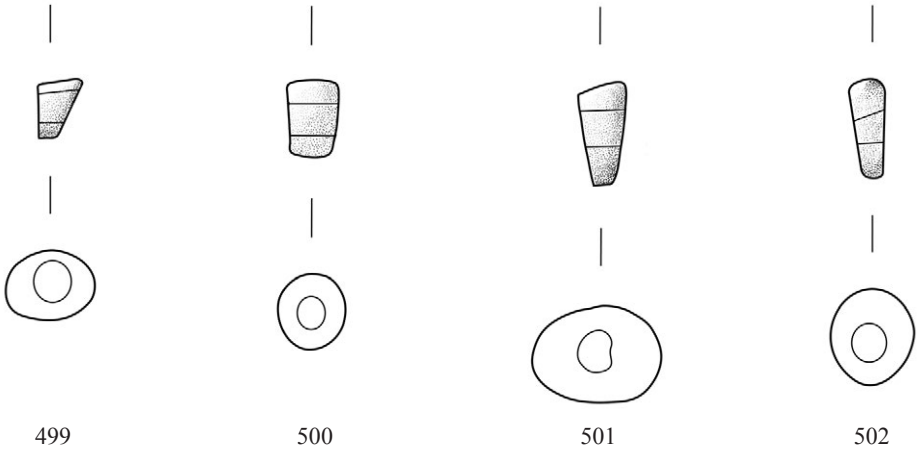


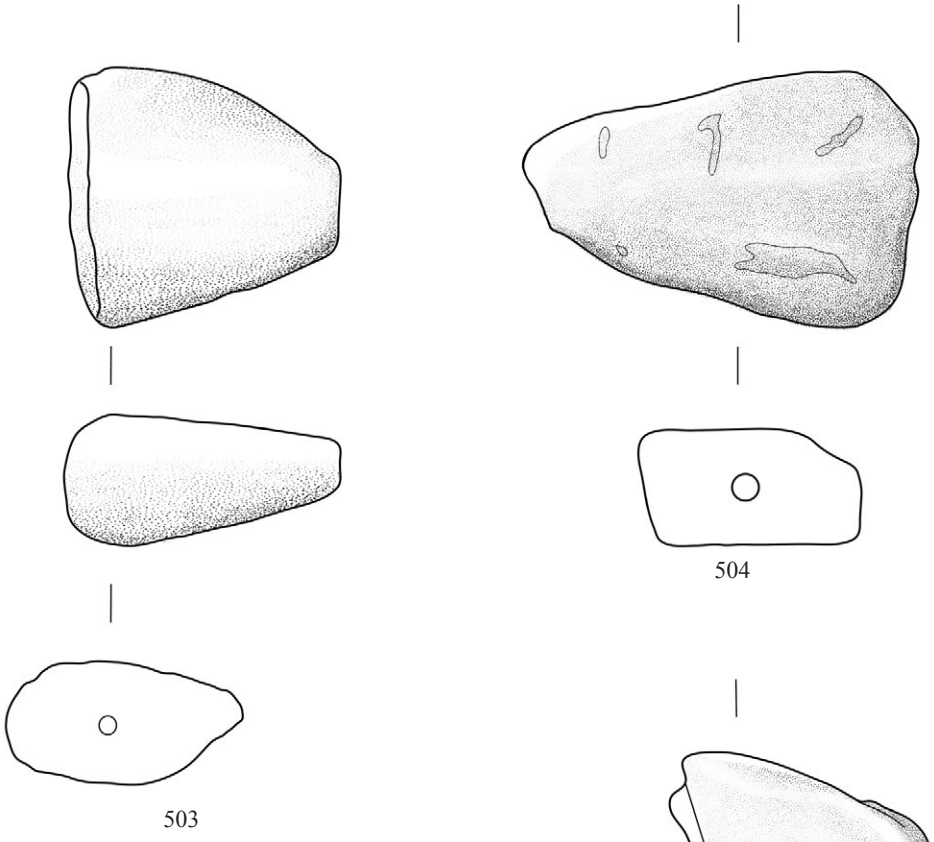
Spacers cat. 444–488



Fibulae cat. 489–498

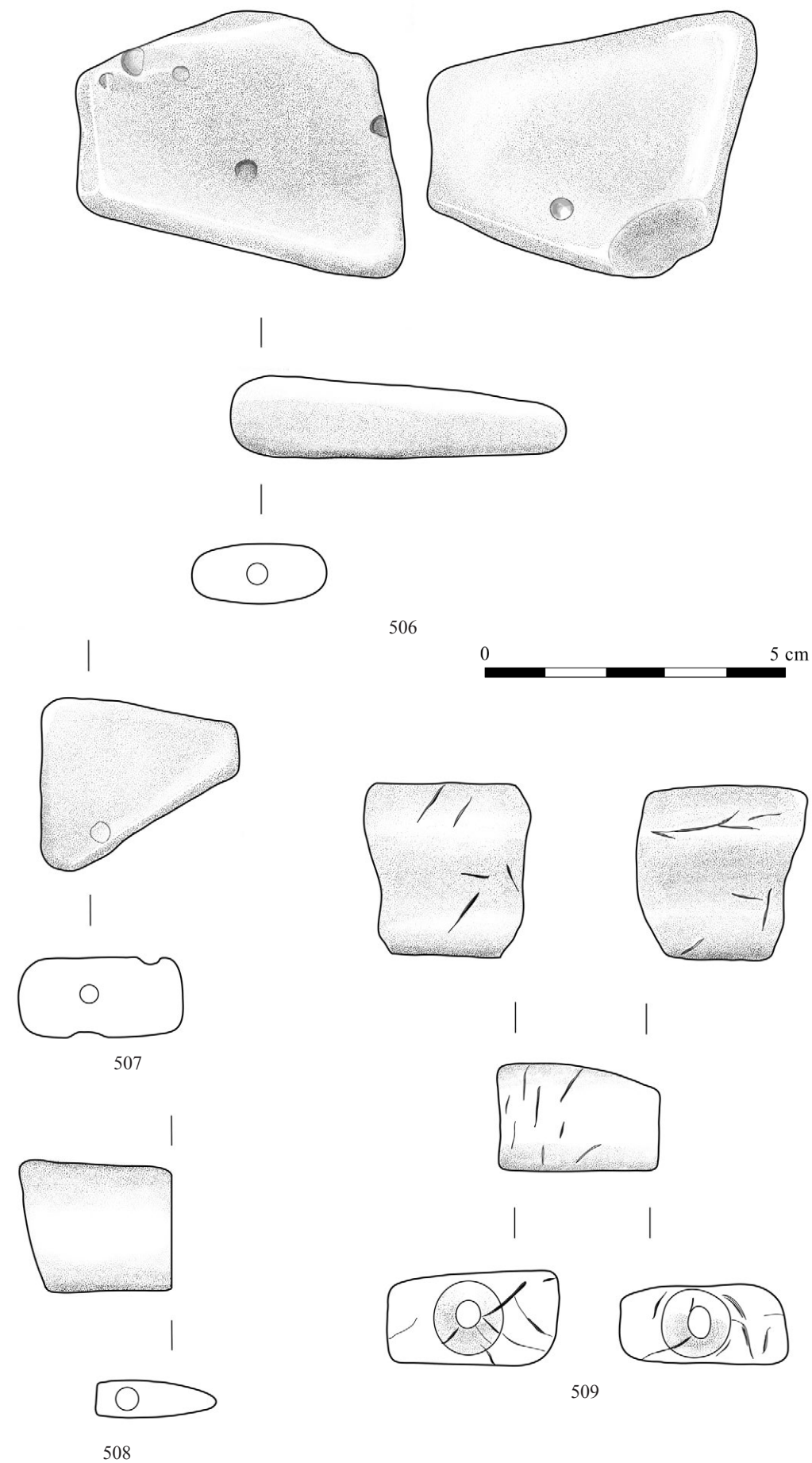
Plate 54





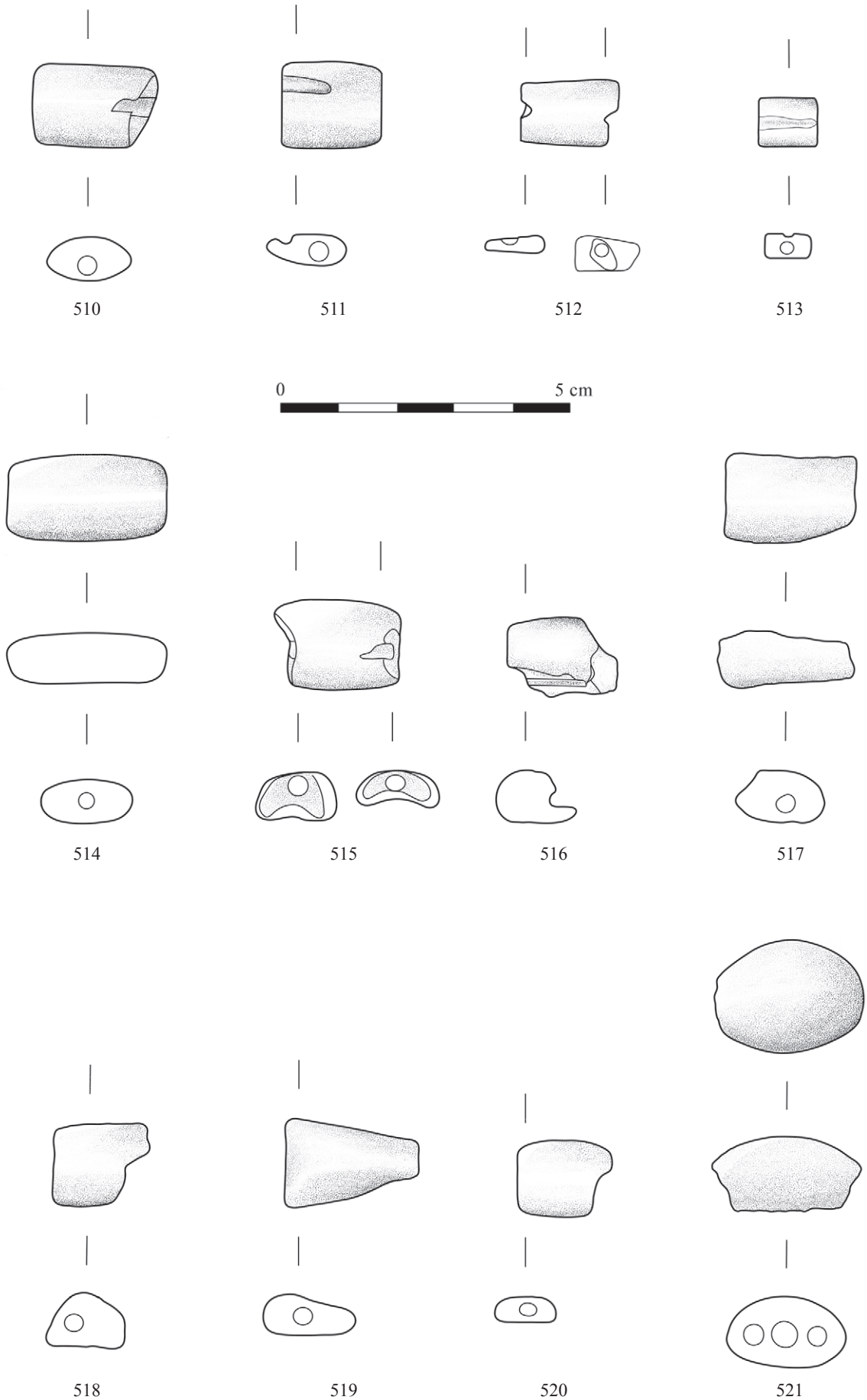


Fibulae cat. 499–505

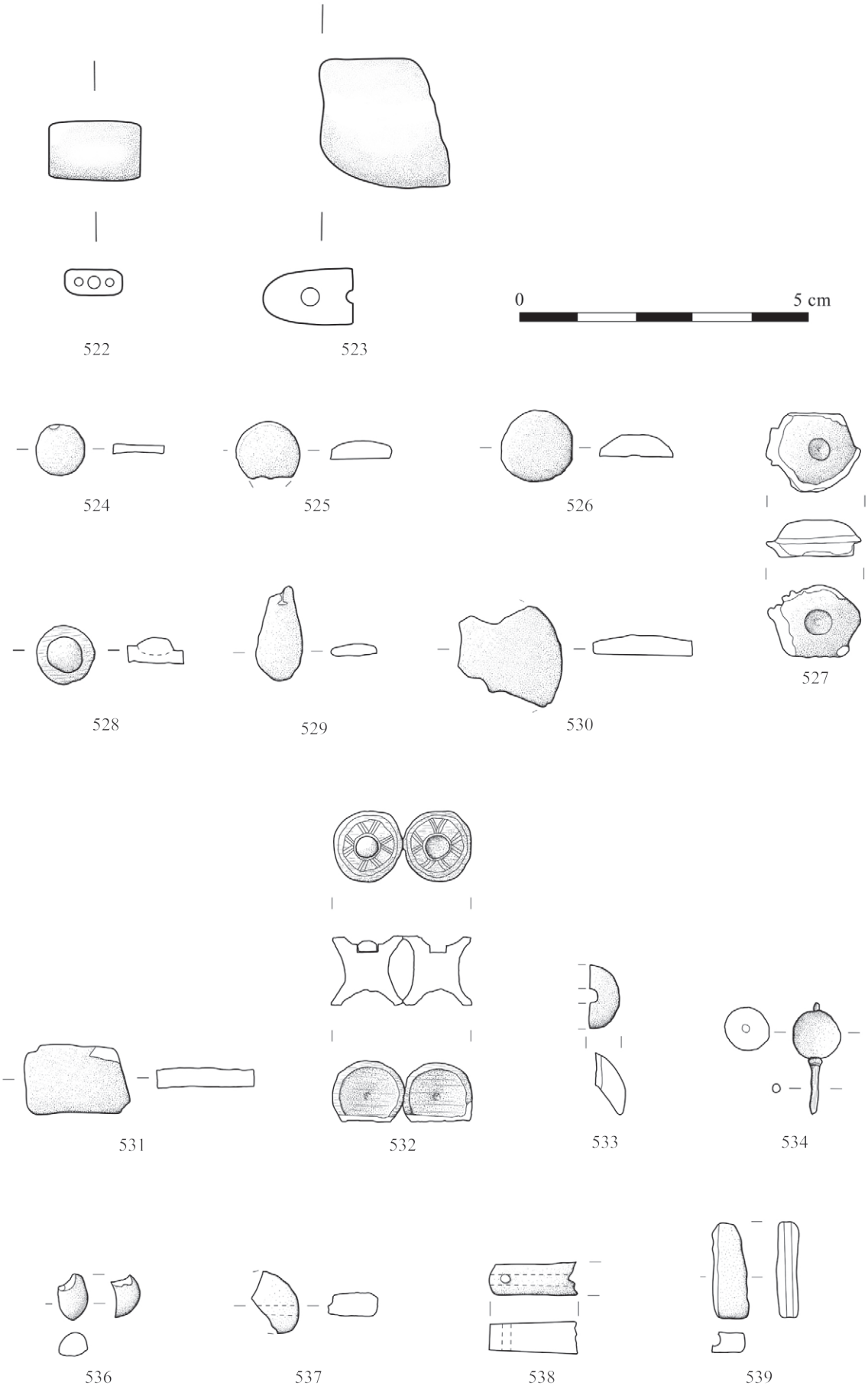


Fibulae cat. 506–509

Plate 56

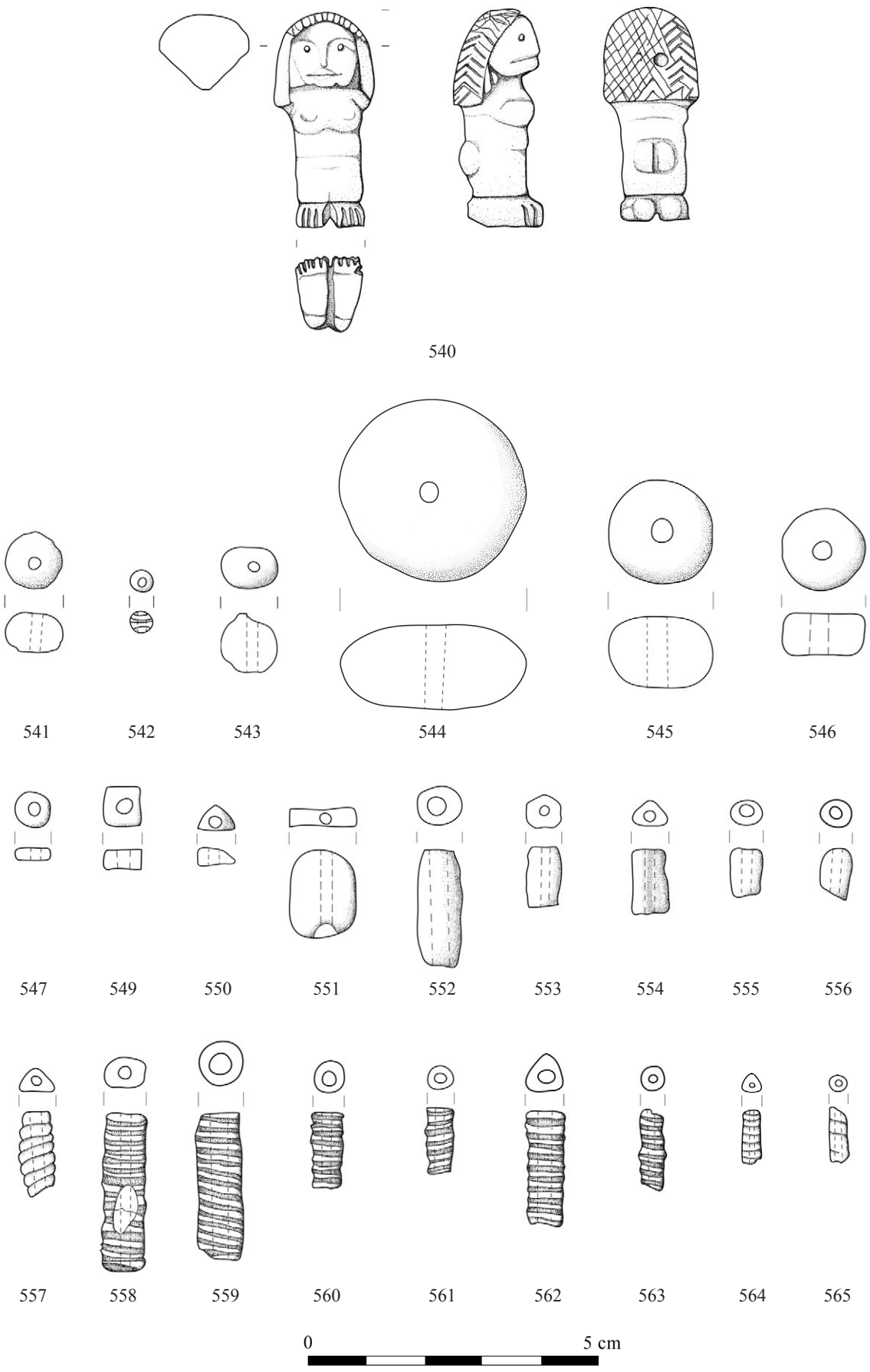


Fibulae cat. 510–521

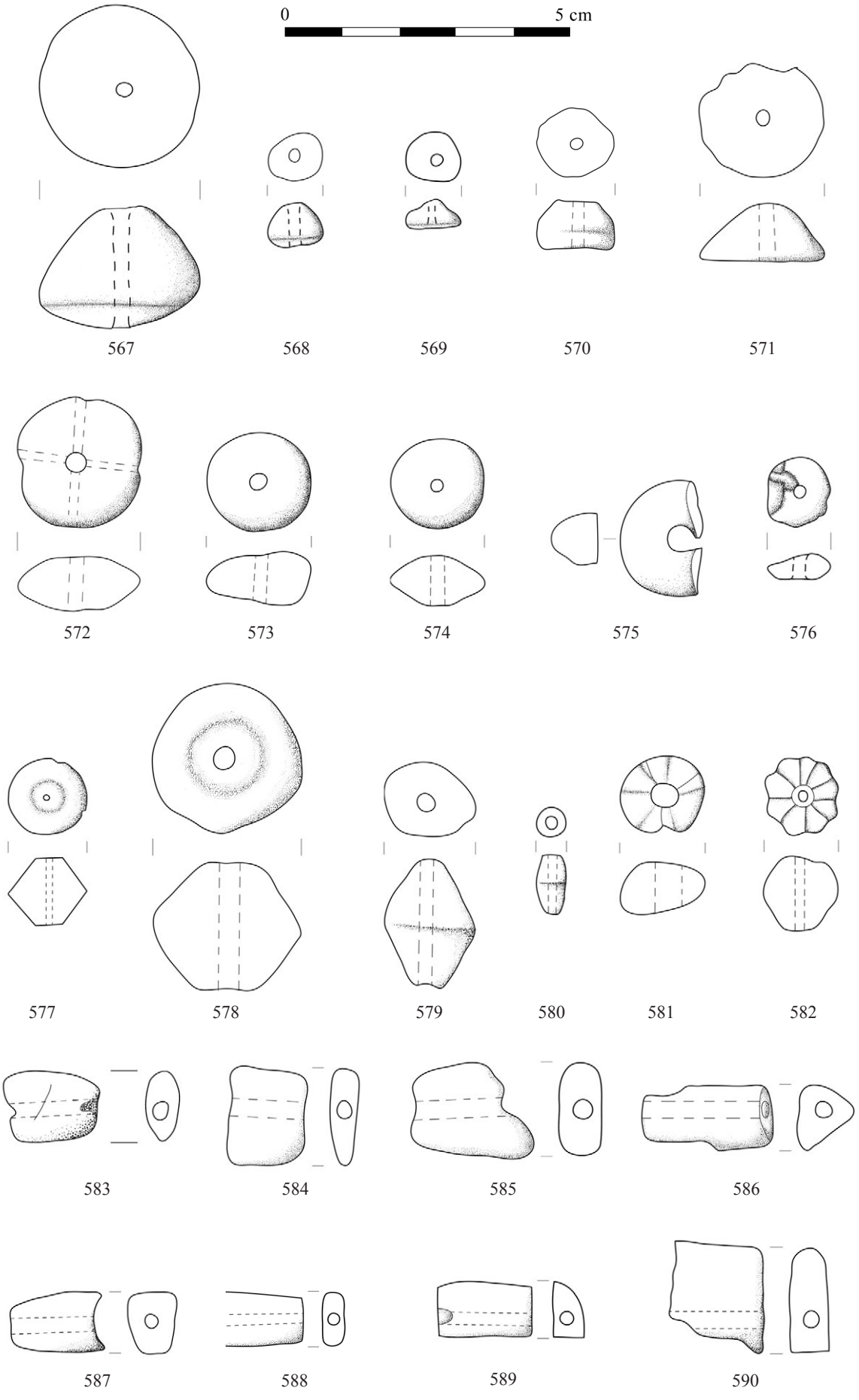


Fibulae cat. 522–523; inlays cat. 524–539

Plate 58

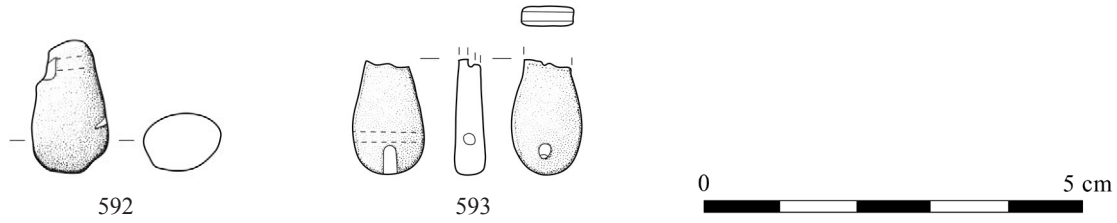


Figured find cat. 540; beads cat. 541–565

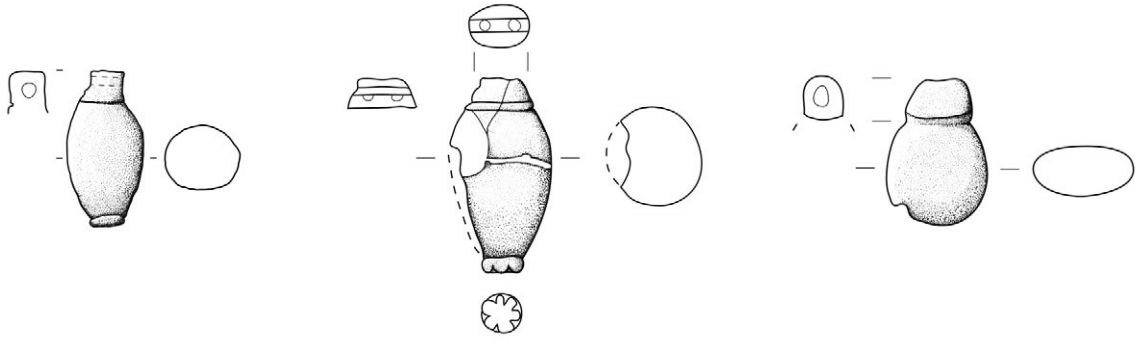


