JAVANESE (JATIM) BEADS IN LATE FIFTH TO EARLY SIXTH-CENTURY KOREAN (SILLA) TOMBS

JAMES W. LANKTON, IN-SOOK LEE AND JAMEY D. ALLEN

INTRODUCTION

As early as 1921, when schoolchildren were seen to be playing with glass beads exposed by grading for railway construction (Nelson 1993, 251), archaeologists began to excavate a number of the over 150 mounded tombs in the centre of Gyeongju, Korea, uncovering remarkable gold crowns, belts, earrings, rings, and bracelets, as well as tens of thousands of glass beads and other ornaments. These mounds are now known to be the elite tombs of the Silla Kingdom (*c.* 300 to 668 CE), with at least some of the tombs being the burial places of Silla kings.

Close inspection and scientific analysis of the glass beads suggests several possible bead making sites and techniques, both local and foreign (Lee 1994; 1997; Lee and Wypyski 2002). This paper will focus on five polychrome glass beads found in four different graves in Gyeongju. Four of these beads appear to be identical to beads thought to have been made in eastern Java, and the fifth, while unique in the archaeological literature, is sufficiently similar in technique of manufacture to suggest a similar origin.

ARCHAEOLOGICAL EVIDENCE

The Silla Kingdom developed rapidly during the late 3rd to 4th century from its origins among the Chinhan peoples of the south-eastern Korean peninsula. From the 4th to the early 6th century, the most obvious evidence of social stratification was the construction of large mounded tombs in the Silla capital at Gyeongju (Barnes 2001, 208). The tombs appear to be of at least two types, one with a single wooden burial chamber containing a wooden coffin and a separate box for grave goods, and the other with multiple smaller chambers containing either burials or grave goods (*ibid.* 214–15). These inhumation graves were covered by stone mounds, which were in turn covered by an earth mound with a typical height from 10 to 15m. Because the stone mounds usually collapsed, closing off the wooden chambers, the mounded tombs were very difficult to plunder, and most of those excavated have been intact. The single chamber tombs generally contain richer grave goods, including, in some cases, glass vessels, gold crowns, and thousands of monochrome glass beads; at least some of the single chamber tombs are thought to be the burials of Silla kings and queens or nobles. Many of the other mounded tombs also contain prestige objects, including gold jewellery and glass beads. The soil conditions are such that little skeletal material has been recovered, and, with rare exceptions, it is not known whether the graves were male or female. All of the wooden chamber tombs are thought to predate the mid 6th century, when stone chamber tombs become more common (*ibid.*, 208, 211). The structure of a typical mounded wooden chamber tomb is shown in FIGURE 1.

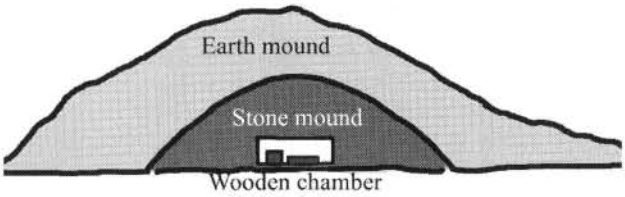

FIG. 1 Structure of Silla wooden chamber, stone-mounded tombs; mid 4th to early 6th century; adapted from Barnes 2001, 209

FIGURE 2 shows the location of several tomb clusters, indicating the approximate find-spots for the beads in this report. We have designated these five beads as follows:

1 Noseo-ri A (COLOUR PLATE 98.1a): A small glass bead covered with a mosaic layer of alternating green and yellow stripes, which have been combed into a festoon pattern; L. 12mm, diam. 14.5mm. This bead, on display in the Seoul

