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Report on the Vitreous Bird Beads (Vogelperlen)

Summary
The tiny glass beads in the shape of a bird have been the focus of archaeological research for over 100 years. Together with other imported objects they are seen as indicators of the connections between Late Villanovan/Early Orientalising Italy and the Aegean. Recent advancements in digital technology and the production of high-quality colour photographs enable improved knowledge and comparison, especially of small archaeological objects like glass beads. Here are presented bird beads from previous excavations at Vetulonia (Etruria, Italy) and Kamiros (Rhodes, Greece), in part only recently recognised as bird beads like the examples from Osteria dell'Osa (Latium, Italy) or from Tiryns (Argolis, Greece), and a new find from Verucchio (Emilia-Romagna, Italy). The question of origin of the *Vogelperlen* – from Rhodes, or elswhere in the Aegean, or even from Italy – remains open.

Riassunto
Novità sulle perle di vetro a uccellino.
Da più di un secolo le perle a forma di volatile sono nel focus della ricerca archeologica. Sono state interpretate soprattutto come testimonianza di contatti fra le popolazioni Italiane del Tardo Villanoviano e del Primo Orientalizzante con l'Egeo. Solo adesso con le possibilità delle tecnologie digitali è diventato possibile disporre di immagini a colori di buona qualità per poter studiare e comparare meglio una classe di oggetti archeologici molto piccoli come le perle e i vaghi di vetro. Qui vengono presentate perle di vetro a forma di volatile già note da Vetulonia (Etruria) e altre in parte solo adesso riconosciute come *Vogelperlen* da Osteria dell'Osa (Latium) o da Tirinto (Argolide, Grecia), e un ritrovamento nuovo da Verucchio (Emilia-Romagna). La questione della provenienza delle *Vogelperlen* – da Rodi o da qualche altra regione dell'Egeo o addirittura dall'Italia stessa – rimane al momento necessariamente in sospeso.

Introduction

The Bird Beads

Bird shaped beads made of glass have attracted the attention of archaeologists for decades[1], probably because of their figurative form which was very rare prior the 7th century BC. We are indebted to Thea Elisabeth Haevernick and her extensive knowledge of archaeological glass artefacts for the first compilation of these beads. O.-H. Frey's often reproduced distribution map[2], that shows bird shaped beads from the north-west Iran to Italy is based on the comments Haevernick made during her museum visits[3]. The examples from Italy and the Aegean are very similar in size and colour – as far as one can tell from the published pieces and those on display, but currently the beads in Mesopotamia and Syria cannot be assessed.

The glass beads (approximately 2cm long) in the shape of a bird or a "dove" are easy to recognize if complete (*fig*. 1): there are two protuberances formed into a fine head and a broader tail. These two extensions were made from the still hot and viscous glass with a tweezers-like pincer; the impression of the tool in the end of the tail is often recognisable (*fig*. 4e and 6c). The body is a conventional ring bead, the form of which is due to its production on a rod, probably of metal, on which the hot glass is turned and fused[4]. In a final step, most bird beads were decorated around the body with fine glass threads of a different colour. This decoration is yellow or white – with one exception, that will be presented below – as is typical of other glass beads dating to the Late Bronze and Iron Age. The transparent glass of the body ("matrix glass") is often a light blue or turquoise colour or, more rarely, a light brown or violet – or some gradient thereof. The combination of colours found in bird beads is most often turquoise with yellow and violet/brown with white. Apart from the decorated bird beads, I know of no manganese-violet beads (undecorated violet beads are also rare and known for example from Sasso di Furbara, Latium[5]). Turquoise and violet glasses[6] are known in the Mediterranean from the Bronze Age and go back to the colouration with metal ions, in these cases probably copper and manganese[7]. Transparent brown glass was quite unusual in the 8th and 7th century and chemical analyses are required to determine whether the brown colouration was intentional (maybe produced by a certain amount of iron-ions) or perhaps the result of an altered colour, brought about by the changing of the oxidation state of manganese-ions. The combination of transparent and opaque decoration glasses can also be seen during the 8th century, for example in the light blue, 5 cm to 8 cm long glass pendants (or "tube beads") with a fishbone-pattern that are known from tombs from Vetulonia (Etruria) (*fig*. 7a) and Verucchio (Romagna) (*fig*. 7b)[8]. Other two-coloured types in Italy such as the so called "eye beads" are more often of a dark blue glass, appearing opaque, or of brown-black non-transparent glasses, some of which include high amounts of non-molten silicates[9].

Customs and distribution in Italy

The *Vogelperlen* in Italy are known from graves in the region between Emilia-Romagna and Southern Italy; they are found in the Etruscan necropoleis such as those

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[1] von Bissing 1938; Id. 1942.

[2] See with supplements: Koch 2010b, fig. 5.

[3] Frey 1980, p. 71 with note 11, fig. 2.

[4] Spaer 2001, pp. 44-45; 101.

[5] Brusadin Laplace *et al.* 1992, fig. 26.

[6] It is now commonplace to use the plural form "glasses" because glassy material can have different chemical compositions l.

[7] For colouration with the oxides of different metals or the question of white and opaque glasses see for example Henderson 1985.

[8] Koch 2015, pp. 19-20, type 13 pl. 31.

[9] See e.g. glass beads of Verucchio: *ibid.*, types 6-12 and 14-15.

of Vetulonia, Tarquinia or Veio, and also in Lazio and Campania, for example in tombs at Pontecagnano and Capua[10]. From these grave contexts it appears that the bird beads were used from the middle of the 8th century until the beginning of the 7th century BC. Despite their wide distribution in Italy their absolute number is quite low (approximately 40 published examples). Only one or few tombs in a single necropolis contain these exceptional glass beads. However, a single grave can contain more than one bird bead, for example there were two in a tomb at Bologna, Le Roveri 30[11], Marzano sul Sarno (grave 273)[12], and Guardia Perticara (Contrada san Vito, grave 392)[13], or the two graves in Capua (grave 200 and Fornaci 248)[14] with five glassy birds each. Other examples are without known contexts such as the two in the Castellani Collection in the National Etruscan Museum of the Villa Giulia.

When the grave contexts are known, they are often wealthy with other beads or pendants of bronze, glass and amber, fibulae, girdles, bronze vessels or tools like spindles or knifes, and items indicating contacts between the Italic peoples and those of the Aegean and the Levant. Most striking are the examples of the Geometric skyphos with the St. Andrews cross design from Euboea in the Tarquinian tomb Selciatello Sopra 93 (*fig.* 2)[15] and the little scarab seals in Pontecagnano tomb Picentino 4870[16]. The grave goods or the tomb size make it likely that the glassy birds were only placed into tombs of – or worn only by – women and children. So, it is possible that these little figures of an animal could have had a magic or apotropaic significance similar to what is postulated for other special grave goods like the imported faience statuettes of Egyptian style[17]. In this context, it is interesting that a bronze bird bead is known from an earlier, exceptional tomb of a girl from Tarquinia of the 9th century BC[18]. This find clearly shows that, already three of four generations earlier than the examples in glass which are discussed here, jewellery in the shape of birds had a symbolic meaning[19].

It is not clear how the bird beads were worn; if they were strung on a simple thread they would have hung head-down and would have been difficult to recognise, especially together with other beads. For this reason, it is possible that they were fixed with an extra knot and worn as a pendant.