Beads cat. 567–590

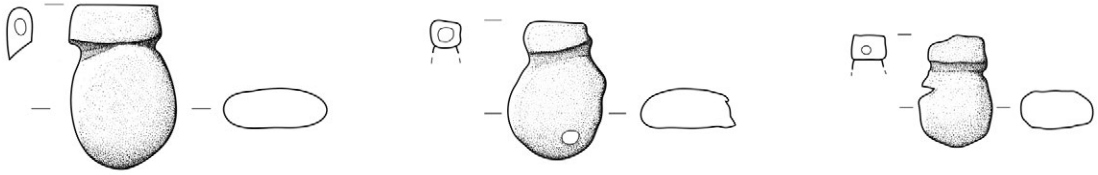
Plate 60



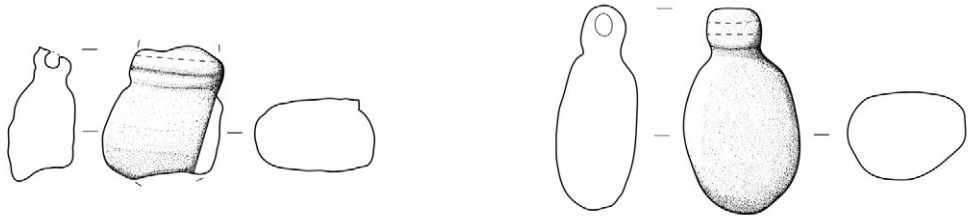
592 593



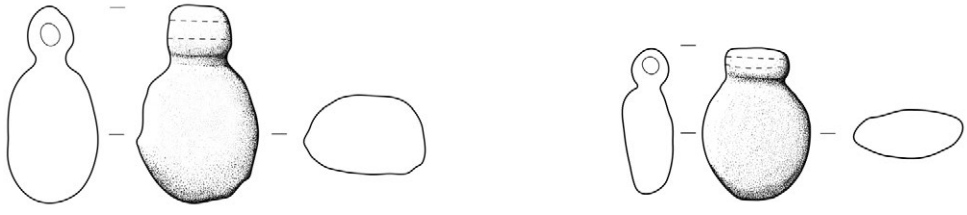
594 595 596



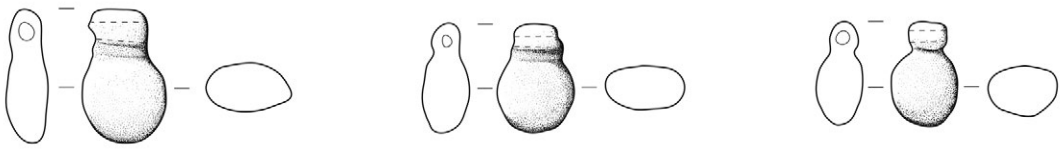
597 598 599



600 601

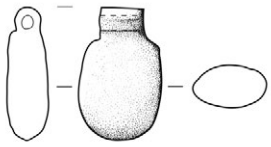


602 603

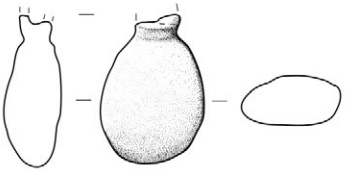


604 605 606

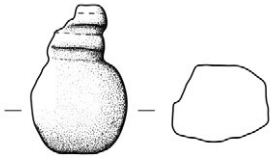
Pendants cat. 592–606



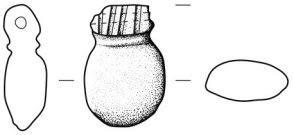
607



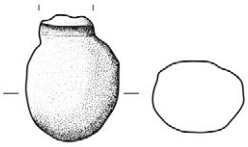
608



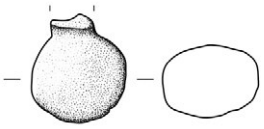
609



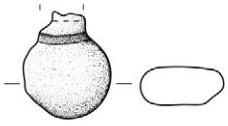
610



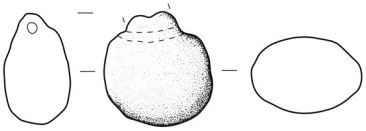
