THE BEADS OF TENTH- TO TWELFTH-CENTURY HUNGARY

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Translated by Donald Haines

An examination of the beads recovered from three Hungarian cemeteries in use during the 10th to 12th century resulted in the identification of 61 distinct bead types. Seven of these were found to be significant on the basis of frequency analysis, and represent the beads most used by the local population. The study is enhanced by comparative material from a number of other contemporary archaeological sites in and around the country. The classification system developed for this study is applicable to other geographical areas and time periods, and may be expanded or otherwise modified to suit the needs of other researchers.

INTRODUCTION

The purpose of this paper is to describe and interpret the glass beads recovered from three completely excavated 10th- to 12th-century cemeteries in Hungary: Halimba-Cseres (10th-12th century), Fiad-Kérpuszta (10th-12th century) and Tiszaeszlár-Bashalom I (10th century). A new typology has been devised for this purpose and will facilitate the analysis and interpretation of new archaeological material which is coming to light in large quantities.

As only a few 10th- and 11th-century cemeteries have been completely excavated, the findings reported herein will also be useful as a basis for future studies of cemeteries both large and small, as well as find sites with only a few graves.

THE TAXONOMIC SYSTEM FOR GLASS BEADS

The bead typology described below incorporates data presented in my thesis (Szilágyi 1979). It is, therefore, suitable for classifying the beads recovered from every Hungarian find site.

This study concentrates on the glass beads. The stone and metal specimens require an independent study and are, therefore, not being classified in more detail at present. This also holds true for such articles as shells and bones which were used as beads.

In determining the bead types, all specimens were examined individually and measured. The diameter and the length were recorded, as well as the height and the thickness, and the diameter of the perforation, if appropriate. Decomposed and fragmentary specimens were not included in the analysis.

The following attribute categories were recorded in order to classify the beads: 1) material; 2) shape; 3) ornamentation; 4) unique production technology; 5) color; and 6) measurements. The relatively large number of beads made it necessary to encode the above-mentioned categories (Appendix A). This allows the data to be processed using a computer. The codes of the individual categories can be added to as needed within the framework of binomial numerology.

The *material* composing the beads is designated in the first two digits followed by a slash (/). The third and fourth digits identify the *shape*, the fifth and sixth digits denote the *ornamentation*, and the seventh and eighth digits specify the *production technology*. Since the code is already very long at this point, *color* designations, which are appended to the code, are separated from it and subsequent designators by a slash. The first two appended digits identify the basic color of the bead. The next two describe the color of any ornamentation or painting, again followed by a slash. Where the ornamentation is composed of several colors, the dominance of the colors is specified in descending order in the remaining places, always with a slash separating the paired digits.

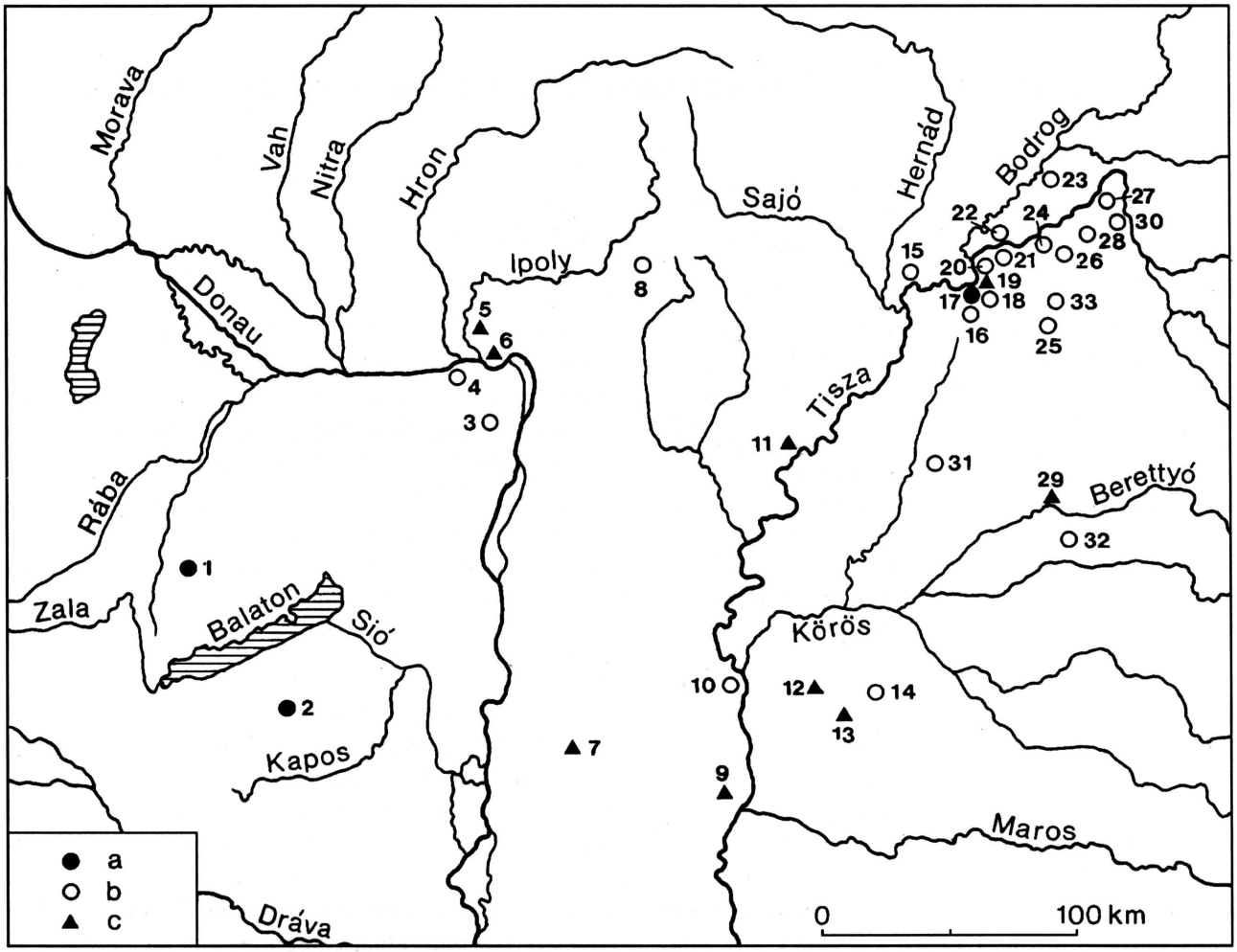


Figure 1. The distribution of 10th- to 12th-century archaeological sites in Hungary: a) completely excavated cemetery; b) partial cemetery; c) cemetery or partial cemetery known only from the literature. Not all the sites found in one locality are listed. The name of the site is followed by the name of the county it is in.