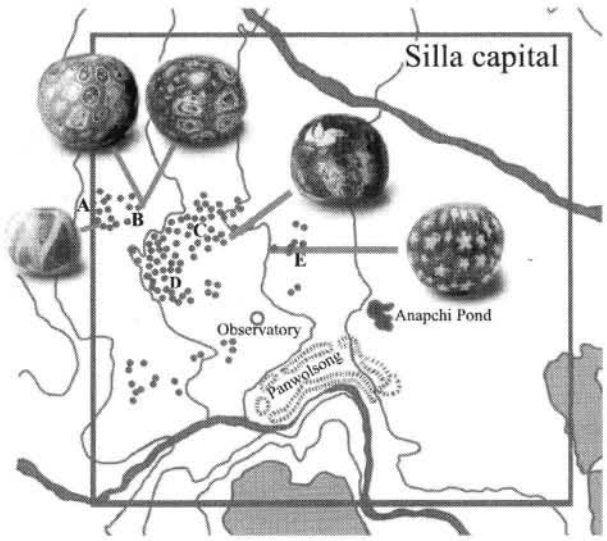

FIG. 2 Mounded tomb clusters in Gyeongju, with excavation sites of beads included in this report; map adapted from Barnes 2001, 225; A Noseo-ri, B Nodong-ri, C Hwango-dong (includes King Michu Tumuli District), D Hwangnam-dong, E Inwang-dong

National Museum along with cornelian, amber, jasper and monochrome glass beads from the same grave (COLOUR PLATE 98.1b), was excavated in 1933, with an estimated date from the late 5th to the early to mid 6th century. Distinctive characteristics of the bead Noseo-ri A include the bright yellow diagonal stripes, and the more complex bands with multiple thin stripes. These patterns appear to be pulled toward the perforations of the bead, suggesting formation by segmenting a glass tube. Because of the elite nature of the excavated beads, the Noseo-ri A burial is thought to be from a large mounded tomb whose mound had been lost over time (pers. comm. Dr B. Pak, Curator at the Gyeongju National Museum, June 2002).

2 and 3 Sikrichong A and B are *millefiori* mosaic glass beads found during the 1933 excavation of Sikrichong, the Ornamental Shoes tomb, a large, late 5th to early 6th-century, mounded royal tomb.

2 Sikrichong A (COLOUR PLATE 98.2a–c): A *millefiori* mosaic bead with an underlying monochrome glass core; diam. 21.3mm, perforation diams 2.9mm and 3.1mm. The superficial mosaic canes show two different patterns: blue and white concentric circles built up by applying successive layers of glass to a blue centre, and a more complex cane with a layered yellow and red centre surrounded by blue and white spokes formed by manipulating either cold or hot strips of glass into position. The cane segments appear to be distorted toward the perforation at one end of the bead, best illustrated in COLOUR PLATE 98.2c, while the other end does not show this distortion.

3 Sikrichong B (COLOUR PLATE 98.2d–g): A *millefiori* mosaic bead with five different mosaic cane designs; diam. 21.5mm, perforation diams 3.8 to 4.5mm and 3.7 to 3.8mm. Although the thin mosaic slices would have been circular in cross-section when applied to the bead, when partially melted together they assume the polygonal shapes most obvious in COLOUR PLATE 98.2d and e. The simplest, layered, cane is similar to the blue and white cane on Sikrichong A, and can be seen in COLOUR PLATE 98.2e. There are two versions of canes with a central star surrounded by glass of a contrasting colour – white and blue, and yellow and green. These cane designs are best seen in COLOUR PLATE 98.2d. In both cases, the stars appear to have six points. The other two cane designs on Sikrichong B are more complex: the first has a dark green core surrounded by alternating strips of red and white to form a ring pattern with six parts, which is then surrounded by layers of dark green, white, and finally red. The second complex cane has a monochrome white centre surrounded by a ring made up of twelve sections of alternating red, yellow, and green, all of which is then layered with white. This cane is best seen in COLOUR PLATE 98.2d. COLOUR PLATE 98.2f and g show the two ends of Sikrichong B. One end has clear evidence of distortion of the canes toward the perforation, while the other does not.