611



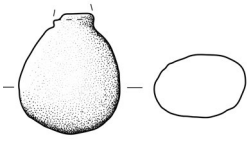
612



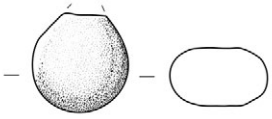
613



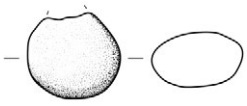
614



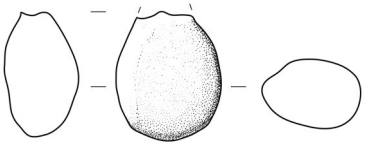
615



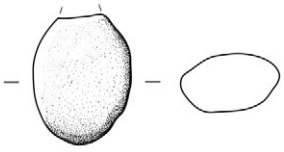
616



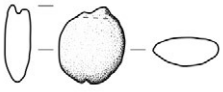
617



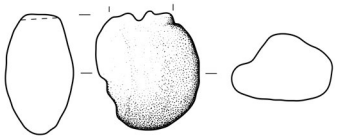
618



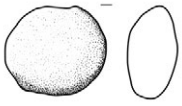
619



620



621



622



623

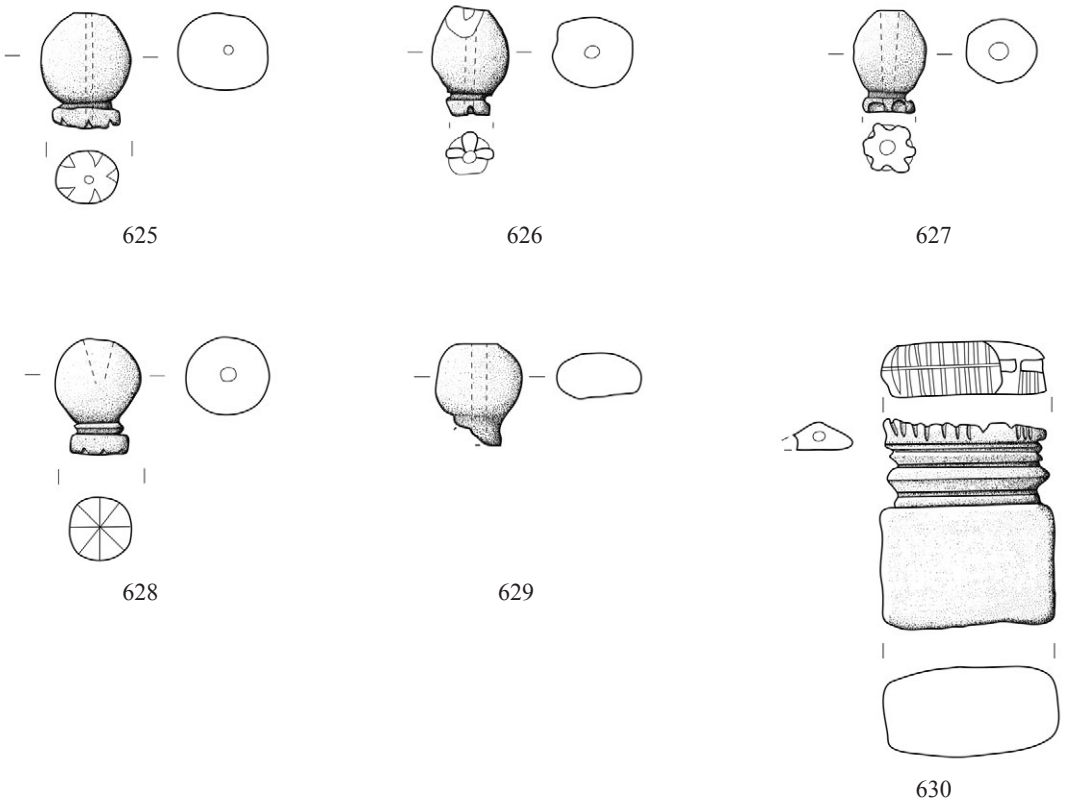


624

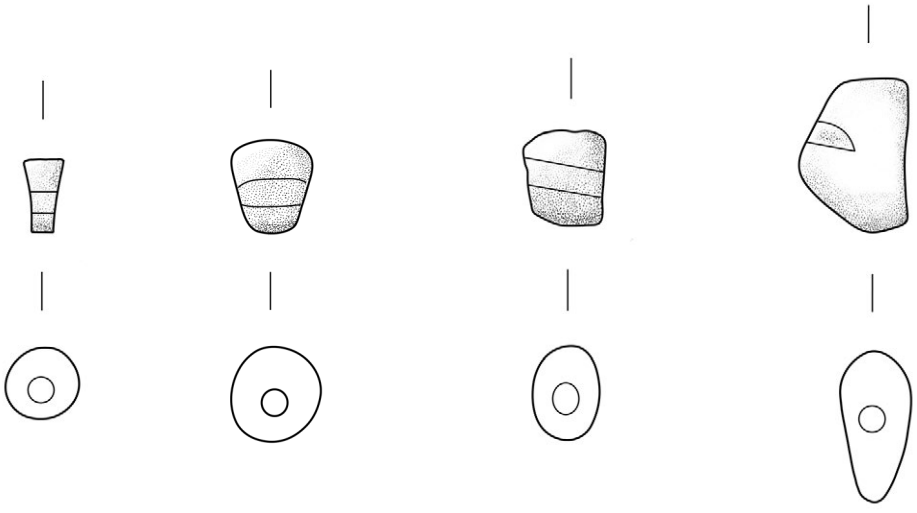
0 5 cm

Pendants cat. 607–624

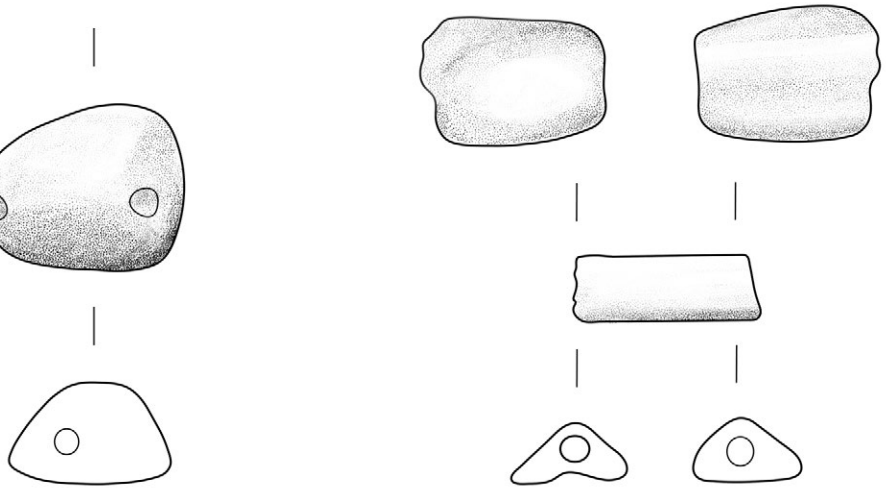
Plate 62