1. **Halimba-Cseres** (Veszprém)
2. **Fiad-Kérpuszta** (Somogy)
3. Budakeszi (Pest)
4. Esztergom-Kovácsi (Komárom)
5. Letkés (Pest)
6. Szob (Pest)
7. Kishunhalas-Zsandipuszta (Bács-Kiskun)
8. Pilin-Leshegy (Nógrád)
9. Szeged-Bojárhalom (Csongrád)
10. Csongrád-Vendelhalom (Csongrád)
11. Tiszanána (Heves)
12. Gádoros (Békés)
13. Orosháza (Békés)
14. Gerendás (Békés)
15. Tiszaluc-Sarkadpuszta (Borsod-Abaúj-Zemplén)
16. Tiszalök (Szabolcs-Szatmár)
17. **Tiszaeszlár-Bashalom** (Szabolcs-Szatmár)
18. Tiszanagyfalu (Szabolcs-Szatmár)
19. Rakamaz (Szabolcs-Szatmár)
20. Tímár (Szabolcs-Szatmár)
21. Szabolcs (Szabolcs-Szatmár)
22. Kenézlo (Borsod-Abaúj-Zemplén)
23. Bodrogszerdahely (Streda nad Bodrogom, Slovak Republic)
24. Tiszabercel (Szabolcs-Szatmár)
25. Újfehértó-Micskepuszta (Szabolcs-Szatmár)
26. Nagyhalász (Szabolcs-Szatmár)
27. Tiszabezdéd (Szabolcs-Szatmár)
28. Kisvárda (Szabolcs-Szatmár)
29. Hencida (Hajdú-Bihar)
30. Eperjeske (Szabolcs-Szatmár)
31. Nádudvar-Töröklaponyag (Hajdú-Bihar)
32. Biharkeresztes-Ártánd (Hajdú-Bihar)
33. Nyíracsád-Szentirmay Föld (Hajdú-Bihar)

When the color is indefinite, or in the case of stone beads, no color is specified.

Individual bead types, which are based on all of the above attributes, are designated by consecutive Arabic numerals. Illustrations of all the recorded types appear in subsequent sections of this report in Figs. 2, 3, 6 and 9 (type numbers are situated to the left of the individual drawings, while their computer codes appear below the drawings). Descriptions of the various types and sub-types appear in the caption of Fig. 6, and in Table 7 and Appendix B. Examples of individual bead strings from various graves at Halimba-Cseres and Fiad-Kérpuszta appear in Fig. 5 and Plates VIIIA-D and IXA-D.

The material category is of fundamental importance in determining bead types. The materials (glass, stone and metal) are intentionally of a general nature. Where the material is uncertain, it is assigned the code "00". The characteristics that designate a specific type and those which identify a sub-type were determined for each type individually, since the types are often similar in many respects. With most of the types, their shape characteristics proved decisive in their classification (Szilágyi 1987).

For beads of the same shape, variations in size may denote a sub-type. This category is not coded because this is unnecessary where the type is determined without the use of a computer.

Shape and ornamentation nomenclature is generally based on that used by E.M. Alekseeva (1970). Local names which have proven useful and already have a claim to uniform usage have also been adopted; e.g., *Strass* or "gravel" beads (very small beads 0.2 to 0.4 cm in diameter) and cornerless prismatic beads. The similarity of certain beads to various seeds and grains has also been taken into account in naming some types; e.g., wheat-kernel-shaped beads, and the well-established melon-seed-shaped designation. When the existing terminology was inadequate to describe specific bead shapes, new shape names were developed; e.g., tapered cylindrical beads.

BEADS FROM THE HALIMBA-CSERES CEMETERY

The cemetery of Halimba-Cseres, located in the Bakony Forest to the north of Lake Balaton in northwestern Hungary (Fig. 1), was excavated by Gyula Török (1962) in 1952-1955. The archaeological material is with the Medieval Department of the Hungarian National Museum (HNM) under Inv. Nos. 55.1.1."A" and 1.1138 "A".

The large number of graves in the cemetery (n = 932), coupled with the fact that it was utilized continuously for almost 230 years and that three chronological burial phases are represented, make it ideal for the study of 10th- to 12th-century beads of the Carpathian basin.

Török distinguished three phases in the cemetery on the basis of coins found in the graves. His phases are utilized herein to determine the temporal distribution of the various bead types. Phase I encompasses the second half of the 10th century, Phase II extends from the end of the 10th century to the first half of the 11th century, and Phase III extends from the second half of the 11th century to the first half of the 12th.

The beads from the Halimba-Cseres cemetery include those made of stone and metal as well as other materials, but the majority are made of glass. Stone beads comprise the second largest category. The latter are not dealt with from a typological viewpoint, but they are taken into account in the statistical calculations. This also applies to the metal beads, a few of which are present.

Bead Type Frequencies at Halimba-Cseres

The Halimba-Cseres cemetery produced 2,343 classifiable beads (14 specimens were unsuitable for typing) which represent 51 individual bead types (Figs. 2-3; Appendix B). Thus, the beads from the cemetery may be characterized as very diverse. Of the total number, 688 (29%) beads relate to Phase I, 795 (34%) relate to Phase II, and 860 (37%) relate to Phase III.

Of the 932 graves in the cemetery, 495 contained burial goods. Of these, 81 produced beads which represents 8.7% of the total number of graves, and 16.4% of the graves which contained burial goods. Beads were the sole burial offerings in five of the bead-producing graves (Nos. 191, 372, 492, 640, 706). All of these graves relate to Phase III (11th to 12th