Imports and connections

Due to the similarity between the Italian and Aegean bird beads, the examples in Italy are usually seen as imports[20]. They appear in the middle of the 8th century, before the beginning of the proper Orientalising period in which more and more objects of Aegean or "Phoenician" origin

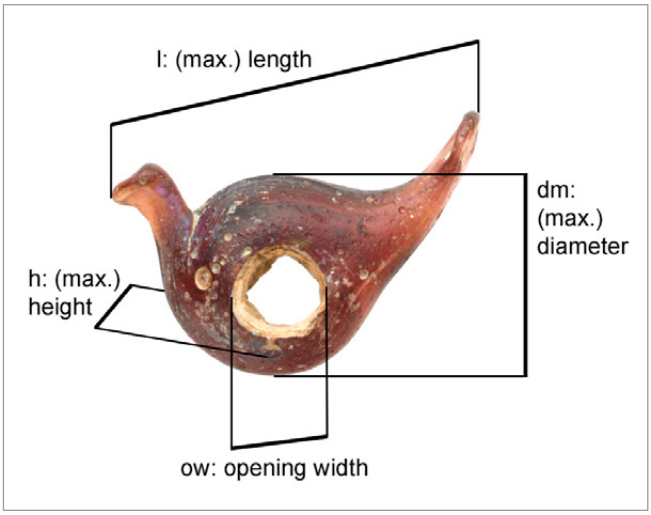

fig. 1 – A bird bead and possible measurements (photograph after Metropolitan Museum; see note 39).

reached Italy. It is not surprising that parallels for the bird beads are found in dozens of tombs and sanctuaries on Rhodes (see below) and at Eretria on Euboea[21] – well known as highly frequented places in the network of Aegean trade and travel. It is also worth remembering the "old" connections between the colonizing island of Euboea and Italy, which are reflected in the occurrence of Euboean pottery in Italy, the creation of local Italic imitations and the use of painted decorations on local italic pot forms.

Although is very likely that the "dove" beads in Italy are Aegean imports, this is still difficult to prove. The technique used to shape the little birds is not very complicated, and the concept of decorating beads with a glass thread of different colour had been previously used in the Late Bronze Age workshops of Frattesina di Fratta Polesine[22]. If we consider a local, Italian working with glass in the late 8th century, which seems possible given the variation of beads that have no parallels outside the Italian Peninsula and the invention of the leech bow fibulas of glass[23], then it is easy to imagine that the bird beads were made in an Italian glass workshop as well.[24] On the other hand, clear parallels with other "foreign" items make an import also conceivable.

For a detailed understanding of glass beads a personal examination is necessary to obtain information on the characteristics of the glasses, the working techniques, the exact size, etc. The bead's opening for instance is related to the diameter of the rod used in a workshop[25]. The chemical composition of the glasses can be an indication of imports or local products. However – and this must always be considered – it is possible that different workshops got their raw glass from the same source, and it is also possible or even likely that imported glass beads were remelted and the glass reworked. For the proper evaluation

[10] See list in Koch 2011, 84-85.
[11] Colour foto: Meconcelli Notarianni, Ferrari 1998, p. 20 no. 75-76.
[12] d'Agostino, Gastaldi 1988, p. 94 with note 270.
[13] Bianco 2012, p. 168, n. 5.
[14] Johannowsky 1994, p. 98 fig. 3, Id. 1983, p. 108 nr. 13 pl. XIV, 11.
[15] Hencken 1968, 164 with fig. 149g; Paoletti 1986, 421 with note 30; D'Acunto 2017, 360 f.
[16] d'Agostino, Gastaldi 1988, 222 f., fig. 195; 210.
[17] Schweizer 2006, pp. 127-133; 212-220.
[18] Trucco *et al.* 2005; see discussion Koch 2010b.
[19] For Mycenean, Egyptian, and Mesopotamian bird beads of the Bronze Age see e.g. Koch 2010b, with fig. 4 and Ead. 2011, 80-81 with literature.
[20] A summary in Koch 2011, 83.
[21] Huber 2003, 84 ('17 pieces'); 65 no. O128-O133 ('eight pieces'); pl. 47; 124.
[22] Towle *et al.* 2001; Bellintani, Stefan 2009.
[23] Koch 2010a.
[24] The fusing of raw glass is something completely different and not discussed here.
[25] See for differences in bird beads f.e. Koch 2011, 78 figg. 44 and 46.

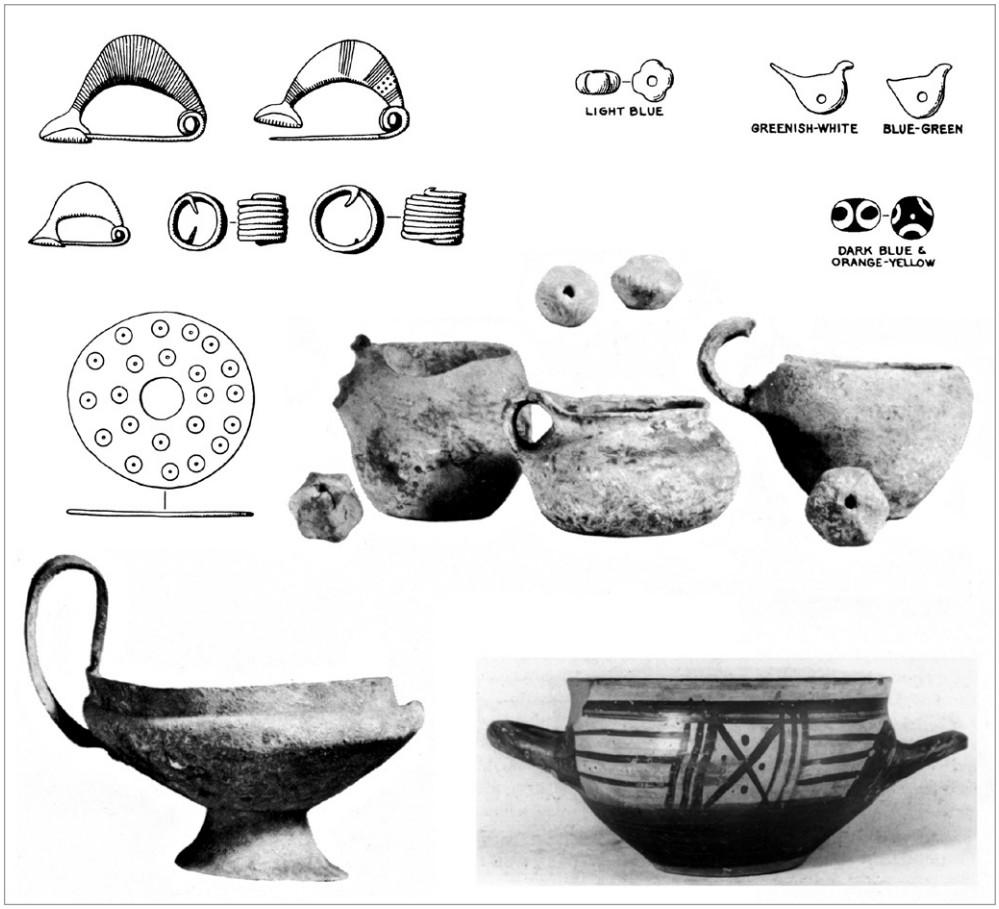

fig. 2 – Tarquinia, tomb Selciatello Sopra 93 with the Euboean skyphos (modified after Hencken 1968, fig. 149g and Paoletti 1986, fig. 4; without scale).

of chemical results a large data set is necessary, but until now such analyses have only been undertaken on a small scale for Iron Age glasses. One methodological problem among others is that it is necessary to analyse unweathered glass from the inside of a bead, so a fresh break or cutting out a chip is necessary. A particular problem is that while sodium is a significant element of glass and necessary for characterizing glass groups, sodium-ions are easily dissolved out of the surface and underlying layers of glass objects. However, initial results of the analyses of Italian glass beads indicate that Iron Age glass groups are highly variable and completely different from those of the Bronze Age[26]. With respect to the bird beads a first step has been undertaken: a large group of 72 beads and bead fragments from the Campania region (from Cuma, Capua, and the Sarno valley) was recently analysed, and these included two of the five *Vogelperlen* from tomb 200 of Capua[27].