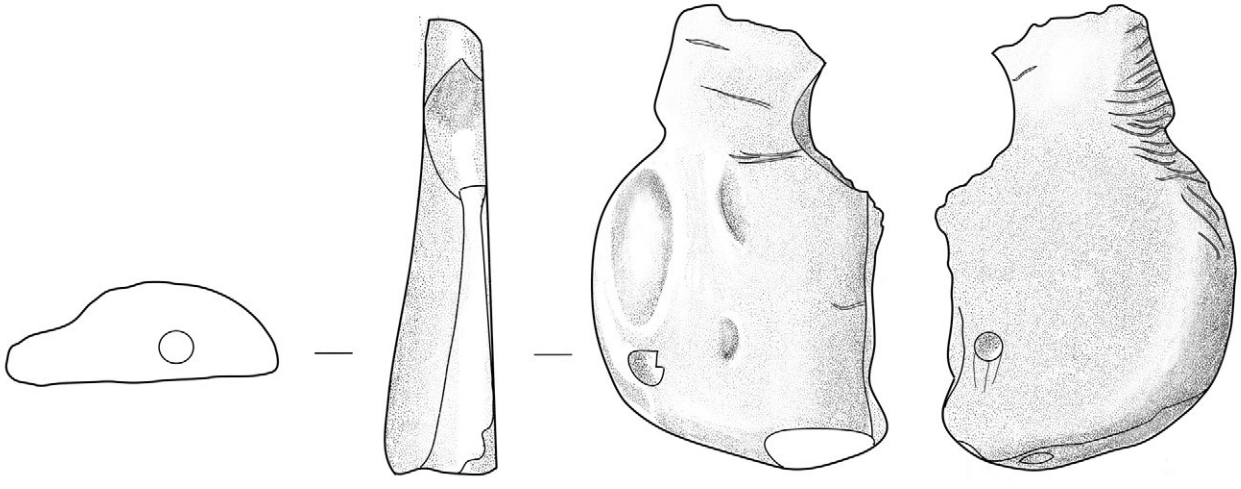
Pendants cat. 625–630; spacers cat. 631–634



635 641 642 648



649 650

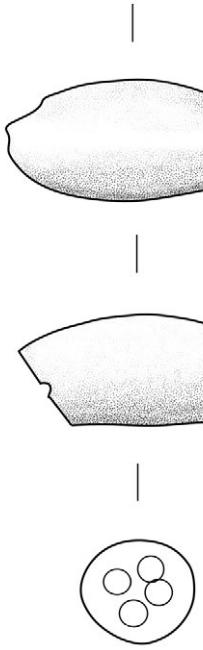


651

0 5 cm

Fibulae cat. 625–651

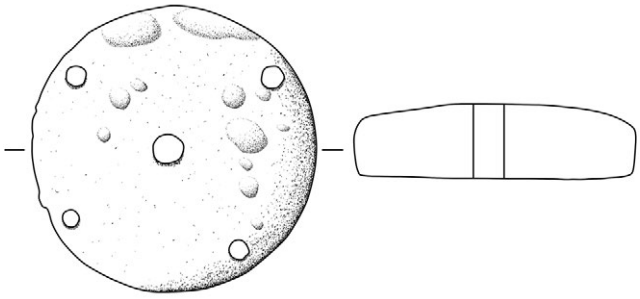
Plate 64



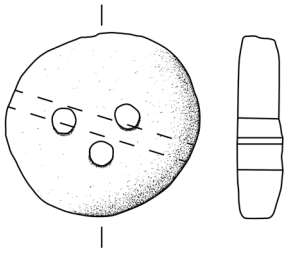
652



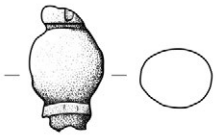
653



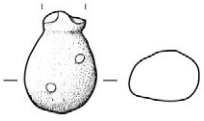
654



655



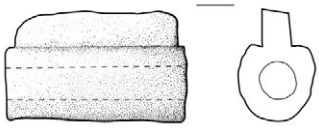
656



657



658



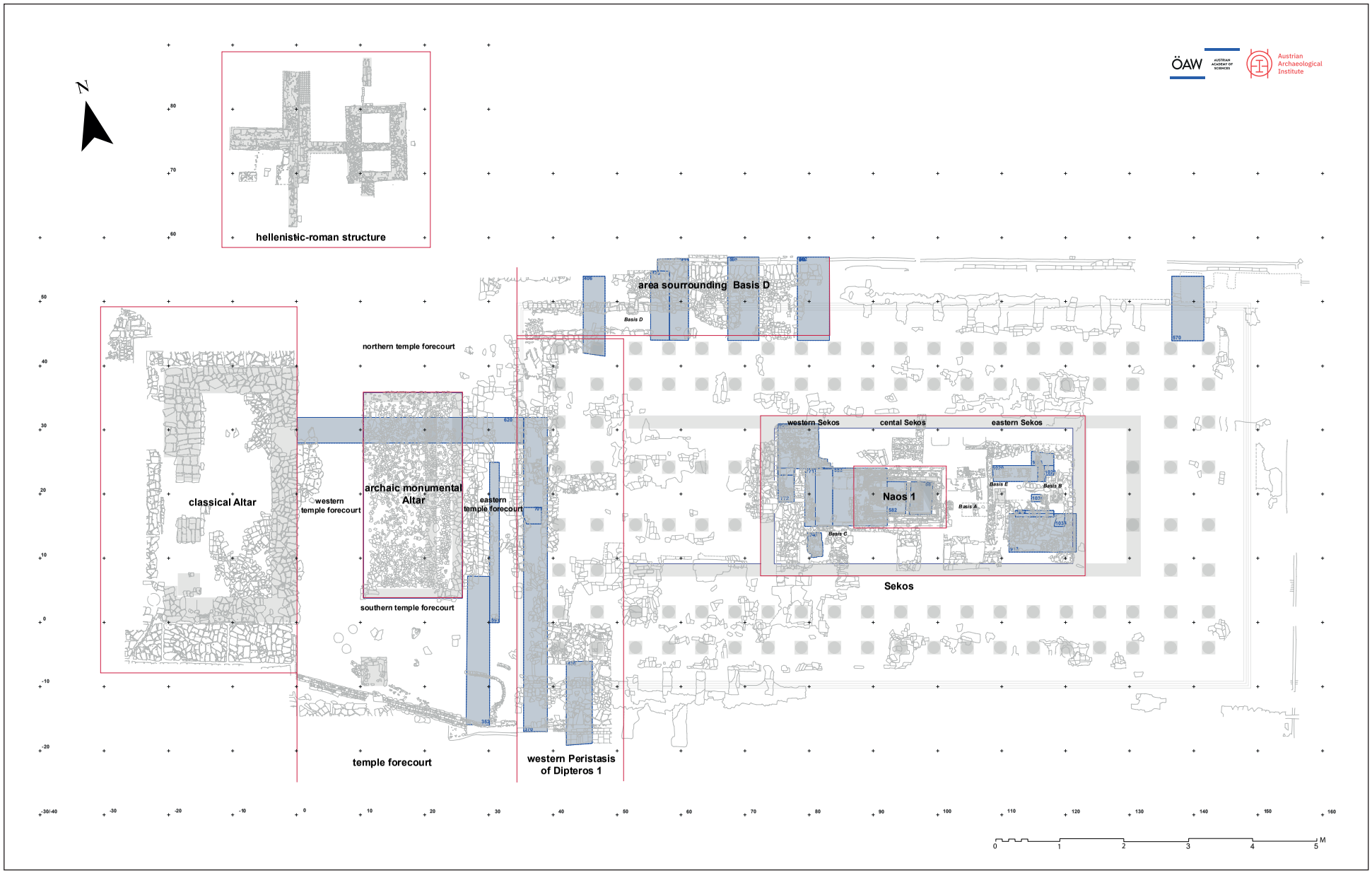
659

0 5 cm

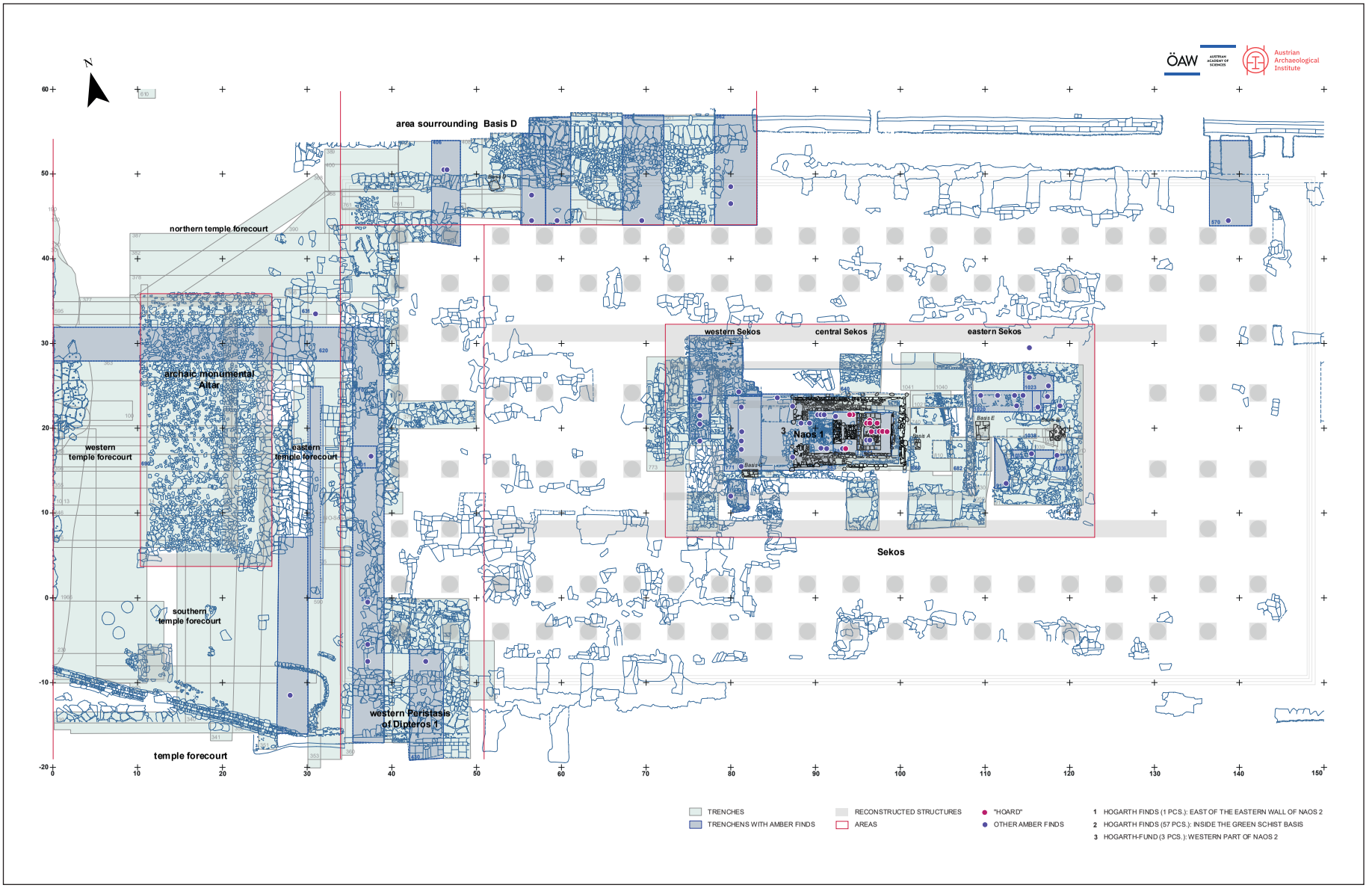
Fibula cat. 652; inlays cat. 653–655; pin heads cat. 656–658; indeterminable cat. 659