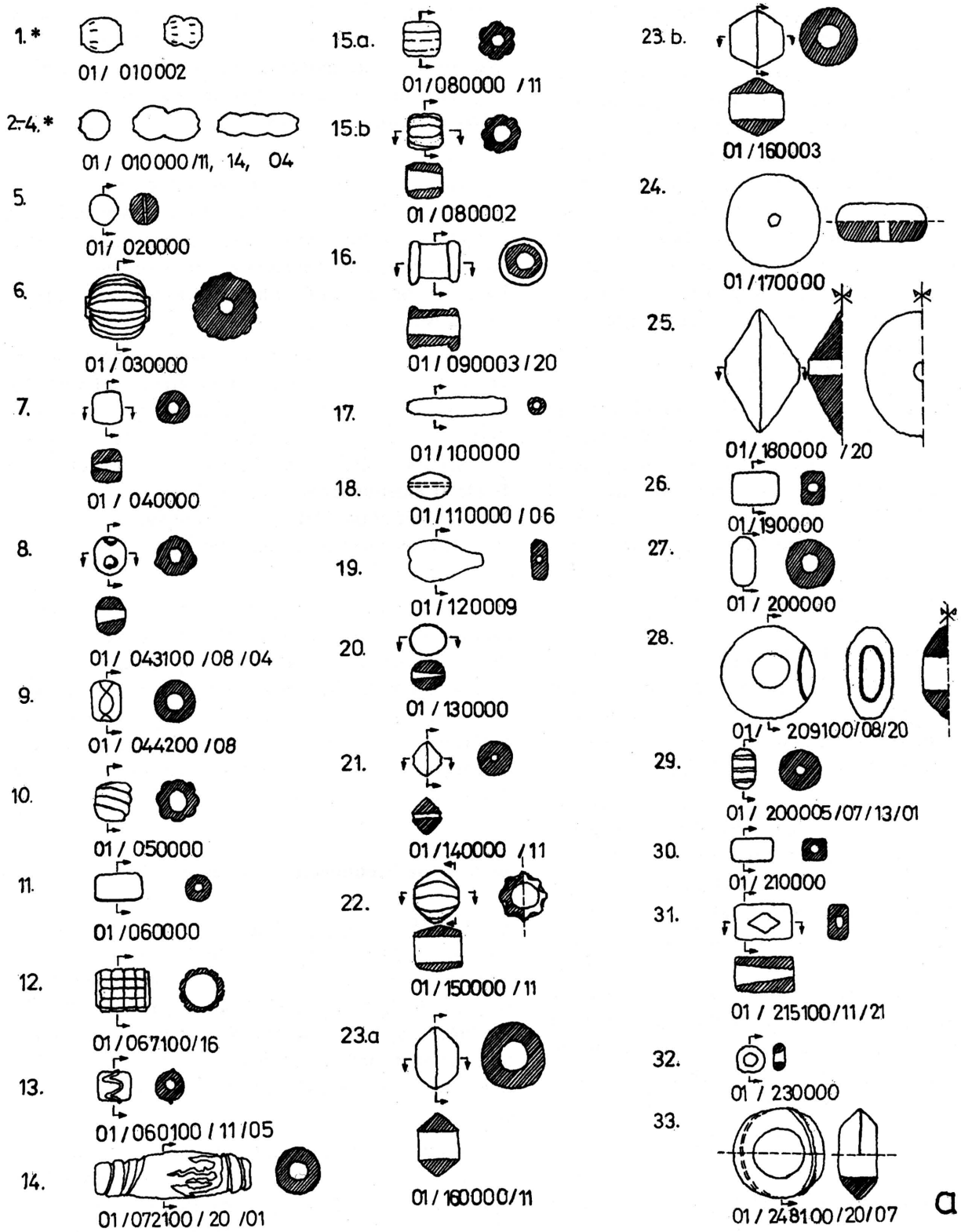
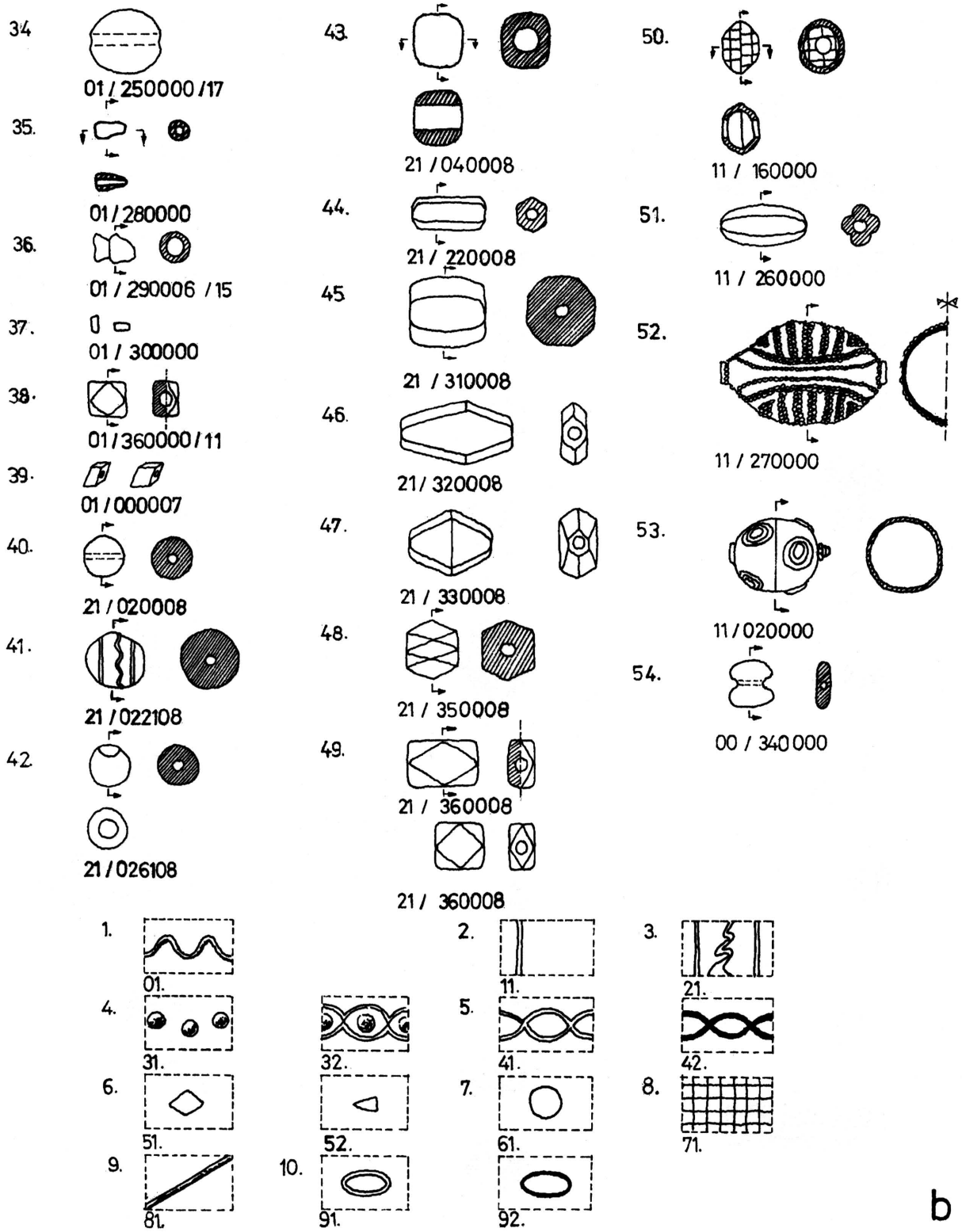