A closer look at new and old finds in Italy

Verucchio (Rimini, Emilia-Romagna, Italy)

Verucchio, situated on a steep rock outcrop in the hinterland of Rimini, is the site of astonishing Early Iron Age necropoleis[28]. The rich cremation tombs of the 9th-7th century BC yielded not only weapons, wagon remains, bronze tools and vessels, glass and amber beads, and bronze or gold elements of costumes, but in some cases also objects made from organic materials like the famous wooden "throne", other furniture and even clothes (tomb 89)[29]. Imports of "oriental" origin or style in Emilia-Romagna are rarer than in Etruria or Campania. This lack has been interpreted as the absence of direct supra-regional contacts – or contact with the "Phoenician traders"; the existence of the small number of imported objects in the area of Bologna and Verucchio has been seen as the result of mediation by Etruscan centres like Veio or Tarquinia[30]. However, these are questions that cannot be solved with a distribution map alone.

Although a wide variety of glass beads have been discovered in the Verucchio tombs[31], bird beads were not found until 2014. The first couple of *Vogelperlen* found at Verucchio were in a recently excavated tomb in the necropolis named 'Lippi' or 'Sotto la Rocca'[32]. The tomb was furnished with other glass beads that have well-known parallels in Verucchio phases IV and V: one green-yellow

[26] E.g. Henderson 1995; Towle et al. 2001; Angelini 2011; Towle, Henderson 2007; Arletti et al. 2011; Conte et al. 2016.

[27] *Ibid.*; I would like to thank Francesca Mermati and Sonia Conte for unpublished information.

[28] Recently von Eles 2013; *Immagini di uomini e di donne 2015* with literature.

[29] *Guerriero e sacerdote* 2002.

[30] For example Sciacca 2008; Id. 2010; Neri 2012; for bird beads: Martelli 1991, p. 1052.

[31] Koch 2015.

[32] Tomb Lippi 2007/55. The tomb was identified in 2007 but not excavated until 2014; it is unpublished, but thanks to Annalisa Pozzi (Soprintendenza Archeologia, Belle arti e Pesaggio per le provincie di Ravenna, Forli-Cesena e Rimini), Patrizia von Eles, and the courtesy of Elena Rodriguez (Museo Civico Archeologico Verucchio) I was granted the opportunity to study the glassy materials.

ring bead[33], three complete and fragments of lightly coloured and slightly depressed spherical beads[34] and other more common beads like the approximately 25 blue-white simple eye beads of diameter between 0.5 cm and 0.7 cm of which some seem to have been burnt on the pyre (type 6Aa; ibid. 13-24 pl. 20), and nearly 20 small dark blue ring beads without any decoration (type 1Aa; ibid. 5 pl. 1-7).

The two "dove" beads are of different colours and both are now approximately 1.6 cm long and 1.1 cm high. They appear to have lost both parts of the tail and their head in antiquity (*fig*. 3-4a-d). The light blue one has many large gas bubbles inside and on the surface of the glass (*fig*. 3). These can either originate from heating during manufacture or from a second heating during the cremation; but the bead has not lost its proper form and was found together with other unburnt glass beads, so presumably it was not cremated with the body. Also visible on the surface are clear streaks which result from the turning and shaping of the viscous glass (fig. 3b-d). The blue bird bead shows no indications of a decoration thread of different colour. In fact, one group of bird beads, from Italy as well as from Rhodes[35], remained undecorated.

The violet bird has fewer bubbles on the surface and within the inner glass matrix (clearly visible on the broken tail fig. 4c). In the opening one can identify the remains of the substance which was put on the working rod to prevent adhesion of the glass. On the back and the lower side of the bird, long grooves, more or less deep, are visible in which the remains of a white glass can be seen in the reflection of the flashlight (fig. 4d). As said above, the manganese-violet is a rare glass colour, and few definitively violet bird beads are known. They come from Pontecagnano, tomb Picentino 4870, probably the grave of a young child (it remains unclear whether the two beads are decorated or not)[36]; from two inhumations in Latium, both of women: Narce, tomb 19M ('dark purplish with lines of light colour [creamy]'[37]) and Cassino (Frosinone) tomb 6[38]. One *Vogelperle* without context in the 'Castellani' Collection at the Etruscan Museum of Villa Giulia is a violet-brownish colour with a clear white decoration line and four are stored in the Metropolitan Museum, for which the Rhodian origin is only hypothetical[39] (*fig*. 1). Additional bird beads are reported in the literature without any details, and their colour must still be determined.

A final similar and rather beautiful find comes from a grave at Vetulonia (*fig*. 4e; tomb 19 Poggio alla Guardia, saggio III "ripostiglio straniero"). Unfortunately the bead was not accessible during my study visit at the Archaeological Museum at Florence. This brownish-violet bird with a white decoration is complete and 2.1 cm long. The provenience from this tomb, together with a green-bluish bird bead is provided by von Bissing[40], but in the exhibition catalogue[41] two blue-yellow birds are mentioned from the same tomb (*fig*. 5-6), and the violet bird is said to have come from of a tomb '*a buca*' at Poggio alla Guardia in 1890. In the plates in von Bissing[42] and in Naldi Vinattieri[43] the violet bird and the turquoise one of fig. 5 can be identified – a two-coloured pair as at Verucchio –, for which reason I think it probable that the violet bird came from tomb Poggio alla Guardia 19, although some doubt remains[44]. This tomb dating to the third quarter of the 8th century BC[45] also contained some transparent beads of different colours, large blue-yellow eye beads ('owl eyes') and one or more[46] of the amazing large, dark blue-yellow "tube" beads with a fish scale pattern and a length of 6.5 cm had been recovered[47]. With respect to shape only, and not to the type of glasses used, these also have similarities with Verucchio, type 13A[48], which are up to 7cm long and of a light blue glass with fine white decoration (*fig*. 7). So, the relationship between Verucchio and Vetulonia[49] can also be seen in the glass artefacts.