PLANS

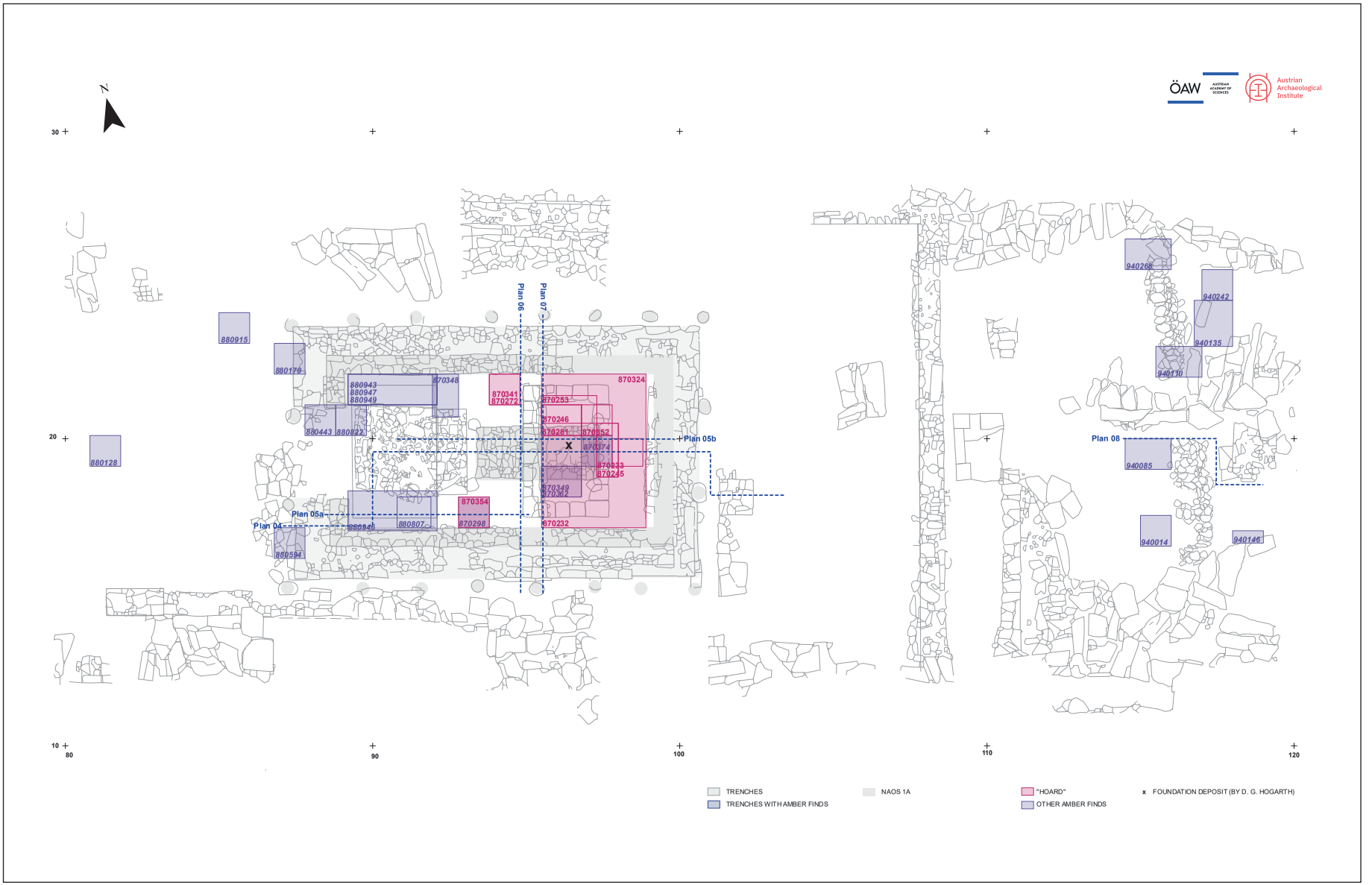
Plan 1 General plan with the excavated structures, their terms and the trenches relevant for the amber finds


ÖAW
Austrian Archaeological Institute
N
hellenistic-roman structure
area sourrounding Basis D
Basis D
northern temple forecourt
classical Altar
western temple forecourt
archaic monumental Altar
eastern temple forecourt
southern temple forecourt
temple forecourt
western Peristasis of Dipteros 1
western Sekos
cental Sekos
eastern Sekos
Naos 1
Basis E
Basis B
Basis A
Basis C
Sekos
0 1 2 3 4 5 M

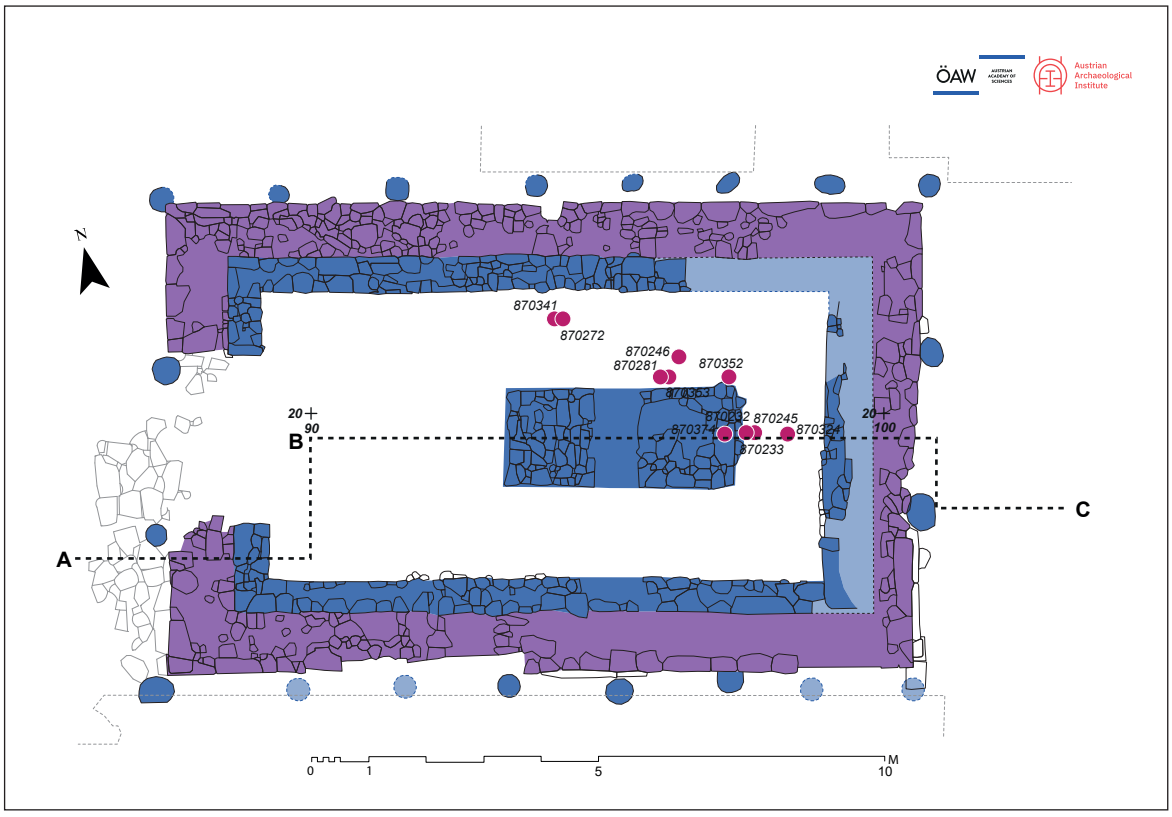
Plan 2 General plan with the horizontal distribution of the amber finds in the excavation area

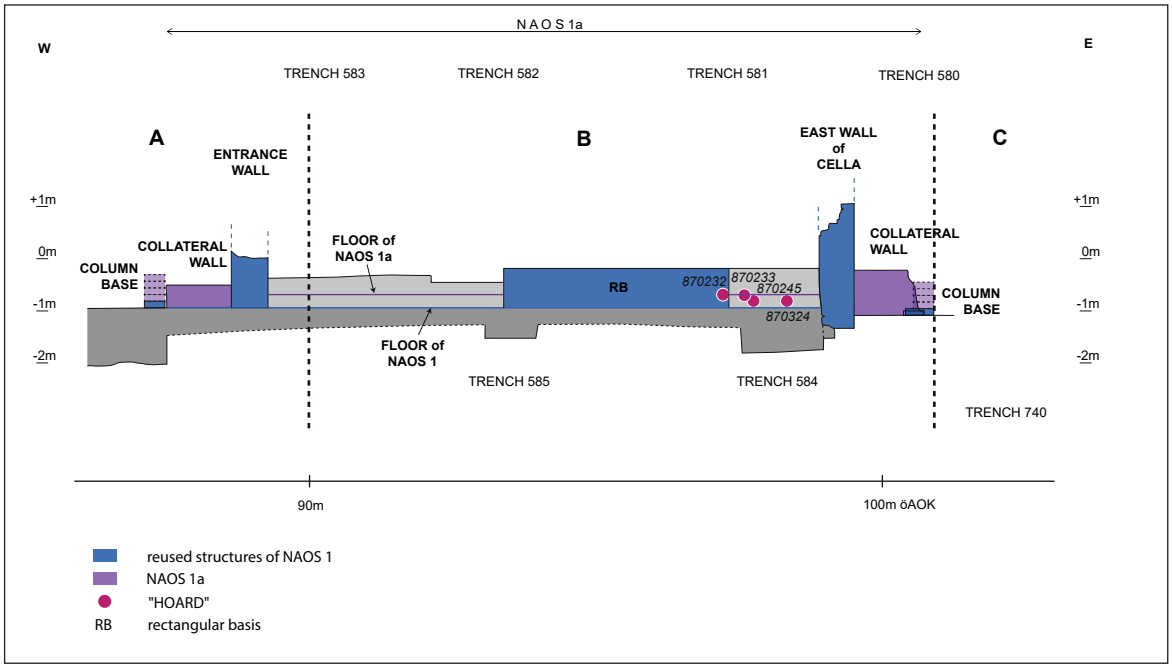

ÖAW
Austrian Archaeological Institute
area sourrounding Basis D
northern temple forecourt
archaic monumental Altar
western temple forecourt
eastern temple forecourt
southern temple forecourt
temple forecourt
western Peristasis of Dipteros 1
western Sekos
central Sekos
eastern Sekos
Naos 1
Sekos
TRENCHES
TRENCHENS WITH AMBER FINDS
RECONSTRUCTED STRUCTURES
AREAS
"HOARD"
OTHER AMBER FINDS
1 HOGARTH FINDS (1 PCS.): EAST OF THE EASTERN WALL OF NAOS 2
2 HOGARTH FINDS (57 PCS.): INSIDE THE GREEN SCHIST BASIS
3 HOGARTH-FUND (3 PCS.): WESTERN PART OF NAOS 2

Plan 3 Locations of the metrical excavation units with amber objects within the central area of the temenos (in the sekos of the later Dipteros 1)