Figure 2. Bead types from the Halimba-Cseres cemetery, and the types of ornamentation found on the glass beads. Type numbers are to the left of the individual drawings; computer codes are below the drawings (1:1).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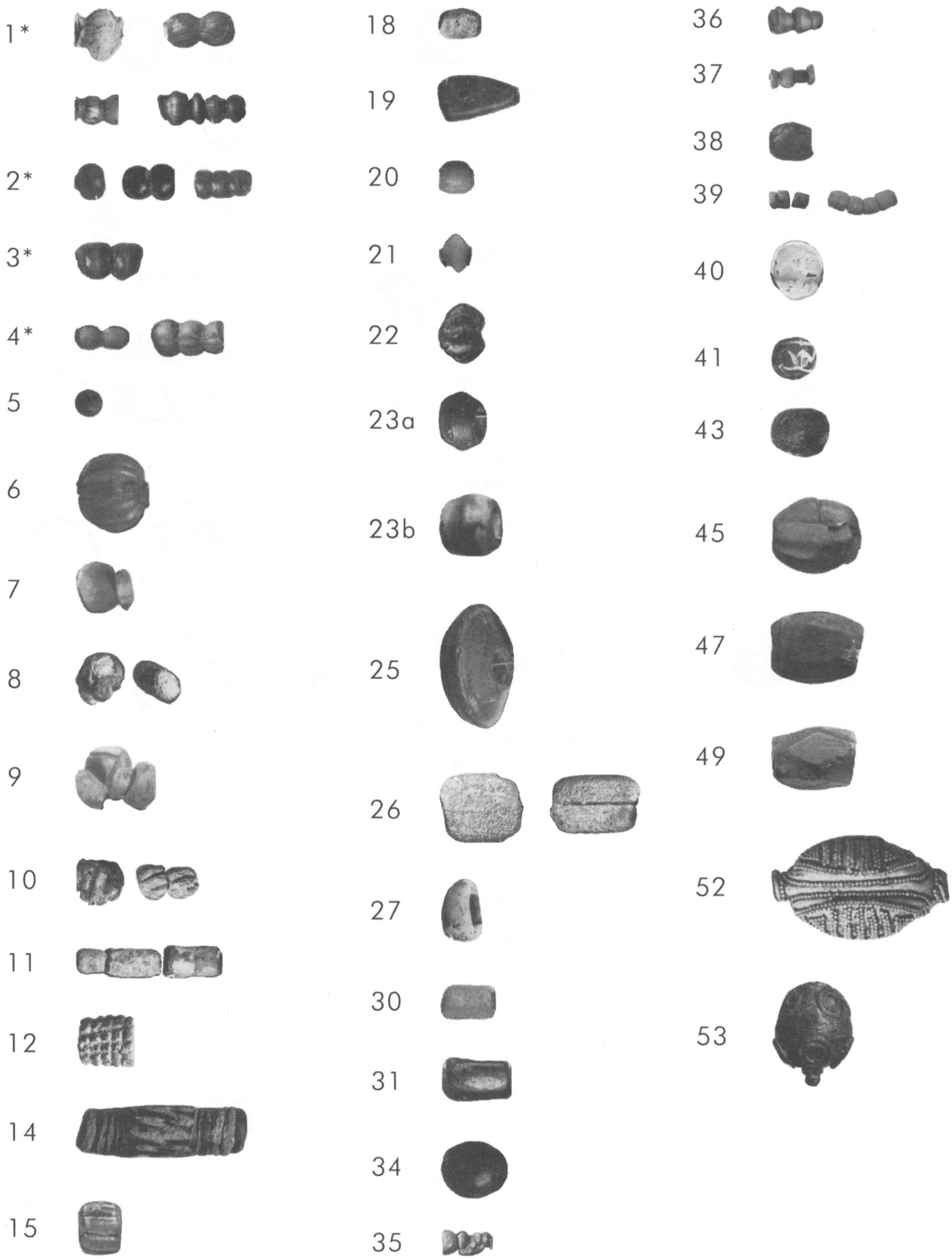

Figure 3. Actual specimens of the Halimba-Cseres bead types (1:1).

Table 1.
The Most Common Bead Types at the Halimba-Cseres Cemetery Based on Quantitative Frequency.

	A. Entire Cemetery			B. Phase I		Phase II		Phase III	
	Bead Type	#	%	Bead Type	#	Bead Type	#	Bead Type	#
1	37: "gravel" (very small)	951	40.6	37: "gravel" (very small)	517	1*: flashed, segmented (single and multiple)	331	37: "gravel" (very small)	394
2	1*: flashed, segmented (single and multiple)	630	26.9	1*: flashed, segmented (single and multiple)	64	27: disc-shaped	80	1*: flashed, segmented (single and multiple)	235
3	40-49: ground stone beads	140	5.9	2*: segmented (single and multiple), dark blue	41	39: "cut from glass rods"	59	40-49: ground stone beads	132
4	2*: segmented (single and multiple), dark blue	104	4.8	4*: segmented (single and multiple), cadmium yellow	35	35: tapered cylindrical	58	2*: segmented (single and multiple), dark blue	21
5	27: disc-shaped	8	10	2*: double bead, small, dark blue	6	2*: segmented (single and multiple), dark blue	42	39: "cut from glass rods"	14

century) when a gradual reduction in burial offerings was taking place.

The distribution of the bead-producing graves by phase is as follows. Of the 155 graves representing Phase I, 48 contained burial goods, with beads being included in seven cases. Burial offerings were found in 240 of the 381 Phase II graves, 38 of which also produced beads. Burial goods were present in 207 of the 396 Phase III graves, and 36 of these contained beads.

Comparing the quantity of beads per phase with the number of bead-producing graves for each phase, it becomes clear that the quantity of recovered beads is not proportional to the number of excavated graves. The predominance of graves devoid of burial goods in Phase I and the large number of beads found in just a few graves alone strikingly reflects the differences in clothing and social status of the individuals buried during this period.

An examination of the five most common bead types at the cemetery of Halimba-Cseres allows the formulation of several conclusions regarding their distribution in the cemetery and their demonstrable relationships with one another. Here and in the tables, the quantitative occurrence of the different bead types is termed the *quantitative frequency*, while their frequency based on the number of graves which contained them is referred to as the *frequency of incidence.*

Four bead types from the entire cemetery are among the five most common types both in regard to their numerical quantity (Table 1, Section A) and frequency of incidence (Table 2, Section A). Consequently, they represent the beads most commonly used by the local population.

The quantitative frequency of the flashed, segmented (single and multiple) glass beads (Type 1*), as well as the very small "gravel" beads (Type 37), is very high within the top five types. They are also significant based on the frequency of incidence.

The fifth most common type in the cemetery based on its quantitative frequency—a disc-shaped bead (Type 27)—is relatively scarce. This type was found

Table 2.
The Most Common Bead Types at the Halimba-Cseres Cemetery Based on their Frequency of Incidence in Graves.

	A. Entire Cemetery		B. Phase I		Phase II		Phase III	
	Bead Type	**# %**	**Bead Type**	**# ##**	**Bead Type**	**# ##**	**Bead Type**	**# ##**
1	1*: flashed, segmented (single and multiple)	25 30	37: "gravel" (very small)	4 13	1*: flashed, segmented (single and multiple)	11 25	40-49: ground stone beads	15 18
2	40-49: ground stone beads	18 22	4*: segmented (single and multiple), cadmium yellow	3 4	2*: segmented (single and multiple), dark blue	9 17	1*: flashed, segmented (single and multiple)	11 25
3	2*: segmented (single and multiple), dark blue	17 21	2*: segmented (single and multiple), dark blue	3 17	35: tapered cylindrical	6 8	37: "gravel" (very small)	7 13
4	37: "gravel" (very small)	13 17	1*: flashed, segmented (single and multiple)	3 25	32: ring-shaped	3 4	8: flattened spherical, with three eyes	5 5
5	35: tapered cylindrical	8 10	11: cylindrical	2 9	40-49: ground stone beads	3 18	2*: segmented (single and multiple), dark blue	5 17

# denotes the number of graves *per phase* which produced the specific bead type.
denotes the total number of graves which produced the specific bead type.

in only three graves; i.e., 3.7% of the bead-producing graves.