Osteria dell'Osa (Rome, Latium, Italy)

In the surroundings of Gabii on the old Via Praenestina, ca. 20 km south-east of Rome, a large necropolis with over 600 graves, used from the first phase of the Iron Age, Latium IIA, onwards, was excavated in the 1970s[50]. The mostly intact cremation and inhumation tombs contained many grave goods in ceramic and other materials which were used for social interpretations of this Latial protohistoric culture[51]. A representative number of tomb groups are on display in the National Museum 'Terme di Diocleziano', but some of the tomb goods of an exceptional woman's grave are exhibited in the National Museum of Prehistory and Ethnography 'Luigi Pigorini'. The inhumation burial 82 (phase Osteria dell'Osa IIIB)[52], in which the bones have nearly completely vanished, yielded beside four spindle whorls, two impasto amphoras and cups, several bronze pendants, rings and fibulae. A "collier" (a kind of an ornament pendant, which has a parallel in tomb 99 of the same phase) of different beads and pendants, strung

[33] Type 2Bc in graves Moroni 31/1969 (phase IV); Lippi 40/2006 (phase V) (Koch 2015, 9 pl. 14 no. 92 and 100), the slightly larger type 2Cc also in Moroni 31/1969 and Pegge 3/1970 (phase V) and Pegge 5/1970 (phase V) (Koch 2015, 10 pl. 17 no. 113 and 114; dating after von Eles 2015, list chapter 4.3 on CD).

[34] Types 3Ad and 4Cd in Lippi 69/2008 (phase IV) and Lippi 40/2006 (phase V) (Koch 2015, 11 pl. 18 no 122 and 125; dating after von Eles 2015, list chapter 4.3 on CD).

[35] Spaer 2001, p. 101.

[36] d'Agostino, Gastaldi 1988, p. 223 no. 9-10; fig 219.

[37] MacIntosh Turfa 2005, 132 no. 85 fig. 85.

[38] Carettoni 1958-59, p. 175 fig. 7-8.

[39] https://www.metmuseum.org/art/collection/search/249688.

[40] von Bissing 1938, 299 f.

[41] Cygielman, Palmieri, Rafanelli 2005, p. 25 no. 122, fig. 16b.

[42] von Bissing 1938.

[43] Naldi Vinattieri 1957, fig. 13.

[44] The drawing of Falchi 1891, pl. V, gives a highly stylized picture which prohibits a definitive identification of individual bird beads. He describes two similar tombs with a pair of *Vogelperlen* each, one from 1884 and the other from 1889 (Id. 1891, p. 68; 73, which is doubted by von Bissing 1983, p. 299 note 15). Both tombs contained a small vessel with the remains of human teeth, colliers of glass and amber beads, bracelets and fibulae of leech or boat shape, and in one case also bronze rings and pendants. Unfortunately a clear description of the bird's colour is not given, Falchi 1891, p. 68 only cites the excavation records of A. Pasqui for the tomb 19 (1884) (at 6 may, no. 32): "*due ocarelle a vari colori*". This could mean two beads of different colours – or it refers to the two colours of glass body and decoration.

[45] Naldi Vinattieri 1957, p. 344.

[46] '*cilindri*' after Pasqui, but only one example is conveyed in the literature and the museum magazine.

[47] Falchi 1891, p. 68.

[48] Koch 2015, p. 20 pl. 31.

[49] Cygielman, Palmieri, Rafanelli 2005.

[50] Bietti Sestieri 1992a.

[51] Ead. 1992b.

[52] Ead. 1992a, p. 823.

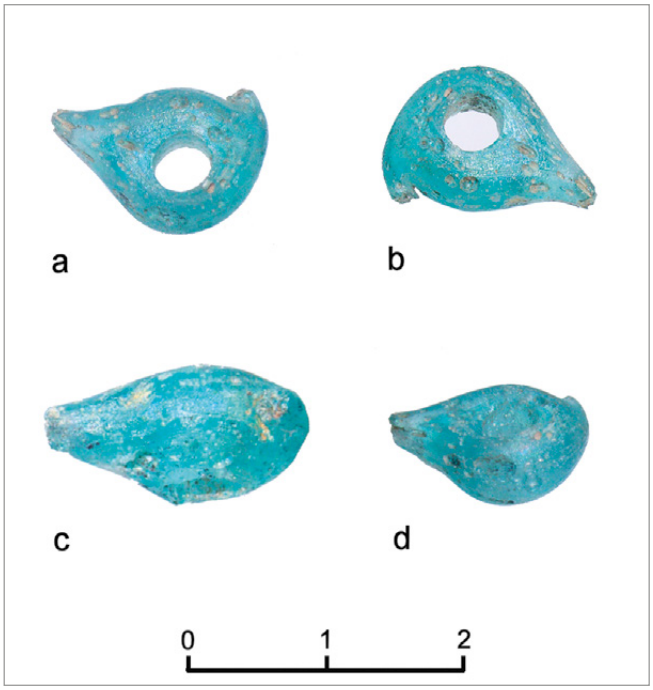

fig. 3 – a-d. Verucchio (Rimini), bird bead from tomb Lippi 2007/55.

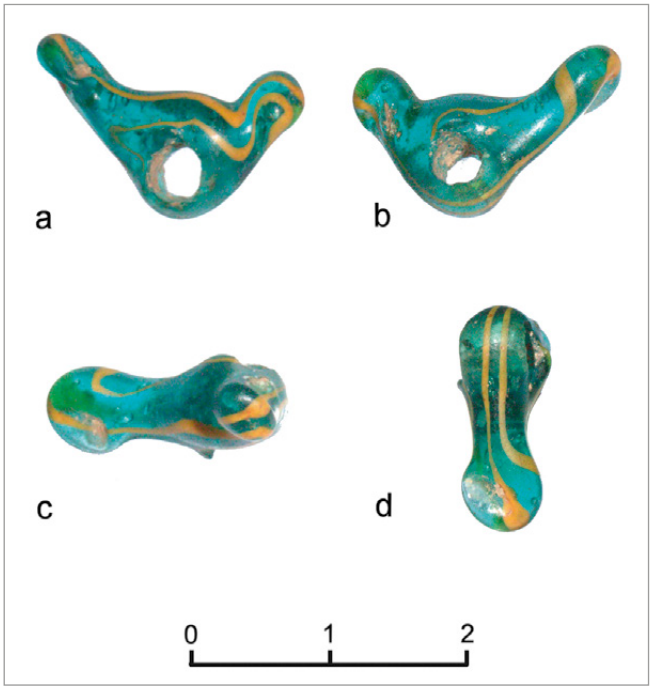

fig. 5 – a-d. Bird bead probably from tomb Poggio alla Guardia 19, trench III (Archaeological Museum Florence, with the concession of Ministero dei Beni e delle Attività Culturali e del Tourismo – Polo Museale della Toscana; no further reproduction without permission is allowed).

on a fine bronze wire, was found in the stomach area threaded onto a *navicella* fibula, together with two bronze rings. This "collier" consisted not only of very varied glass beads and amber beads, but also small pebbles wrapped in bronze wire, two flint arrow heads, rock crystal and a