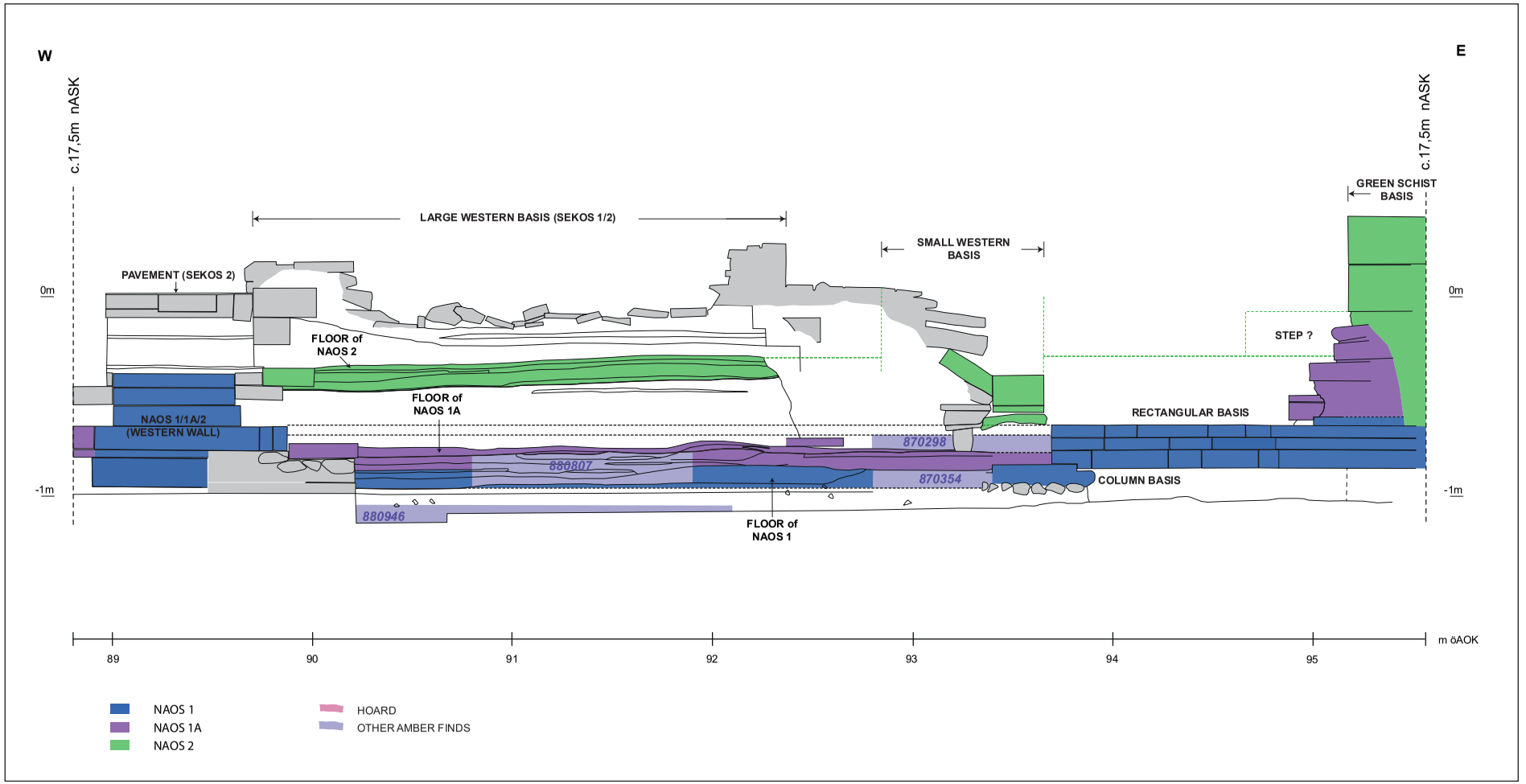

N
ÖAW
Austrian Archaeological Institute
30
20
10
80
90
100
110
120
Plan 06
Plan 07
Plan 05b
Plan 05a
Plan 04
Plan 08
880915
880176
880943
880947
880949
870348
880443
880822
880128
870341
870272
870324
870253
870246
870281
870852
870274
870333
870245
870349
870362
870354
870298
880807
880945
880594
870232
940268
940242
940135
940130
940085
940014
940146
TRENCHES
TRENCHES WITH AMBER FINDS
NAOS 1A
"HOARD"
OTHER AMBER FINDS
x FOUNDATION DEPOSIT (BY D. G. HOGARTH)

Plan 4 Floor plan of Naos 1a and section showing the location of the amber hoard

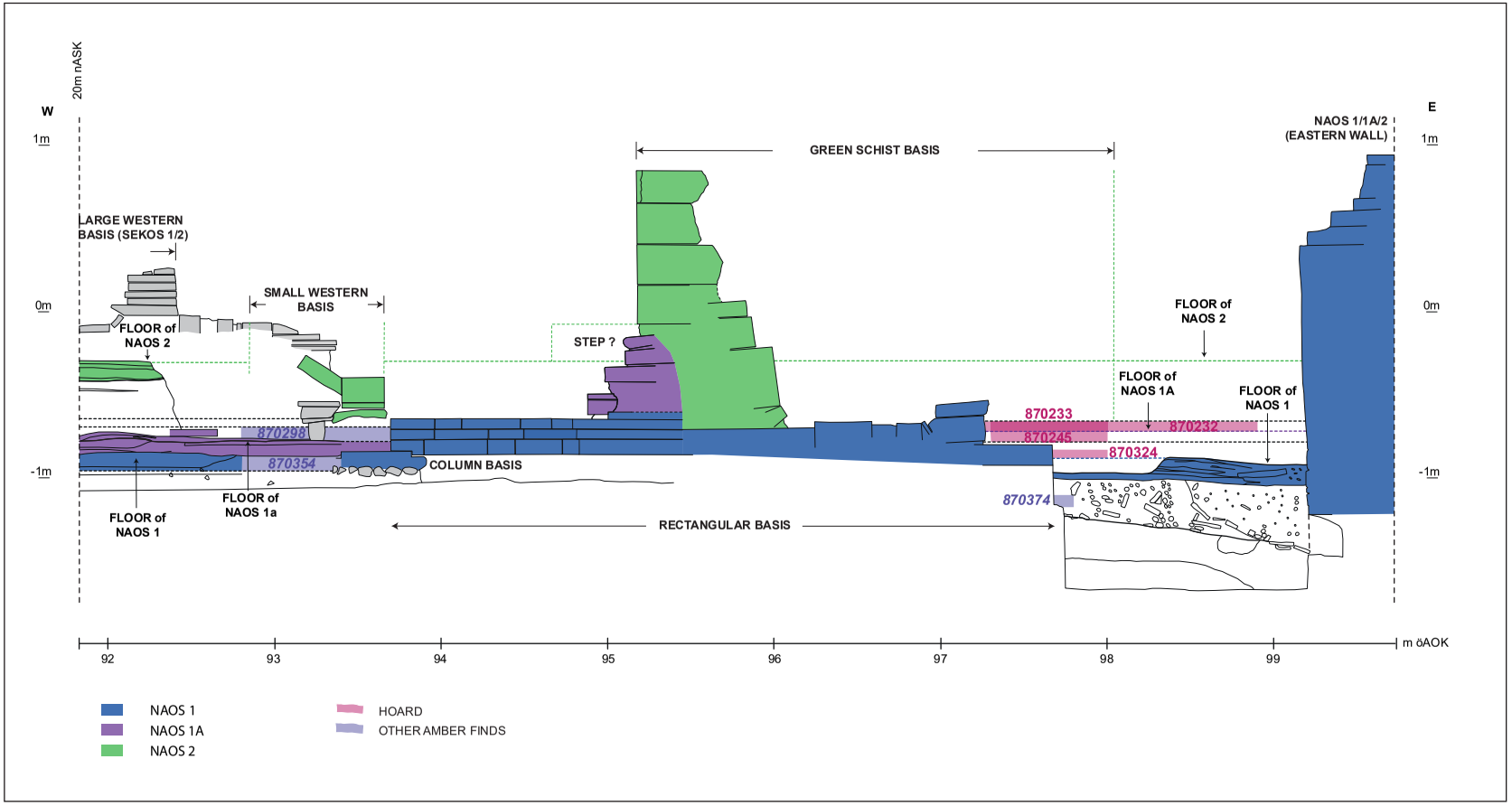

ÖAW
Austrian Archaeological Institute
N
870341
870272
870246
870281
870352
870353
870232
870245
870374
870324
870233
20
90
B
20
100
A
C
0
1
5
M
10


NAOS 1a
W
E
TRENCH 583
TRENCH 582
TRENCH 581
TRENCH 580
A
B
C
ENTRANCE WALL
EAST WALL of CELLA
+1m
0m
-1m
-2m
COLLATERAL WALL
COLUMN BASE
FLOOR of NAOS 1a
RB
870232
870233
870245
870324
FLOOR of NAOS 1
TRENCH 585
TRENCH 584
TRENCH 740
90m
100m öAOK
reused structures of NAOS 1
NAOS 1a
"HOARD"
RB
rectangular basis

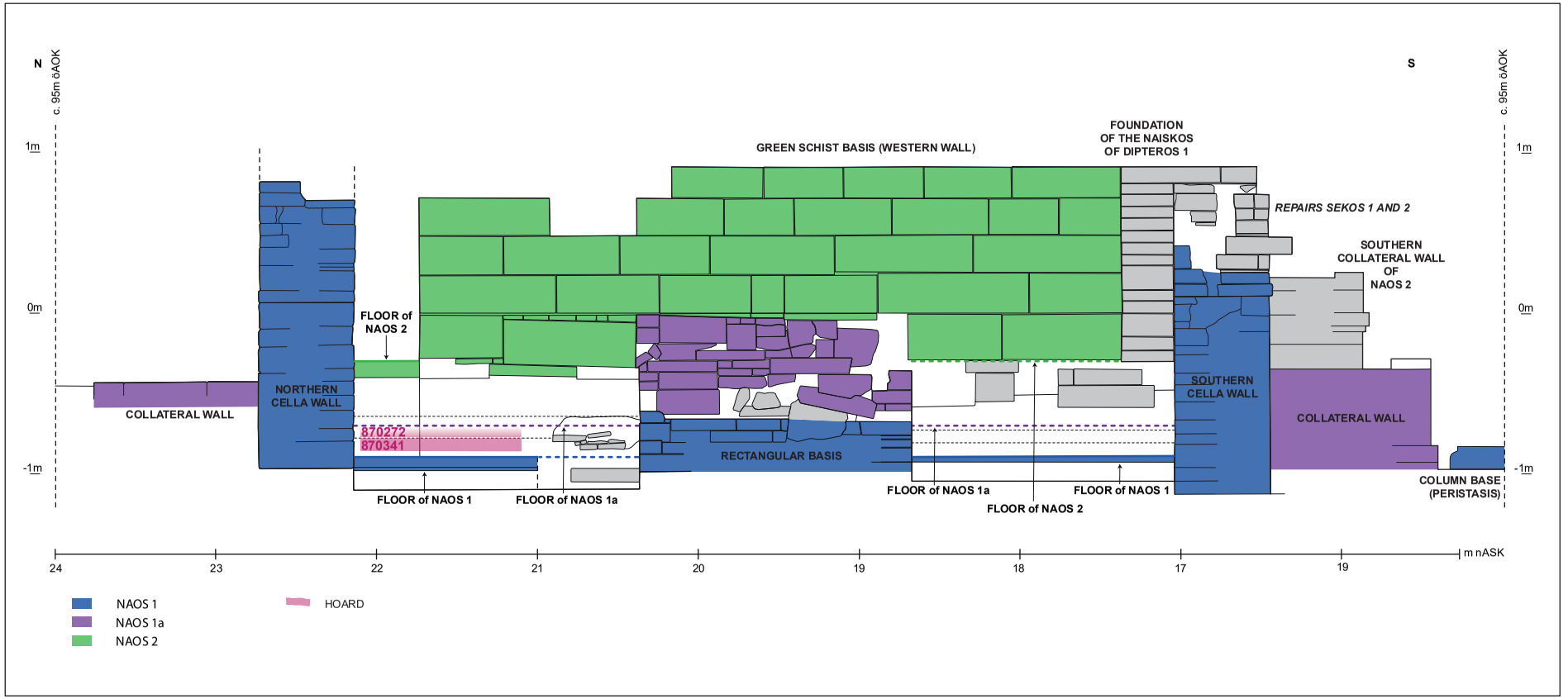
Plan 5 a and b Section through the western part of the cella of Naos 1, Naos 2 and Sekos 1. View from the south.
From left to right: western Collateral Wall, western door wall of Naos 1 and Naos 2, western basis of Sekos 1 and Sekos 2, Small Western Basis of Naos 2, Rectangular Basis of Naos 1, western wall of the Green Schist Basis of Naos 2, eastern wall of Naos 1 and Naos 2, eastern Collateral Wall of Naos 2 (on top of which is placed the eastern enclosure wall of Sekos 1), Inner Sekos Enclosure of Dipteros 1