The difference between the frequency of the top five bead types based on their grave incidence is less than that based on their quantity. This is linked to the large or small quantity of the relevant bead types used to make the different kinds of necklaces.

Stone beads (Types 40-49, which are considered as one combined type for the purposes of this study) are among the top four bead types. While they occur in Phase II graves, they are not among the top five bead types during this period. Their frequency of incidence does not even reach 12.6%. In Phase III, they are in third place based on quantity and in first place based on their frequency of incidence. So, although stone beads occur in Phase II, it is only in Phase III that they become fashionable. If the stone beads discovered in all graves from properly excavated cemeteries were analyzed using the methods presented in this study, we would obtain even more reliable data on their origins and, presumably, also valuable data on the trade relationships of that period.

Counterparts for the stone beads have been uncovered at six 10th- to 12th-century sites: Tiszaluc-Sarkadpuszta (n = 6)(Kovács 1986); Grave 4 of Tiszabercel (n = 2)(Kiss 1937); Grave 79 of the cemetery of Esztergom-Kovácsi (Zolnay 1965)(see Fig. 4); a grave at Szob-Vendelindulo (n = 1); Grave "A" of Szob Highway on the Eipel (Ipoly)(n = 1); and Grave 341 of Szabolcs-Petofi Street (n = 2).

It is revealing to study the sequence of the top five bead types which occur in great quantities or frequencies per phase (*see* Tables 1-2, Section B). Interest is focused on the following four types:

1) Type 4*: Segmented (single and multiple) beads, cadmium yellow. These occur, with the exception of a single grave, only in Phase I where

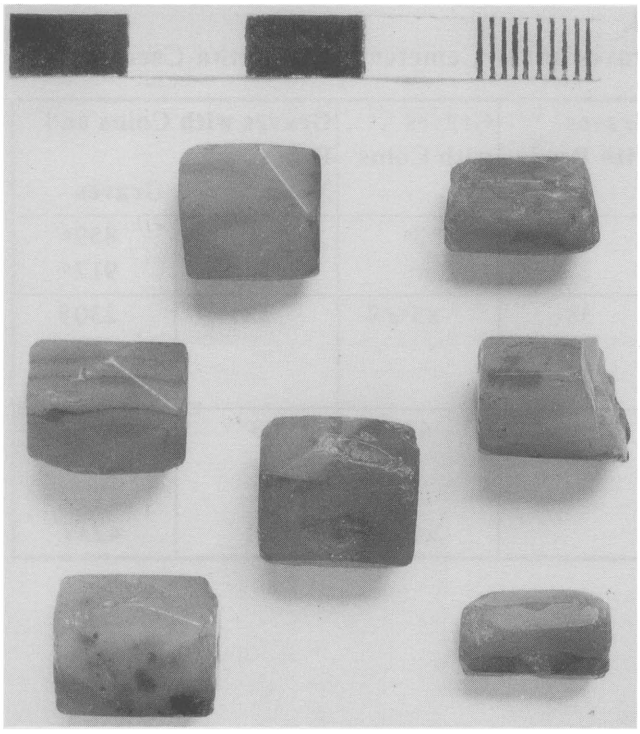

Figure 4. Stone bead Types 45 (bottom row) and 49 (top) from a grave at Esztergom-Kovácsi, dating to A.D. 1046-1060 (Hungarian National Museum, Budapest). The material is carnelian.

they are in second place based on their frequency of incidence, but in fourth place based on their quantity. The exception, Grave 425 which contained a single specimen and belongs to Phase II, is located on the boundary of Phases I and II on the cemetery map. A ring-shaped bead (Type 32) and a cylindrical bead (Type 11), also cadmium yellow, were found in Grave 765 of Phase III, while a wheat-kernel-shaped one (Type 20) came from Grave 423 of Phase III.

2) Type 2*: Double beads, small, dark blue. It is significant that these beads occur only in one grave (No. 859) of Phase I but are in fifth place based on quantity.

3) Type 39: Beads "cut from glass rods." These were found almost exclusively in Phases II and III. A cadmium yellow bead of this type is known from Grave 859 of Phase I.

4) Type 35: Tapered cylindrical beads. These were found almost exclusively in Phase II contexts, being in fourth place based on quantity and in third place based on grave incidence. Only three examples from Grave 859 relate to Phase I. One bead was also discovered in Grave 192 of Phase III. This exhibited pincer marks and was larger (length: 0.7 cm; greatest diameter: 0.55 cm) than the typical specimens. It, therefore, represents a sub-type.

Examples of the above four bead types have been found at other archaeological sites in Hungary. Correlatives for the Type 4*, segmented, cadmium yellow beads are known from Grave 25 at Szob-Vendelindulo (2 specimens)(Török 1956:132-134), in addition to the five specimens in Grave 21 of the cemetery of Bashalom I (q.v.). A counterpart of the Type 39 beads "cut from glass rods" was found in Grave 3 of 10th-century Szeged-Bojárhalom (1 specimen)(Reizner 1891:107, Table III, 8-9; 109). Counterparts to the Type 35 tapered cylindrical beads are known from Graves 341 (1 specimen) and 282 (3 specimens) at the cemetery on Petofi Street in Szabolcs which was utilized from the end of the 10th century to the 12th century (Kovács 1976). No counterparts are known for the double, small, dark blue beads (Type 2*) found exclusively in Phase I at Halimba-Cseres.

In summarizing the results of the statistical studies carried out on the beads from the cemetery at Halimba, it would be worthwhile to compare the beads found at other find sites of the same age—after they have been classified using the typology described herein—to the types discovered at Halimba, particularly as regards the stone beads, the segmented, single and multiple, cadmium-yellow beads, and the double, small, dark blue beads.

Coin-Dated Bead Strings at Halimba-Cseres

The coin-dated graves at Halimba-Cseres are especially important to this study as they permit the assignation of actual dates to the burials and any associated beads. By comparing the frequencies of the bead types that comprise the burial goods of a coin-dated grave to those accompanying a non-coin-associated burial, it is possible to determine probable dates for the latter. The coin-dated graves may be summarized as follows (*see also* Table 3).

Table 3.
The Incidence of Coin- and Bead-producing Graves at the Cemetery of Halimba-Cseres.