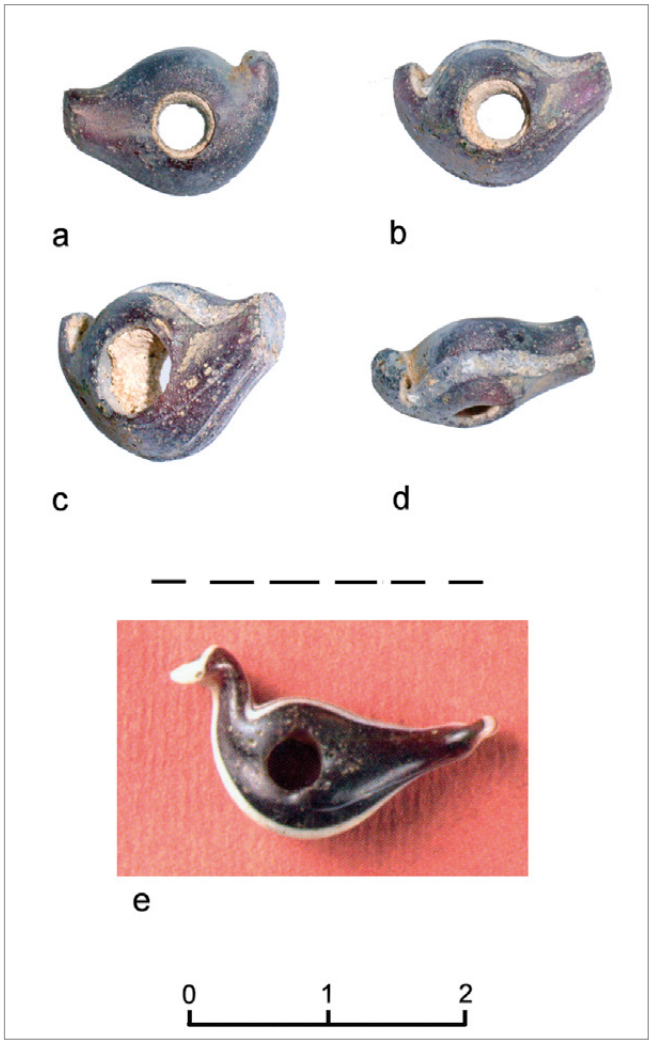

fig. 4 – a-d. Verucchio (Rimini), bird bead from tomb Lippi 2007/55; e. Vetulonia (Grosseto), bird bead possibly from tomb Poggio alla Guardia 19 (trench III) (after Cygielman/Palmieri/Raffanelli 2005, fig. 16b).

miniature stone axe and others in fragments[53]. The over 40 glass beads included a bird bead. The tail is broken, which probably explains why it was not recognized. The drawing in the publication has been mistaken for the cross section of an arrow head[54], and this is why in the typology of glass beads at Osteria dell'Osa[55] no bird bead is mentioned. So, in addition to Narce, Falerii and Cassino[56] another locality in Lazio for a glassy bird bead has to be added.

The bead was made of a bubble-rich, streaky light brown matrix glass that differs from the violet-brownish ones, and is decorated by a thread that was turned two times around the body (*fig.* 8) (now l 1.2 cm; dm 0.95 cm; h 0.55-0.6 cm). This decoration thread is of an extraordinary opaque turquoise glass which makes this *Vogelperle* from Osteria dell'Osa a unicum. All other birds are decorated with the usual white or yellow opaque glass. Opaque light blue

[53] *Ibid.*, p. 824 f. fig. 3c.10-14.
[54] *Ibid.*, fig. 3c.12-83/9.
[55] *Ibid.*, pp. 432-435 pl. 46.
[56] s. Koch 2015, p. 84 f. list 5.

or turquoise glass[57] is known to me in the 8th century in only a very few cases – one of them is a simple, thick ring bead (dm 1.3 cm; h 0.75-0.8 cm) in the same tomb 82 at Osteria dell'Osa. For the moment, it is impossible to know whether the opaque turquoise is a glass that occurred by chance during re-melting of copper-blue and white glass together, whether it was intentionally produced (and where?) by melting raw glass with copper as colourant and an opacifier, or whether it is an imported, rare (Bronze Age?) kind of glass. So, it remains unresolved whether the decoration of the bird bead is a sign of foreign, non-Italic production – or alternatively the reuse of a broken bead of this rare glass colour for decorating an (Italic?) bird bead.

A closer look at some Aegean parallels

Kamiros, Rhodes (Dodencanes, Greece)

The island of Rhodes with its sanctuaries at Lindos, Ialysos, and Kamiros has long been identified as an important locality in the eastern Aegean on the travelling and trading routes, probably since Mycenaean times (see for example an Egyptian vessel in a Mycenaean tomb)[58], or even the place of production of glass ornaments or different "oriental" goods that also reached Italy from the 8th century onwards[59]. Since the time of von Bissing[60] the Italian glass birds have been thought to come from Rhodes because of the large number of finds there: 84 pieces come from across the acropolis of Kamiros[61], a minimum of 14 have been found in the votive hoard at the sanctuary at Ialysos[62], and they are also known from Geometric tombs [63]. G. Jacopi described the colours of the bird beads as between light blue to greenish or brownish-violet[64] and greenish with yellow and brownish with white decoration[65]. The beads from Ialysos are unpublished, but are on display in the Archaeological Museum of the city of Rhodes. As far as it is possible to recognize under the thick layer of whitish patina, all have blue-green bodies and some clearly have a yellow decoration like the examples from Vetulonia we have seen above.

For historical reasons, Italy, with its Archaeological School at Athens, in the second decade of the 20th century took an interest in the archaeology of the Dodecanes and carried out research on Rhodes, at Kamiros and Ialysos[66]. Consequently, among other archaeological materials the objects from the Late Geometric tomb of a girl from Kamiros reached the Museum for Prehistory 'Luigi Pigorini' at Rome (ibid. 212-217, fig. 9-11). Besides completely painted skyphoi, a small bowl, two Cypriote lekythoi, common on the Dodecanes in the second half of the 8th century BC (ibid. 212), the grave produced a doll of terracotta and ten glass beads; unfortunately a terracotta bird appears to be missing. Four beads of different sizes (dm 1-1.65 cm; h 0.8-1.48 cm) are more or less spherical and of a transparent, faintly coloured (yellowish or greenish) or non-coloured glass. A bluish bead is shaped with four strokes and hence belongs to the type of "melon beads" (comparable to the one from Tarquinia fig. 2)[67]. All beads are heavily weathered and have a thick white or iridescent patina – like most other beads from Kamiros[68], the examples in the museum of Rhodos from Ialysos, and also the bird beads from Eretria, Euboea[69]. Glass "patina" develops as sodium leaches from the surface and other chemical reactions take place, which depend on the chemical composition of the glass and the soil, and which accompany discolouration and devitrification[70]. In one case the patina fell off and the surface became very irregular with lots of dimples; however, natural removal of the patinated surface revealed the original glass colour (fig. 9a-b).

The four bird beads[71] also have a white patina and already some loss of substance (*fig.* 10-13), but in all cases the colour of body and the decoration thread can be identified.

The first one (*fig.* 10; now l 1.15 cm; dm 1.0 cm; h 0.42-0.6 cm; opening width – ow, see *fig.* 1 – 0.32-0.35 cm) is of greenish-turquoise transparent glass with a yellow opaque decoration line. It has lost the tip of its tail so that the thickness of the weathered glass and the original colour is visible (*fig.* 10d). Astonishingly, the yellow decoration glass is intact, the surface is not corroded and no grooves are visible; the glass has only some streaks maybe from an irregular colouring.

The second glass bird (*fig.* 11; now l 1.4 cm; dm 1.0 cm; h max. 0.65 cm; ow of oval form 0.3-0.5 cm) also lacks the tip of its tail and has lost some of its surface; a crack in the body makes an exact measurement difficult. The comparison with the heavily weathered spherical bead shows that the pit-like grooves on the surface are due to the loss of patina. There is also a thin white overlay on the yellow decoration glass, but the colour and opaque glass type is certain (*fig.* 11c-d).