4 Inwangdong A (COLOUR PLATE 98.3): A *millefiori* mosaic bead with one mosaic cane design; L. 19.5mm, diam. 22.7mm, perforation diams 4.2 and 4.2mm. This bead was found in Inwangdong tomb number 6, excavated in 1977 by a team from Yeungnam University. Inwangdong 6 is thought to be late 5th century, and certainly no later than the very early 6th century, thus preceding Sikrichong, and making Inwangdong A the earliest bead in our series. With the exception of a relatively large area showing the rough basal glass visible in COLOUR PLATE 98.3d, the surface is covered by cane segments with a white star surrounded by greenish blue. The diameter of the star patterns varies slightly, although all of the stars clearly have five points, with a design otherwise similar to the six-pointed stars on Sikrichong B. The cane distortion at one end matches that on the Sikrichong mosaic beads.

5 National Treasure 634 (NT634) (COLOUR PLATE 98.4): A *millefiori* mosaic bead with three different figural canes; diam. 18.4mm; excavated in 1973 by a team led by Lee Eun Chang from what appeared to be a wood chamber, wood coffin, stone-mounded tomb with a separate area for grave goods, although the mound had been lost over time. The grave is one of over 50 located in the King Michu Tumuli District to the north of the large mounded tomb known traditionally as that of King Michu. The mosaic bead was found together with the additional beads shown in COLOUR PLATE 98.4a, along with an elaborate pair of gold earrings of the type associated with royal graves. The entire group is on display in the Gyeongju National Museum (Gyeongju National Museum 2001, 132). The suggested date for this tomb is late 5th to early 6th century (Pak 2002, 101), and certainly no later than the mid 6th century, when, as noted, the wood chamber tombs were no longer used.

The three mosaic cane patterns on NT634 are a white face, including the neck and part of the shoulders, a white bird and a branching shape interpreted as a tree or flower. Four colours of glass were used to produce the mosaic designs – white, red, yellow, and dark blue. There are four faces on the bead, and in spite of some distortion, it appears that they all originate from the same cane. Prominent features include round eyes; slightly arched, continuous eyebrows; a blue hairline above the forehead; a long, straight nose; red lips; two blue lines on the neck, one of which may indicate the chin; rather long ears applied separately as the composite cane was produced; and the suggestion of three shapes in red and yellow rising from the top of the head at the 10, 12, and 2 o'clock positions. Three of the cane segments show the bridge of the nose to the right, while the fourth shows the bridge to the left, indicating that this cane section had been flipped over prior to being applied to the bead.

The bird image, with its long beak, large feet, short neck, and squat body, has been interpreted as a duck in Korea. The round eye, in blue and white, is identical to the eyes on the human face, suggesting that the bead maker used a similar prefabricated cane for both images. The wing is a separate unit, and the feather markings along the trailing edge are similar to the star patterns on both Sikrichong B and Inwangdong A, suggesting a common manufacturing technique. The four birds on NT634 appear to be slices of the same cane, and again, one of the slices was flipped over to show the bird walking toward the left, rather than toward the right as in the other three sections.

There are also four examples of the flower or tree cane (COLOUR PLATE 98.4c) interspersed over the surface of the bead, appearing to be sections of the same cane. Like the other designs on the bead, this one also is a hybrid of composite and layered construction, with an outer layer of dark blue glass. The central stem has three sets of branches

to the sides, of which two end in flower patterns. The other two branches are quite short, and the end of the stem also has a flower, giving a total of five. Each flower has four petals around a red centre. As with Inwangdong A, there are no obvious borders between the cane segments, since all of the canes were cased in dark blue.

NT634 has a number of important features in common with the other *millefiori* mosaic beads in this report: the shape and size are roughly similar, and the construction of the bead appears to be that of thin slices of mosaic cane laid over a core of glass. Most importantly, the cane sections are distorted toward the perforation, as shown in COLOUR PLATE 98.4b for one end of the bead, and in a photograph published by Yoshimizu for the other (Yoshimuzu 1993, 56).