Phase	Total Graves	Graves Without Burial Goods	Graves with Burial Goods	Graves with Beads	Graves with Coins	Graves with Coins and Beads	
						No.	Graves
I	155	107	48	7	3°	2	859° 917°
II	381	141	240	38	x5°♂♀	x3	230♀ 394° 606°
III	396	189	207	36	48♂♀ x1♀	3 x1	372° 490♀ 770♀ 423♀

♂ man's grave
♀ woman's grave
° child's grave
x small perforated Roman bronze coins

Phase I

Three of the 48 Phase I graves with burial goods contained coins; two of these (Graves 859 and 917) had beads in association, although the bead from Grave 917 was decomposed and not suitable for classification. In Grave 859, a silver denarius with multiple perforations from the period of Ugo di Provenza (A.D. 926-943) was utilized to decorate a garment. The 540 beads comprising the bead string from this grave include a disc-shaped millefiori bead (Type 29). This is the only such bead found at Halimba and is so far the only known example from the Carpathian Basin as well. It was apparently produced by cutting a spherical millefiori bead decorated with stripes into three sections (Szilágyi 1982). The Western coin puts the beads at not quite a generation after the Italian campaign led by Taksony in 974.

The bead string from Grave 859 (Fig. 5; Pl. VIIIB) is composed of the following types:

Type 1*: Flashed, segmented (single and multiple) beads (n = 16);

Type 2*: Segmented (single and multiple) beads, dark blue (n = 15);

Type 4*: Segmented (single and multiple) beads, cadmium yellow (n = 3);

Type 11: Cylindrical beads (n = 3);

Type 20: Wheat-kernel-shaped bead (n = 1);

Type 29: Disc-shaped millefiori bead with stripes (n = 1);

Type 35: Tapered cylindrical beads (n = 3);

Type 36: Double-tapered cylindrical beads (n = 3);

Type 37: Very small "gravel" beads (n = 480);

Type 39: Beads "cut from glass rods" (n = 1).

Grave 775 contained two silver denarii from Berengar (A.D. 888-915) and two from Ugo di Provenza, all of which have multiple perforations and were used as purse decoration. Unfortunately, no beads were in association.

Phase II

Five of the 240 graves attributed to Phase II that contained burial goods contained coins (Huszár 1954). Three of these had beads in association, but here the coins were small perforated Roman bronzes

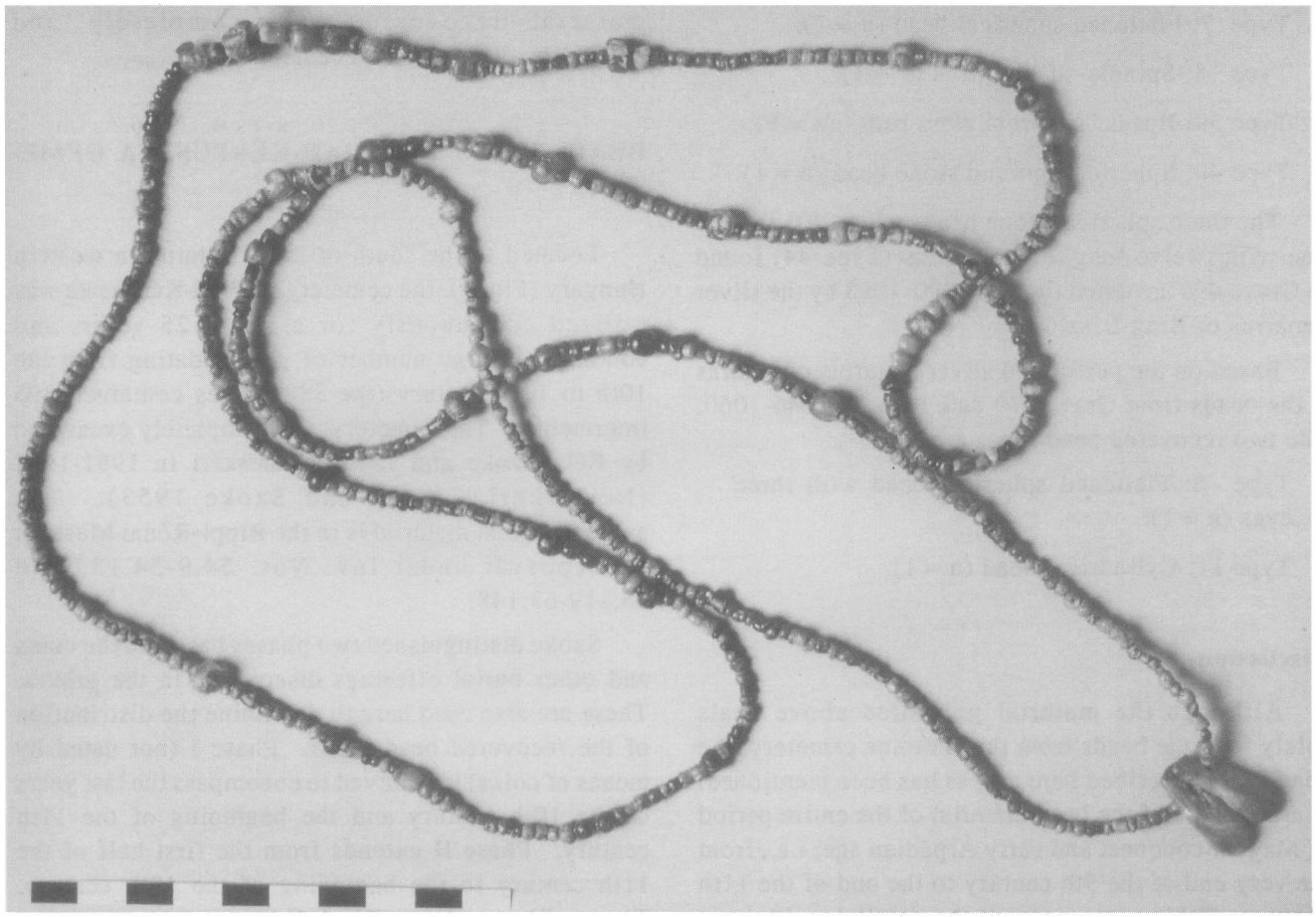

Figure 5. Beads that apparently adorned the neckline of a garment worn by the child in Grave 859, Phase I, Halimba-Cseres cemetery (Hungarian National Museum, Budapest). Primarily Type 37, as well as one Type 29 (the unique millefiori bead) and two perforated deer teeth (Photo: Tibor Kádas). *See* Pl. VIIIB for a detailed view.

which are not suitable for dating their contexts. They represent clothing decoration.

Phase III

Forty-nine of the 207 Phase III graves were found to contain burial goods that included coins. Of these graves, four (Nos. 372, 423, 490, 770) also contained beads. With the exception of Grave 423 which produced a small perforated Roman bronze, the coins all originated from the period of the first kings of the House of Árpádian (1048-1141). At Halimba, the coins buried with the dead were all still in circulation at the time. Therefore, it is likely that there was just a short interval between their being issued and their being placed in the graves, which is also significant in regard to the bead strings found with them (Török 1962:99-100). Since the minting and issue dates of the coins of individual rulers from the period of the kings of the House of Árpádian are still not resolved, the exact four- to five-year period during which the coins were placed in the graves cannot be determined either. Thus, the dates presented here are based on the chronology of Bálint Hóman (1916:206) which are still accepted today, and are based on the coins issued by the first kings of the House of Árpádian.