The third bead (*fig.* 12; l 2.0 cm; dm 1.1 cm; h 0.7-0.85 cm; ow oval form 0.2-0.3 cm) in part has a thick white patina and is traversed by a horizontal crack. The colour seems to be a flashy blue or green because of an iridescent layer; but this is also the result of weathering. The original colour is greenish-turquoise, like the two previous examples, with an opaque yellow decoration. The bead is more massive and less symmetrical than the other two, the width of the opening is slightly smaller and distorted. Due to these characteristics, in addition to the obviously different weathering of the glass, this example could be from another workshop and/or from another batch of raw glass.

[57] Light blue opaque glass is better known as decoration glass for the core formed vessels, as the Egyptian ones of the second half of the second millennium BC, as for the Greek glass vases of the 5th century (*Blaubunte Gefäße*), see for example Stern, Schlick-Nolte 1994, cat. nos. 5, 43-45, 48.

[58] Triantafyllidis 2008.

[59] For example Boardman 1994; Botto 2004; Hölbl 2005; Melandri 2008, following Hölbl.

[60] von Bissing 1942, pp. 133-144.

[61] Jacopi 1932-1941, p. 336 no. fig 74; 13 bird beads are stored at the British Museum in London: Spaer 2001, 101 fig. 46.

[62] Martelli 1988, 110.

[63] Mangani 2005-2007, p. 216 note 52-53 also with literature for a tomb at Kos.

[64] Jacopi 1932-41, p. 60 no. 2.

[65] *Ibid.*, p. 336.

[66] Mangani 2005-2007, pp. 204-206.

[67] *Ibid.*, fig. 11.2.

[68] Spaer 2002, p. 58 f., fig. 9.

[69] Huber 2003, pl. 124.

[70] Freestone 2001; Römich, Lopez 2002.

[71] Inv.-no. 139685-139688

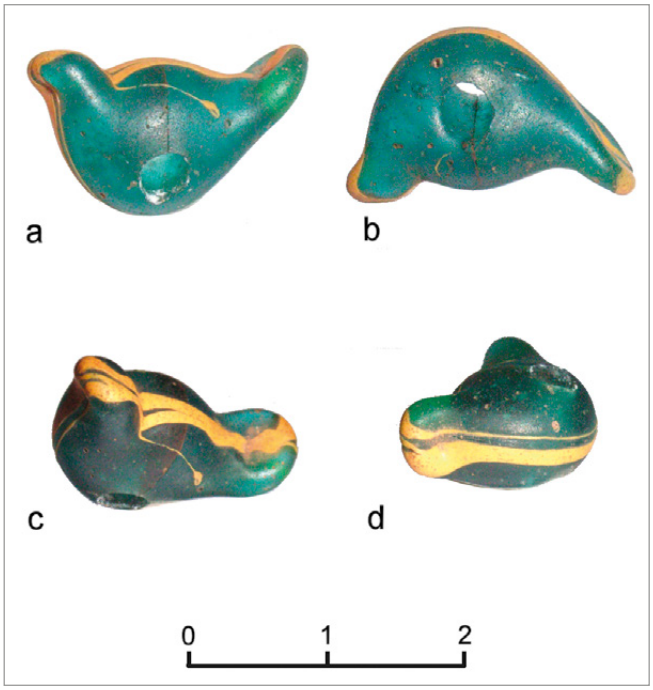

fig. 6 – a-d. Bird bead probably from a tomb in Poggio alla Guardia (Archaeological Museum Florence, with the concession of Ministero dei Beni e delle Attività Culturali e del Tourismo – Polo Museale della Toscana; no further reproduction without permission is allowed).

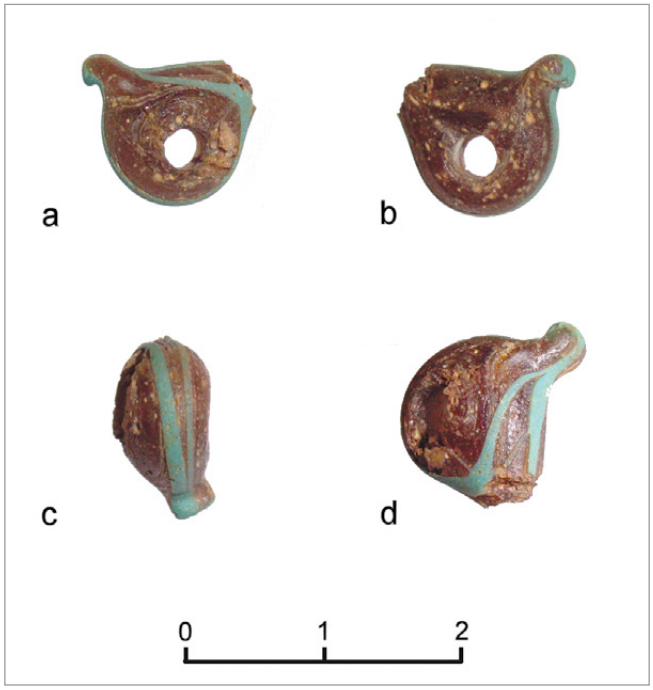

fig. 8 – a-d. Bird bead from Osteria dell'Osa (Rome), tomb 82 (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

The last glass bird from the girl's grave at Kamiros (*fig.* 13; l 1.5 cm; dm 1.0 cm; h 0.55-0.65 cm; ow 0.3-0.32 cm) is of transparent brown glass as can be seen when held up to the light. On the lower side there is a dent in the bead body where the decoration line makes a bend (*fig.* 13d). It seems

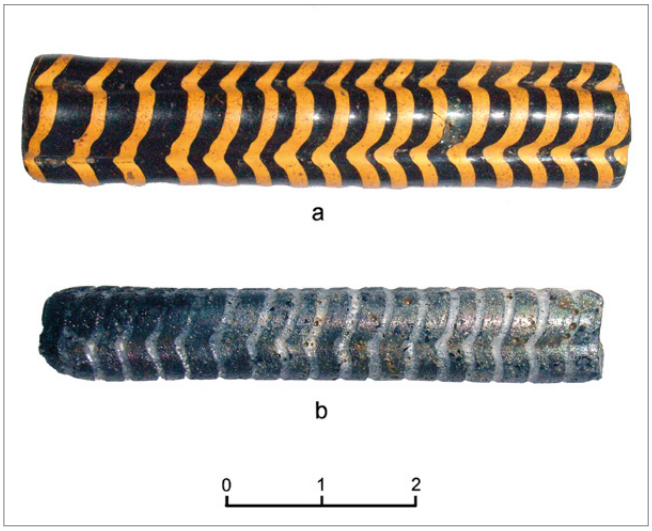

fig. 7 – a. Large tube bead from Vetulonia, tomb Poggio alla Guardia 19, trench III (Archaeological Museum Florence, with the concession of Ministero dei Beni e delle Attività Culturali e del Tourismo – Polo Museale della Toscana; no further reproduction without permission is allowed); b. Large tube bead from Verucchio, tomb Lippi 1972/20. Inv. 11275.