JAVANESE ORIGINS

These five beads found in Korean tombs share many characteristics with a group of glass beads known as *Jatim* for their strong association with eastern Java, or *Jawa timur*. Jatim beads may be monochrome or polychrome; the two groups which concern us are the *pelangi*, or rainbow, beads, and the *millefiori* mosaic beads. Although few Jatim beads have come from controlled excavations, and none, with the exception of those reported here, from well-dated contexts, the association with eastern Java is very strong, leading Francis to conclude that Jatim beads 'likely originated in or around Jember' (in eastern Java) (Francis 2002a, 136), basing his opinion on the following points:

1. At the turn of the 20th century, Dutch archaeologists reported these unusual beads in megalithic graves near Bondowoso and Besuki (also near Bondowoso) in far eastern Java (Adhyatman and Arifin 1996, 65). The vast majority of Jatim beads have been found in that same area (Francis 2002a, 135), with very few from western Java or neighbouring parts of South-east Asia (Adhyatman and Arifin 1966, 67). Exceptions include small numbers of beads, usually of the less diagnostic twisted stripe variety, found in Malaysia, Sumatra, Kalimantan, Johore, the Philippines and possibly Oc-eo and Japan (Francis 2002a, 135). Francis reports a surface find of one *millefiori* mosaic bead of Jatim type at Berenike, Egypt, possibly dating to the mid 6th century (Francis 2002b, part 3). The known exception to this limited spread of Jatim beads is their use as heirloom currency on the Pacific island of Palau, 1600 miles north-east of Java, which may be the result of early maritime contact (Francis 2002a, 190).

2. Surface finds of misshapen and partially melted *pelangi* and *millefiori* beads at Jatiagung, near Jember, in far eastern Java, are taken as evidence for local bead making (see Adhyatman and Arifin 1996, 71, for two of the large *pelangi* beads found near Jember). In contrast, there is no other evidence for the manufacture of Jatim beads, either in Java or elsewhere.

With no well-supported dates for Jatim beads based on scientific excavations in Indonesia, Adhyatman and Arifin have suggested a manufacturing period between the 7th and the 10th century based on local reports that Tang Dynasty (618–906 CE) ceramics have been found in the same graves (Adhyatman and Arifin 1966, 41). There are many important and unanswered questions regarding the origin and early history of glass bead making in Java, as well as the integration of eastern Java with contemporaneous South-east Asian sites, including Mantai, Oc-eo, and Khlong Thom, thought to be involved in the manufacture of Indo-Pacific glass beads. Although some, but not all, of the mosaic patterns on Jatim beads are similar to those on beads made in Egypt or possibly western Asia, the developmental relationships are not clear. The nature of any contact, whether in terms of trade in mosaic glass canes or in terms of actual travel of bead makers from Egypt, western Asia, or Java, is not known.