The beads found in the three coin-dated Phase III graves are as follows.

The bead string from Grave 372, dated A.D. 1048-1060 by the silver denarius of King András I, consisted of the following beads:

Type 1*: Flashed, segmented (single and multiple)(n = 9);

Type 7: Flattened spherical bead (n = 1);

Type 18: Spindle-shaped bead (n = 1);

Type 39: Beads "cut from glass rods" (n = 9);

Type 40: Spherical, ground stone bead (n = 1).

The three spherical stone beads (Type 40) and the one with twelve longitudinal facets (Type 44) found in Grave 490 are dated to A.D. 1090-1095 by the silver denarius of King László I.

Based on the perforated silver denarius of András I, the beads from Grave 770 date to A.D. 1046-1060. The two recovered bead types are:

Type 8: Flattened spherical bead with three eyes (n = 1);

Type 11: Cylindrical bead (n = 1).

Discussion

Although the material presented above deals solely with the beads from the Halimba cemetery, the bead types described here are, as has been mentioned, characteristic of the bead material of the entire period of Magyar conquest and early Árpádian age; i.e., from the very end of the 9th century to the end of the 11th century. Taking into account the parallels with bead types of earlier periods, the taxonomic system presented here can even be used with the beads of other time periods. However, the present typology merely provides a base for further studies and is suitable for scientific conclusions only in conjunction with frequency analysis. Such studies can illuminate and assess numerous archaeologically important phenomena. In this regard, I am thinking primarily of the unique production technology that relates to the manufacture of the various bead types, as well as the territorial delineation of the types and how this information can help to determine trade routes. And, not least, I am also thinking (within the framework of the recovered range of grave goods) of the unique features in the fields of personal adornment and ethnic clothing which are expressed in the specific bead types used by the local population. Scientific data obtained in this way will contribute significantly to an understanding of the everyday life of the people buried at Halimba-Cseres. However, such studies can only result in serious results if the data are based on material recovered from completely and professionally excavated cemeteries.

BEADS FROM THE FIAD-KÉRPUSZTA CEMETERY

Located to the south of Lake Balaton in western Hungary (Fig. 1), the cemetery of Fiad-Kérpuszta was utilized continuously for almost 125 years, and contained a large number of graves dating from the 10th to 12th century (the 388 graves contained 395 interments). The cemetery was completely excavated by Béla Szoke and János Nemeskéri in 1951-1952 (Nemeskéri, Lipták and Szoke 1953). The archaeological material is in the Rippl-Rónai Museum in Kaposvár under Inv. Nos. 54.9-54.137 and 63.119-63.148.

Szoke distinguished two phases based on the coins and other burial offerings discovered in the graves. These are also used here to determine the distribution of the recovered bead types. Phase I (not dated by means of coins) is believed to encompass the last years of the 10th century and the beginning of the 11th century. Phase II extends from the first half of the 11th century to the beginning of the 12th century. Thus, Phase I at Fiad-Kérpuszta coincides approximately with Phase II at Halimba, while Phase II corresponds to Halimba's Phase III.

The Fiad-Kérpuszta Bead Types

The beads from the Fiad-Kérpuszta cemetery are primarily of glass, but include a small number of stone specimens. Here, as at Halimba-Cseres, other articles were also used as beads, but these did not include cowries. Neither were metal beads recovered.

The cemetery produced 13 bead types. These comprise a much more homogeneous assemblage than that from the Halimba-Cseres cemetery. Ten of the bead types from the Fiad-Kérpuszta cemetery have correlatives at Halimba-Cseres:

Type 1*: Flashed, segmented (single and multiple);

Type 5: Spherical;

Type 7: Flattened spherical;

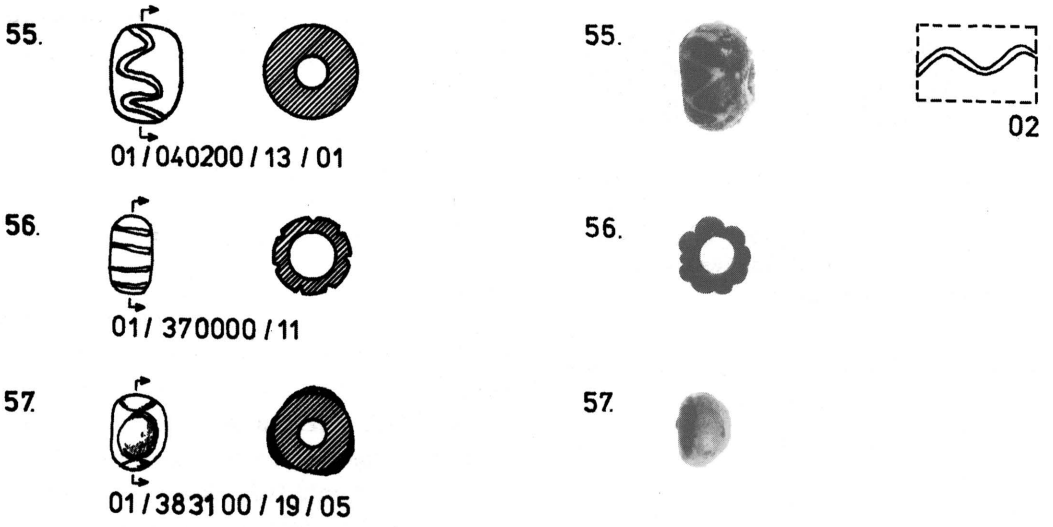

Figure 6. New bead types from the cemetery of Fiad-Kérpuszta (1:1): 55, flattened spherical, inlaid wavy line (01/040200/13/01); 56, finger-ring-shaped, ribbed (01/370000/11); and 57, spherical, flattened at one end, with three eyes (01/383100/19/05). Ornamentation 02: wavy line, inlaid.

Type 12: Cylindrical with lattice pattern;

Type 16: Cylindrical, collared, with silver or gold foil;

Type 27: Disc shaped;

Type 32: Ring shaped;

Type 35: Tapered cylindrical;

Type 37: Very small, "gravel;"

Type 45: Polyhedral stone, with eight sides.

Compared to the beads from Halimba, there are 13 new sub-types at Fiad-Kérpuszta. The sub-types (identified on the basis of shape, ornamentation, technology and color) are as follows:

Spherical, black glass;

Flattened spherical, brown glass;

Cylindrical, collared, with silver or gold foil, decorated with a zigzag line;

Disc-shaped, black glass;

Ring-shaped: a) a sub-type based on shape, made of green or white glass, and b) of the shape customary at Halimba, but made of green glass;

Tapered cylindrical: a) yellow, b) light green, c) pale purple, d) brown, e) black;

Very small, "gravel," yellowish-green.

Bead types from Fiad-Kérpuszta that were not encountered at Halimba-Cseres include (Fig. 6):

Type 55: Flattened spherical, decorated with a wavy line;

Type 56: Finger-ring-shaped, ribbed;

Type 57: Spherical, flattened at one end, with three eyes (Fig. 7).