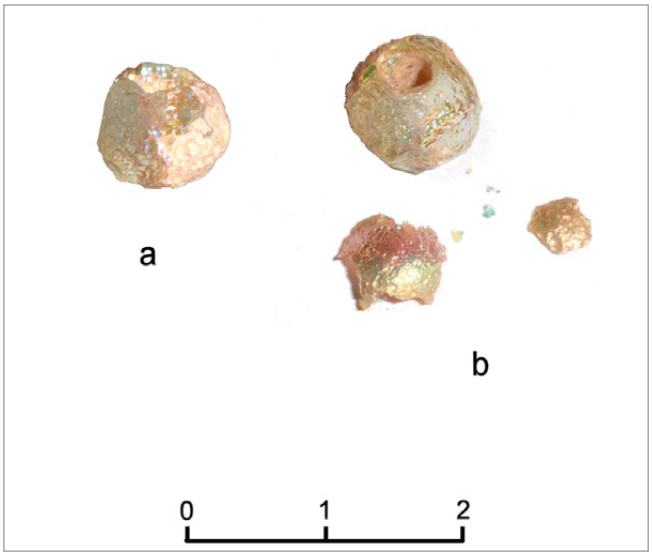

fig. 9 – a-b. Weathered bead from the Rhodian tomb at Kamiros (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

that the bead, still hot from the production process, came in contact with some moving object or tool, maybe when stripping the bead from the working rod or during cooling. The bird has lost a part of its tail and has an irregular surface with streaks and patina spots of starting weathering. The decoration glass in this case seems to be white, although a dull, somewhat transparent yellow appears on the back (*fig.* 13d). The combination of a transparent brown glass with a light yellow-whitish decoration has already been noted on an extraordinary glassy bow-bead of a leech-shaped fibula said to come from Tivoli (British Museum, London)[72] and also on two pairs of this type of fibula bow-bead from Narce

[72] Koch 2010a, pp. 188 f., 235, 274 cat.-no. 170.

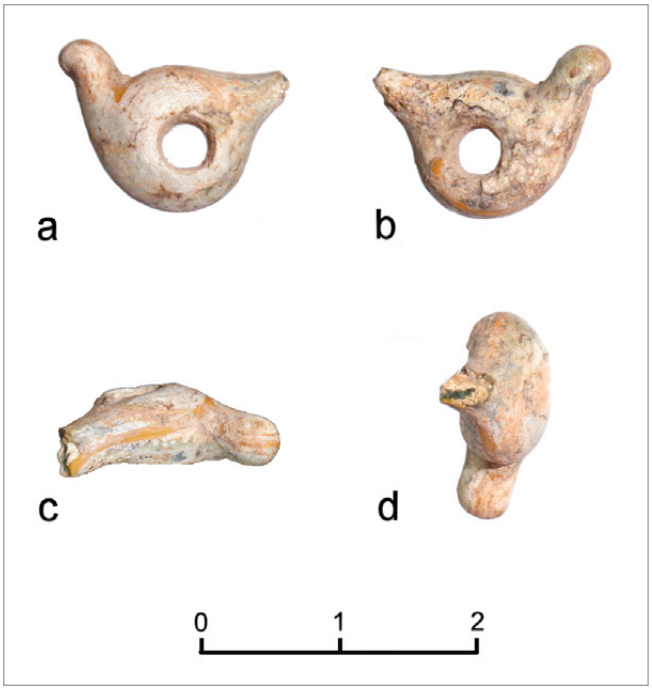

fig. 10 – a-d. Bird bead from a tomb at Kamiros (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

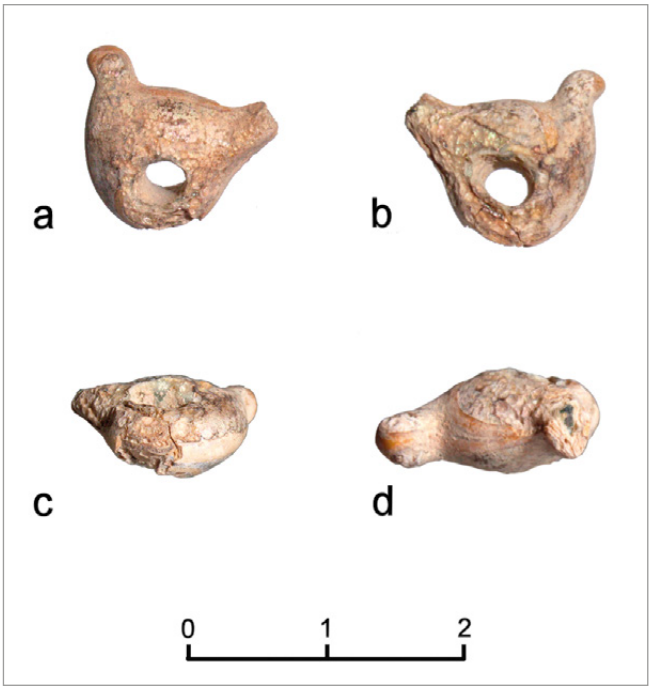

fig. 11 – a-d. Bird bead from a tomb at Kamiros (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

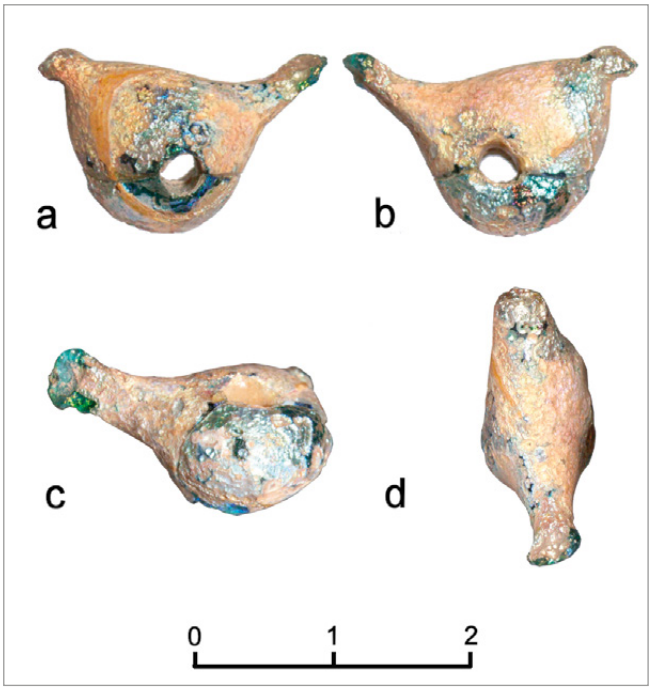

fig. 12 – a-d. Bird bead from a tomb at Kamiros (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

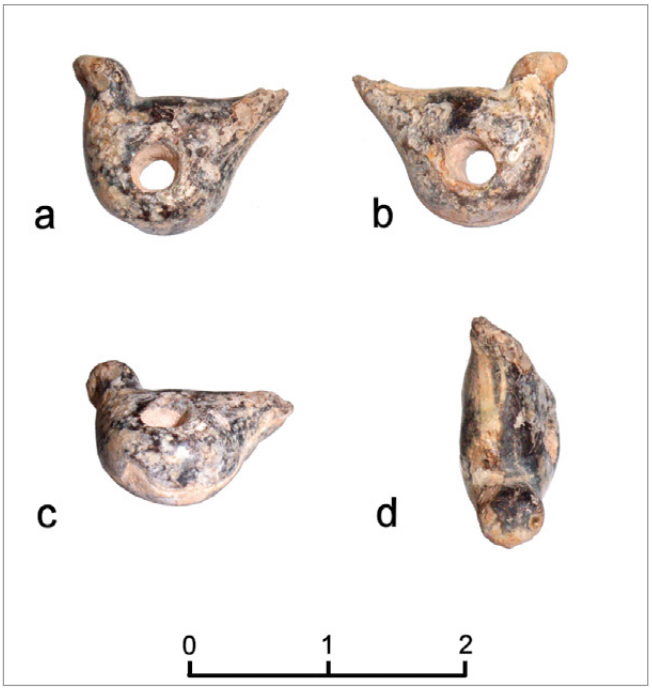

fig. 13 – a-d. Bird bead from a tomb at Kamiros (© Museo delle Civiltà – MNPE "Luigi Pigorini" with the concession of Mibact).