W
E
c.17,5m nASK
c.17,5m nASK
0m
0m
-1m
-1m
LARGE WESTERN BASIS (SEKOS 1/2)
SMALL WESTERN BASIS
GREEN SCHIST BASIS
PAVEMENT (SEKOS 2)
FLOOR of NAOS 2
FLOOR of NAOS 1A
STEP ?
NAOS 1/1A/2 (WESTERN WALL)
RECTANGULAR BASIS
870298
880807
870354
COLUMN BASIS
880946
FLOOR of NAOS 1
89
90
91
92
93
94
95
m öAOK
NAOS 1
NAOS 1A
NAOS 2
HOARD
OTHER AMBER FINDS

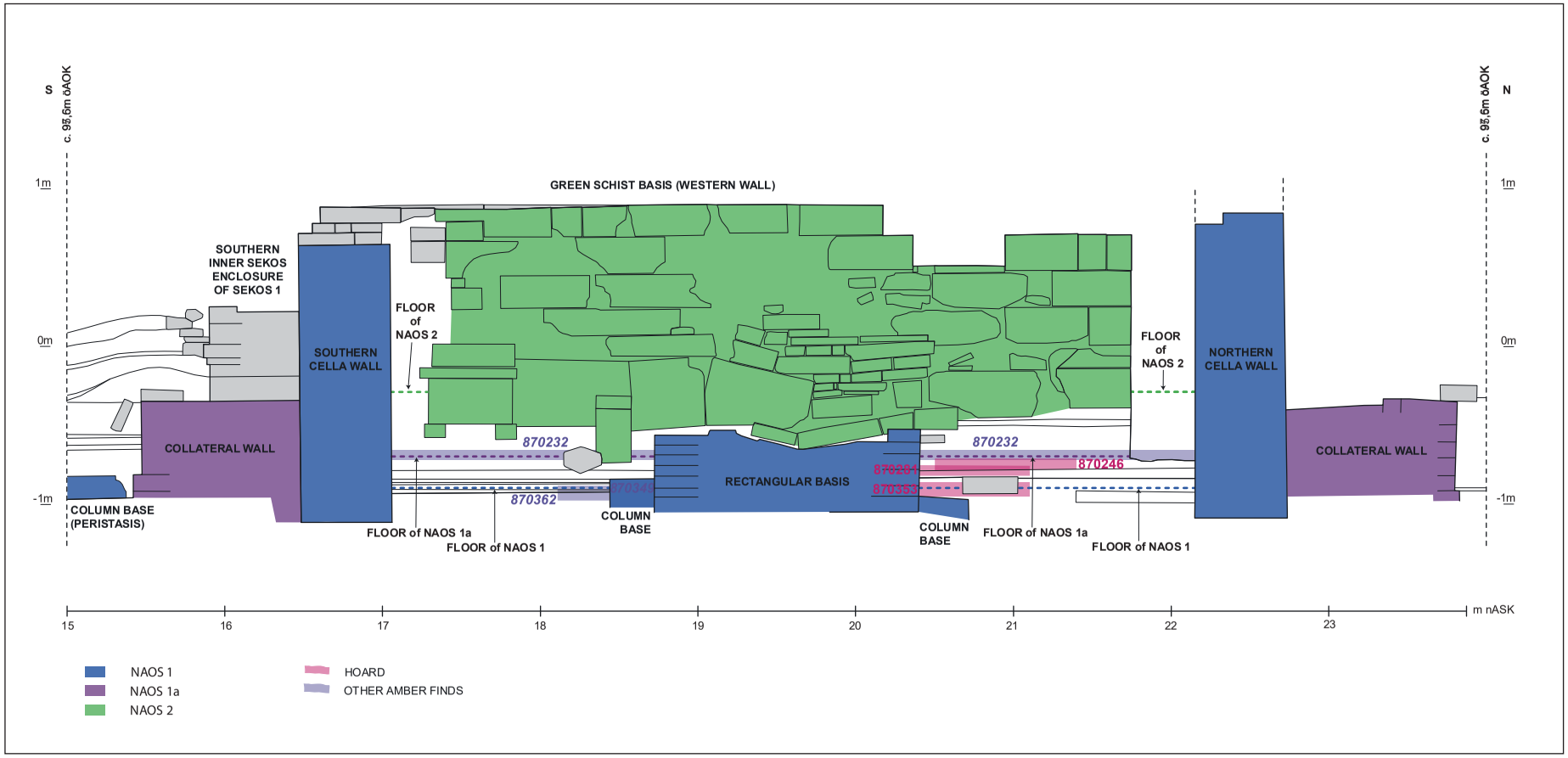
Plan 5 a and b Section through the western part of the cella of Naos 1, Naos 2 and Sekos 1. View from the south.
From left to right: western Collateral Wall, western door wall of Naos 1 and Naos 2, western basis of Sekos 1 and Sekos 2, Small Western Basis of Naos 2, Rectangular Basis of Naos 1, western wall of the Green Schist Basis of Naos 2, eastern wall of Naos 1 and Naos 2, eastern Collateral Wall of Naos 2 (on top of which is placed the eastern enclosure wall of Sekos 1), Inner Sekos Enclosure of Dipteros 1


W
E
20m nASK
1m
0m
-1m
LARGE WESTERN BASIS (SEKOS 1/2)
SMALL WESTERN BASIS
GREEN SCHIST BASIS
NAOS 1/1A/2 (EASTERN WALL)
FLOOR of NAOS 2
STEP ?
FLOOR of NAOS 2
FLOOR of NAOS 1A
FLOOR of NAOS 1
870298
870354
870233
870245
870232
870324
870374
COLUMN BASIS
FLOOR of NAOS 1
FLOOR of NAOS 1a
RECTANGULAR BASIS
92
93
94
95
96
97
98
99
m ÖAOK
NAOS 1
NAOS 1A
NAOS 2
HOARD
OTHER AMBER FINDS

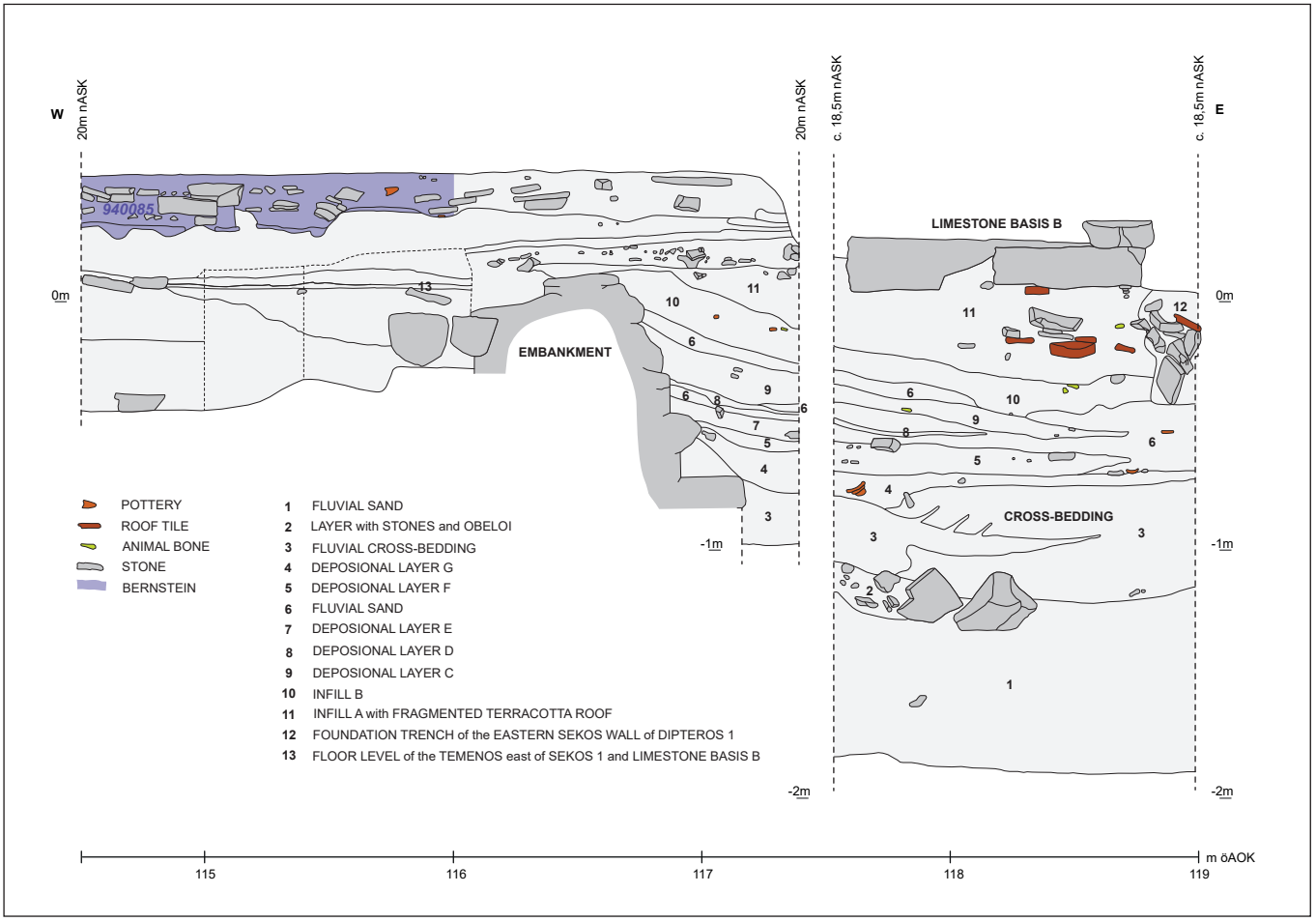
Plan 6 Section through the western wall of the Green Schist Basis, view from the west. North-south section through Naos 1 and Naos 2 showing layers excavated in 1987 within the temples. View from the west


N
S
c. 95m ϭAOK
c. 95m ϭAOK
1m
0m
-1m
GREEN SCHIST BASIS (WESTERN WALL)
FOUNDATION OF THE NAISKOS OF DIPTEROS 1
REPAIRS SEKOS 1 AND 2
SOUTHERN COLLATERAL WALL OF NAOS 2
FLOOR of NAOS 2
NORTHERN CELLA WALL
COLLATERAL WALL
870272
870341
RECTANGULAR BASIS
SOUTHERN CELLA WALL
COLLATERAL WALL
COLUMN BASE (PERISTASIS)
FLOOR of NAOS 1
FLOOR of NAOS 1a
FLOOR of NAOS 1a
FLOOR of NAOS 2
FLOOR of NAOS 1
24
23
22
21
20
19
18
17
19
m nASK
NAOS 1
NAOS 1a
NAOS 2
HOARD

Plan 7 Section through the western wall of the Green Schist Basis, view from the east. North-south section through Naos 1 and Naos 2 showing layers excavated in 1987 within the temples. View from the east


S
c. 95,6m δAOK
N
c. 95,6m δAOK
1m
0m
-1m
GREEN SCHIST BASIS (WESTERN WALL)
SOUTHERN INNER SEKOS ENCLOSURE OF SEKOS 1
SOUTHERN CELLA WALL
FLOOR of NAOS 2
FLOOR of NAOS 2
NORTHERN CELLA WALL
COLLATERAL WALL
COLLATERAL WALL
870232
870232
870246
870362
RECTANGULAR BASIS
COLUMN BASE (PERISTASIS)
COLUMN BASE
COLUMN BASE
FLOOR of NAOS 1a
FLOOR of NAOS 1
FLOOR of NAOS 1a
FLOOR of NAOS 1
15
16
17
18
19
20
21
22
23
m nASK
NAOS 1
NAOS 1a
NAOS 2
HOARD
OTHER AMBER FINDS