The special technological aspects of Jatim beads are important in making the case that the five beads excavated in Korea are in the Jatim tradition. *Pelangi* beads come in a variety of sizes and colours, with the most common combinations being blue and white; red, yellow, blue, and white (the same combination of colours as on NT634); and green and yellow, as in Noseo-ri A. All are characterized by a surface pattern of rows of festoons joined by bands of multiple fine lines. Allen has suggested the following process for making such beads as Noseori A – a drawn tube of glass with a mosaic surface layer of alternating green and yellow longitudinal stripes was twisted to produce a pattern of spiral yellow stripes; these stripes were then combed into festoons, with each combing motion extending the full length of the tube. Each combed stripe will contribute two thin lines of yellow to the band cross-cutting the diagonal festoon pattern. By the time five stripes have been crossed, this band will consist of ten thin lines, which may in fact begin to blend together. Similar patterns may be seen on small glass vessels with a combed trail decoration (Tait 1991, 95). The entire construction was then segmented, or hot-pinched, into individual beads. Although each individual bead may have only one or two rows of festoons, the bands between will reflect the multiple stripes that have been combed on the surface of the parent tube. Occasional examples of doublet beads remaining conjoined are further evidence for the segmenting process. Both the appearance of the finished beads, and the use of segmenting for decorated beads, appear to be unique to eastern Java (Allen 1998, 107, 138–9). Large *pelangi* beads have many rows of festoons, while such small beads as Noseo-ri A may show only part of a row, making the festoon pattern less obvious. However, Noseo-ri A's pattern of bright yellow stripes alternating with broader bands containing multiple thinner stripes, coupled with the appearance of segmenting at the perforations, would only be found on a bead made by the *pelangi* technique, and, in fact, such small yellow and green *pelangi* beads are rather common among beads found in eastern Java. Because the manufacturing technique is thought to be unique to eastern Java, we conclude that Noseori-A is a Jatim bead.

Jatim *millefiori* mosaic beads are also unusual, and the four *millefiori* mosaic beads in our sample reflect some of the same special bead making technologies used in eastern Java. During the 1st millennium CE, the two principal techniques for making *millefiori* mosaic beads were the formation of a bead by fusing together thick mosaic sections, without an underlying core, and the use of thinner slices of mosaic cane to cover a prepared glass bead; neither

technique can be considered necessarily early or late (see Lankton 2003, 77–81 for discussion). Jatim *millefiori* mosaic beads are unusual in that the thin layer of mosaic sections appears to have been applied in some way to a tube, rather than to an already formed bead. In a method analogous to the *pelangi* beads discussed above, this decorated tube would then have been segmented, or hot-pinched, into individual beads. At least one end of the finished bead will show evidence of the mosaic canes being distorted toward the perforation. If the tubes were short, many beads would show pinching at one end only, as is the case for Sikrichong A and B and Inwangdong A. This combination of segmenting with *millefiori* decoration is very unusual, and the authors are not aware of any other bead making industries exploiting the hot-pinched method for the production of intricately patterned beads. In addition, the two most complex cane designs on Sikrichong B have been found only on Jatim beads (Adhyatman and Arifin 1996, 49; Allen 1998, 102, 108).

While beads such as Sikrichong A and B and Inwangdong A (Adhyatman and Arifin 1996, 56) resemble known Jatim examples, NT634, with its figural mosaic patterns, is unique among published beads. The only comparable bead we have found (COLOUR PLATE 98.5) is in the collection of The Bead Museum in Glendale, Arizona. This bead, with an unknown provenance but thought to be from Java, shares similar bird and face canes with NT634, along with three other canes consistent with Jatim designs. On the basis of overall construction, and in particular the combination of segmenting with a thin surface layer of mosaic cane slices, we would identify NT634 as a Jatim bead as well. The Arizona example suggests that others might be found, which could help to strengthen the case for NT634's Javanese origin.

Summary

We have presented five polychrome glass beads scientifically excavated from late 5th to early 6th-century Silla tombs in Gyeongju, Korea, and propose the following conclusions:

1. These five beads found in Korea were made in the Jatim tradition, most likely in eastern Java, and provide evidence for at least indirect contact between Korea and Java during this period. It is also conceivable that bead makers familiar with Jatim techniques were established at another site, although the very strong preponderance of such beads found in eastern Java would argue against this possibility.

2. The late 5th to early 6th-century date of the Korean beads provides the best and earliest date for the production of Jatim beads.

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**JAMES W. LANKTON
University College London
Institute of Archaeology
31–34, Gordon Square
London WC1H 0PY
UK
jwlnet@yahoo.com

IN-SOOK LEE
Number 204-33, Kaenari Apartment
Yeoksamdong, Kangnamku
Seoul 135-795
Korea

JAMEY D. ALLEN
PO Box 1582
Santa Rosa
CA 95402
USA