(*ibid.* 58, 181 f.; 271 cat.-nos. 154+155 and 157+158) and in a few other cases of different dark glass beads (Verucchio type 11[73]). It remains unclear how these observations should be interpreted, but a potential Italic production cannot be excluded.

[73] Ead. 2015, 18 f., pl. 29.

Two "rediscovered" Vogelperlen from a Geometric tomb at Tiryns (Peloponnesus, Greece)

In the courtyard of the prison, that once was situated in the south of the Mycenaean palace of Tiryns, in the 1950s a Geometric cemetery was excavated.[74] The stone cist of grave XXIII contained a skeleton, most probably male, with

[74] I am very thankful to Prof. Dr. Joseph Maran and Prof. Dr. Peter Gercke who helped with literature and information regarding the material.

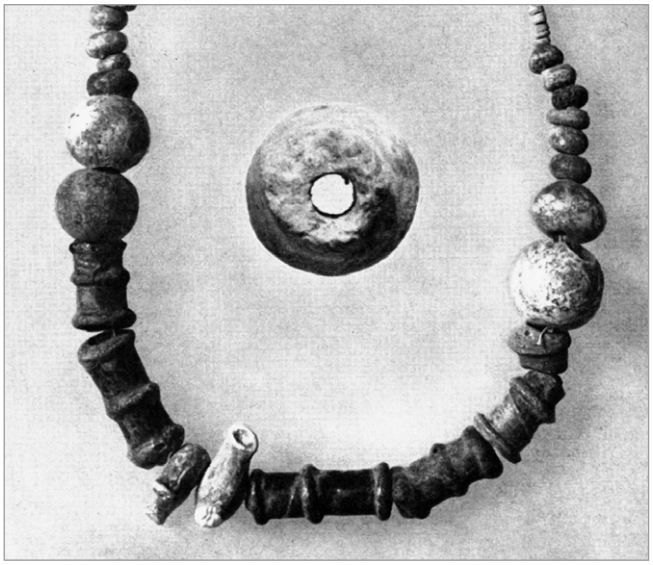

fig. 14 – Tiryns, glass beads from grave XXIII, the bird beads are seen from above (after Verdelis 1963, suppl. 3). The large bead in the middle comes from another grave.

bronze finger rings and pin, a dagger, three spearheads and a second dress pin (all of iron), a necklace of faience and glass beads, and sixteen vessels on the slab which covered the cist[75]. The excavator N. Verdelis dated the grave goods into three different phases and thought that the original inhumation had taken place in Submycenaean times – especially because of the necklace –, followed by two phases of reuse, during Early and Late Geometric Periods. The ceramic is of Late Geometric style[76] and the pin occurs also in Late Geometric[77]. Not being an expert in Geometric Period weapons, I don't want to reject the idea that some of the metal finds may have to be dated earlier than the 8th century BC[78], but there is no reason to date the necklace as early as the 11th century[79]. The collier is on exhibition in the Archaeological Museum in Nauplion and is composed of glass beads of different sizes and shapes – unspecific flattened spherical and ring beads, two bird beads, short tube beads – and small spherical or disk-shaped faience beads (*fig.* 14). Five glass beads are of a short tubular shape, having a black or brown colour and are decorated with three white glass rings around the body ('*Zylinderperlen mit Wulsträndern*'). Verdelis described[80] them as made of bone and noted some parallels, mainly of amber. It seems that he equated the glassy tube beads with the amber beads of 'Tiryns type'[81] which are of course of the 12th and 11th centuries – and now recognized as a product of the north Italian area of Rovigo[82]. In contrast the short glass tube beads have a parallel in the Athena sanctuary near Philia (Thessaly, Greece) and are dated by I. Kilian-Dirlmeier to the Late Geometric / Early Archaic period[83]. The small faience beads are very well known from Italian necropoleis of the 8th century[84]. So, the necklace from Tiryns and with it the two bird beads, also belong to the 8th century, probably to the second half. Thus, apart from Perachora (Peloponnesus), another site in Greece must be added, the second on the Greek mainland[85].

Both the bird beads are of a light blue glass with white decoration – a combination not yet known in Italy and Rhodes – and have a massive body. If the necklace does belong to the buried warrior, it would be the first certain case of bird beads in a man's grave. The necklace was not worn around the neck, but discovered at the side of the body near the hips[86]. Maybe this could be interpreted as a donation, a gift from a woman?

Concluding thoughts

While, on the one hand, bird-shaped glass beads are well-known as an artefact of the 8th century BC in Italy and the Aegean, they remain, on the other hand, insufficiently studied to enable us to be more precise about their origin, trading routes and distribution in Italy. They provide clear evidence of the relationship between Italy and the Aegean, perhaps more specifically with the islands of Rhodes and Euboea. However, the impressive record from Rhodes of over a 100 beads of this kind is in part due to the highly frequented sanctuaries on the island, a phenomenon that is also evident at the sanctuary at Eretria (Euboea, Greece) where several bird beads were found[87]. This evidence is not necessarily an indicator of the location of the invention of the bird beads or the location of the workshops on the islands[88].

Further research should analyse groups such as the violet-white, the blue-white bird beads or the group lacking decoration. As mentioned above, the combination of violet with white is very rare in Italy and only found with bird beads – maybe this is an indication of a single, distinct workshop? Is it conceivable that certain kinds of bird beads, for example the ones of light brown glass, were made in Italy – and even brought to Rhodes? A deeper insight into their origin could be provided by chemical analyses, especially with a full record of main and trace elements in comparison with other glasses in Italy and Greece of the 8th century BC. Perhaps the noted differences of bead weathering from Rhodes and Italy depend in part on differences in chemical composition.

It is noteworthy that the tomb complexes from Kamiros probably did belong to a child and to a woman, as is the case in Italy. So, further research in Greece could support the hypothesis that the colourful small glass birds had a similar meaning as an "amulet" in both regions.

[75] Verdelis 1963, pp. 35-40.
[76] *Ibid.*, p. 40 and pers. com. P. Gercke.
[77] Kilian-Dirlmeyer 1984, pp. 92 f. no. 429 pl. 16, 429 type IC var. 1: MG I.II to LG II.
[78] Bronze pin? see spearheads: Verdelis 1963, p. 36.
[79] *Ibid.* 36 f.
[80] *Ibid.*, 36.
[81] Negroni Catacchio 1999; Ead. 2014.
[82] Bellintani 2014, fig. 5.
[83] Kilian-Dirlmeier 2002, pp. 77; 84 no. 1315 pl. 80, 1315. l 2.3 cm.
[84] e.g. Veio: Koch 2011, p. 157 fig. 85.
[85] Compare Huber 2003, pl. 138, reproduced in Koch 2011, fig. 45.
[86] Verdelis 1963, p. 36.
[87] See above, Huber 2003.
[88] Already discussed with regard to the provenience from Rhodes: von Bissing 1942, pp. 138; 144; Mangani 2005-2007, p. 216 note 53.

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