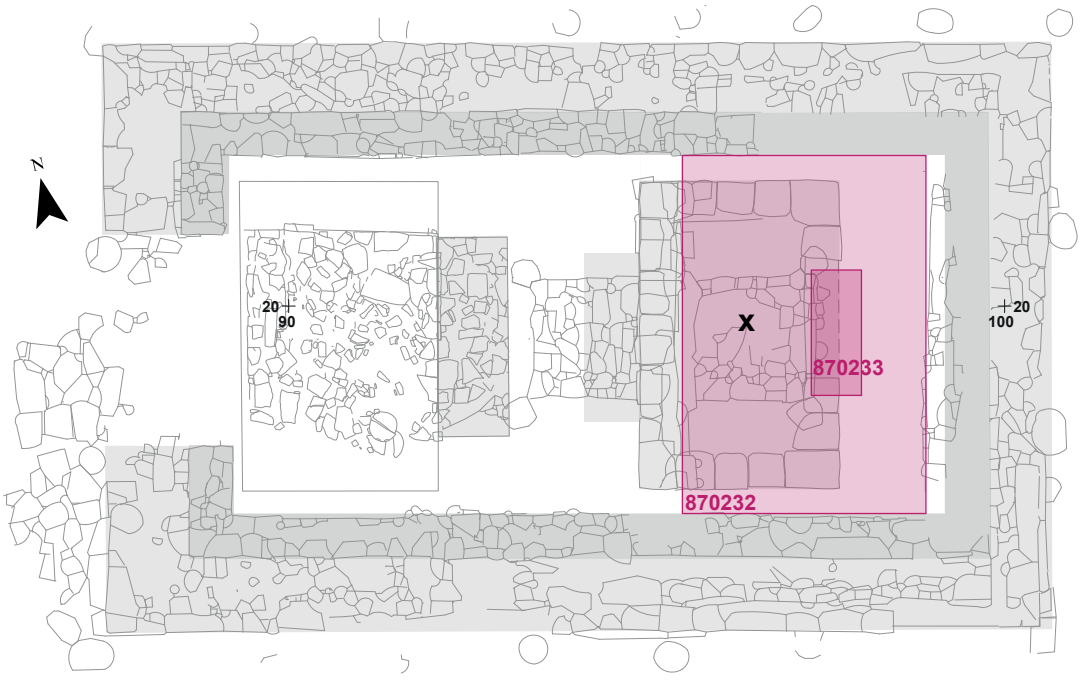
Plan 8 Limestone Basis B – profile Sacrificial deposit in the nearly dried out riverbed, located under Limestone Basis B east of Sekos 1. Central section seen from south


W
E
20m nASK
c. 18,5m nASK
940085
EMBANKMENT
LIMESTONE BASIS B
CROSS-BEDDING
0m
-1m
-2m
POTTERY
ROOF TILE
ANIMAL BONE
STONE
BERNSTEIN
1 FLUVIAL SAND
2 LAYER with STONES and OBELOI
3 FLUVIAL CROSS-BEDDING
4 DEPOSIONAL LAYER G
5 DEPOSIONAL LAYER F
6 FLUVIAL SAND
7 DEPOSIONAL LAYER E
8 DEPOSIONAL LAYER D
9 DEPOSIONAL LAYER C
10 INFILL B
11 INFILL A with FRAGMENTED TERRACOTTA ROOF
12 FOUNDATION TRENCH of the EASTERN SEKOS WALL of DIPTEROS 1
13 FLOOR LEVEL of the TEMENOS east of SEKOS 1 and LIMESTONE BASIS B
115
116
117
118
119
m öAOK

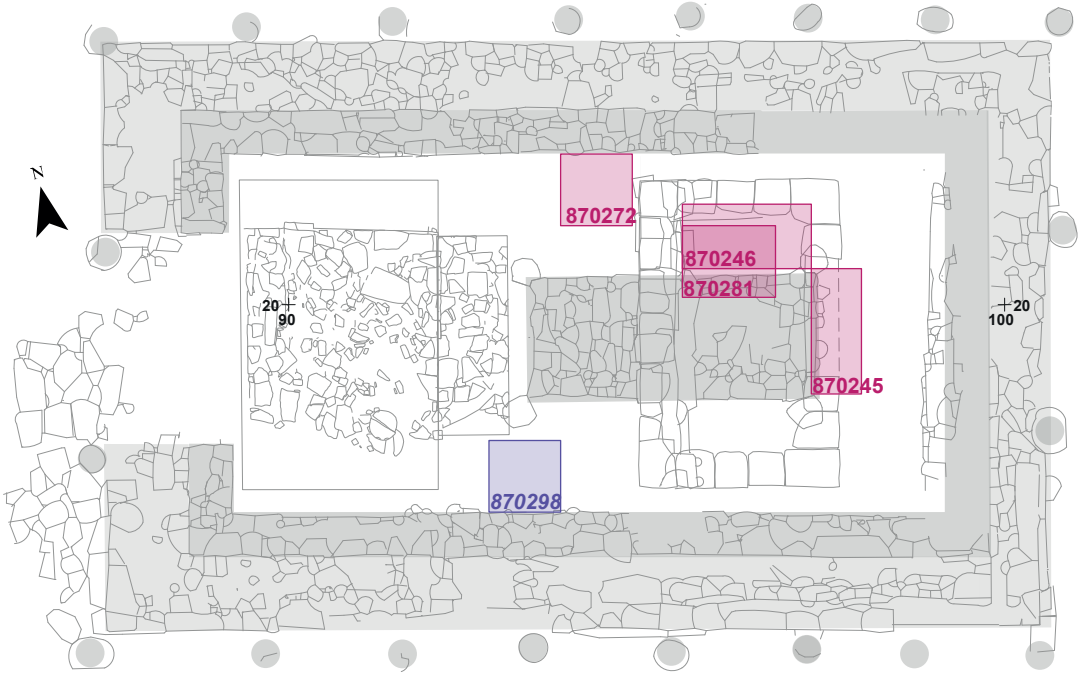
Plan 9 Find spots of the amber objects connected with Naos 2 (above) and Naos 1a (below)

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RAMMED EARTH LAYER – SUBFLOOR OF NAOS 2 [H: -0,66 to -0,68/-73 m ASL]



FLOOR NAOS 1A [H: -0,68/-73 to -0,81 m ASL]

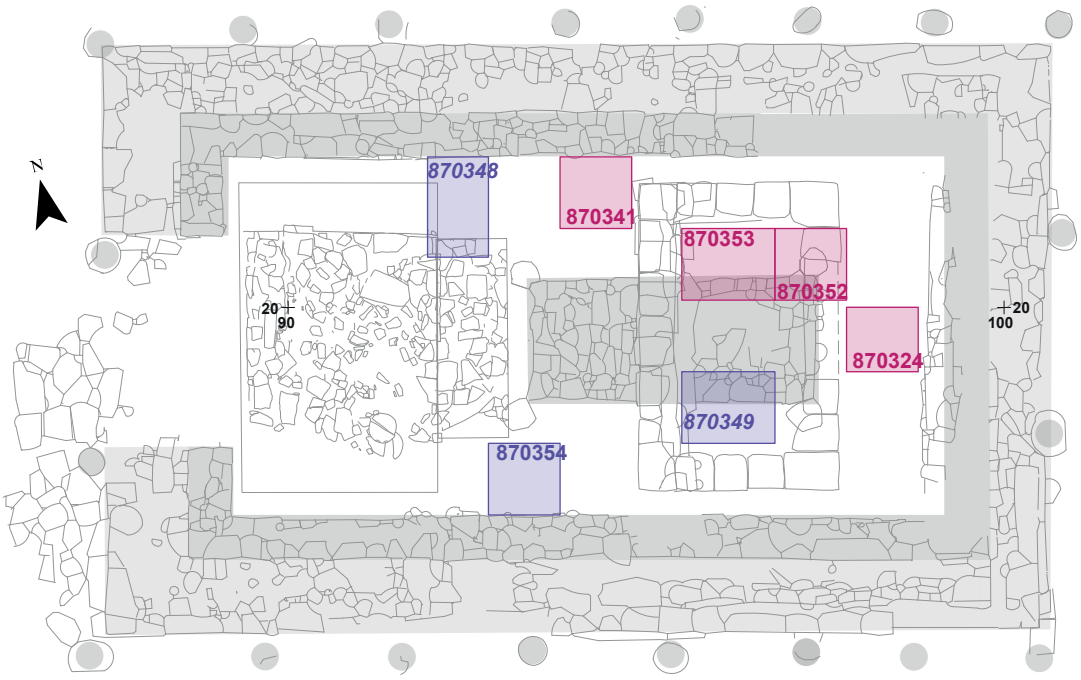


"HOARD" OTHER AMBER FINDS X FOUNDATION DEPOSIT (BY D. G. HOGARTH)

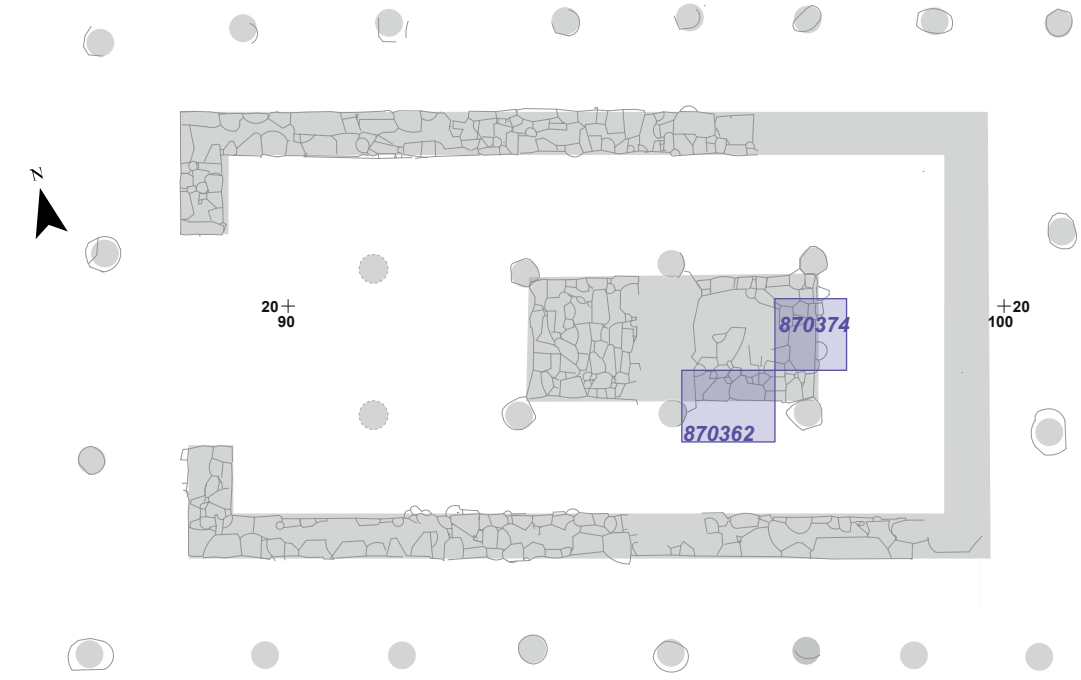
Plan 10 Naos 1a and Naos 1 – layers. Filling of the floor of Naos 1a. Subfloor of Naos 1

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FILLING OF FLOOR OF NAOS 1A [H: -0,81 to -0,9 m ASL]



SUBFLOOR OF NAOS 1 [H: -0,9 to -1,1 m ASL]



"HOARD" OTHER AMBER FINDS