All of these were encoded as a continuation of the number series for the Halimba beads (Appendices A-B).

Bead Type Frequencies at Fiad-Kérpuszta

The cemetery yielded 848 beads. These were about equally divided between the two phases: 402 specimens (47.4%) relate to Phase I, while 446 specimens (52.5%) pertain to Phase II.

Burial offerings were found in 125 of the 395 graves. Of these, 25 contained beads; this is 6.3% of all the graves, and 20% of the graves which contained burial goods. Beads were the only burial goods in four of the graves (Nos. 44, 46, 98, 153). All four relate to Phase II (11th-12th centuries) during which there was a gradual decrease in burial offerings. This means that certain burial goods were no longer put

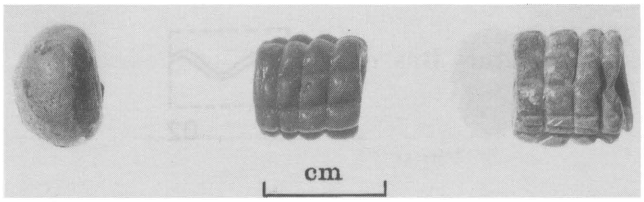

Figure 7. Three glass necklace beads: Type 12 (center and right) and Type 57 (left); Grave 340, Fiad-Kérpuszta cemetery (Rippl-Rónai Museum, Kaposvár).

into graves, partly because of changing burial customs and partly because of changes in clothing styles. Szoke observed in this regard that although "articles" which are characteristic of Phase I "are continually decreasing" in the graves of Phase II, "the recovered material becomes more precious, more valuable" (Nemeskéri, Lipták and Szoke 1953:297).

Of the 96 burials that relate to Phase I, 36 contained burial goods; these included beads in nine cases. Ninety-five of the 301 Phase II graves contained burial goods which included beads in 16 cases.

Comparing the number of beads per phase with the number of bead-producing graves in the individual phases, it is clear that the number of beads recovered is not commensurate with the number of excavated graves, as was also the case at Halimba-Cseres.

The relative frequencies of the glass and stone bead types were determined using the same methodology employed for the Halimba-Cseres cemetery. The following observations may be made on the basis of the resultant data.

Of the five most-prevalent bead types, four are dominant both on the basis of their numerical quantity, as well as their frequency of incidence (Tables 4-5, Section A). Based on frequency of incidence, the Type 16, collared, cylindrical beads with silver or gold foil (Pl. IXC, bottom), are in first place and are of decisive importance. This type is in second place based on quantitative frequency. Consequently, it is characteristic of the people buried in the cemetery of Fiad-Kérpuszta.

Apart from the Type 16 beads, the ones most generally used by the local population were those which are among the top five types both in regard to quantitative frequency and incidence frequency: the flashed, segmented (single and multiple) beads (Type

Table 4.
The Most Common Bead Types at the Cemetery of Fiad-Kérpuszta Based on Quantitative Frequency.

	A. Entire Cemetery			B. Phase I		Phase II	
	Bead Type	**#**	**%**	**Bead Type**	**#**	**Bead Type**	**#**
1	1*: flashed, segmented (single and multiple)	320	38	1*: flashed, segmented (single and multiple)	15	37: "gravel" (very small)	121
2	16: cylindrical, collared, with silver or gold foil	129	15	16: cylindrical, collared, with silver or gold foil	62	7: flattened spherical	100
3	37: "gravel" (very small)	121	14	12: cylindrical, with lattice pattern 32: ring-shaped	5	16: cylindrical, collared, with silver or gold foil	67
4	7: flattened spherical	100	12	types represented by only one bead		27: disc-shaped	59
5	27: disc-shaped	59	7	types represented by only one bead		35: tapered cylindrical	42

Table 5.
The Most Common Bead Types at the Fiad-Kérpuszta Cemetery Based on their Frequency of Incidence in Graves.

	A. Entire Cemetery			B. Phase I			Phase II		
	Bead Type	**#**	**%**	**Bead Type**	**#**	**##**	**Bead Type**	**#**	**##**
1	16: cylindrical, collared, with silver or gold foil	16	64	16: cylindrical, collared, with silver or gold foil	7	16	16: cylindrical, collared, with silver or gold foil	9	16
2	37: "gravel" (very small)	6	24	1*: flashed, segmented (single and multiple)	3	5	37: "gravel" (very small)	6	6
3	1*: flashed, segmented (single and multiple) 35: tapered cylindrical 32: ring-shaped	5	20	32: ring-shaped	2	3	35: tapered cylindrical	5	5
4	12: cylindrical, with lattice pattern	3	12	types found in only one grave			27: disc-shaped	2	2
5	27: disc-shaped	2	8	types found in only one grave			12: cylindrical, with lattice pattern	2	3

# denotes the number of graves per phase which produced the specific bead type.
denotes the total number of graves which produced the specific bead type.

1*); the very small "gravel" beads (Type 37); and the disc-shaped beads (Type 27). The latter two relate solely to Phase II.

"Gravel" beads were found in all three phases at Halimba. Disc-shaped beads occurred almost solely in Phase II, though an example of this type was found in grave 778 of Phase I. Flattened spherical beads (Type 7) occurred in large numbers in only one grave of Phase II at Fiad-Kérpuszta. Therefore, this type is in fourth place in the cemetery based on its quantitative frequency. At Halimba, this bead was not found among the top five types either according to its quantity or frequency of incidence. With the exception of a single bead, this type was found only in Phases II and III.

Several of the remaining bead types are represented by only one specimen.

Based on their incidence in graves, the differences in the frequency of the top five bead types are much more uniform here than at Halimba. This indicates that the necklaces at Fiad-Kérpuszta, which were made of the available bead types, were not strung as diversely as they were at Halimba.

The following three bead types are of special interest as regards the quantitative sequence of the bead types per phase (Tables 4-5, Section B):

1) Type 12: Cylindrical, with lattice pattern (Fig. 7). This bead occurs in both Phase I and II at Fiad-Kérpuszta. While this shape is in third place in Phase I in terms of quantity, it is not among the top five in terms of frequency of incidence; it was found in only one grave.

   At Halimba, this type occurred only in Phase III (the second half of the 11th century to the first half of the 12th century). It was not among the top five types in terms of either quantity or grave incidence. Type 12 beads (n = 10) were also

found in Grave 42 of the Tiszalök Fészekaljadulo cemetery where they were accompanied by a silver denarius of King István I. This dates the beads to around the middle of the 11th century (Szoke 1962:79).

2) Type 32: Ring-shaped. This type occurs both in Phase I and II at Fiad-Kérpuszta. In Phase I it is in third place based both on quantity and frequency of incidence.

   This bead type occurs here during the same time period as at Halimba, for it does not occur in the early part of Phase I which encompasses the second half of the 10th century. It is not among the top five types at Halimba.

3) Type 35: Tapered cylindrical. This bead was found solely in Phase II, in which it is in third place based on its incidence in graves and in fifth place based on its quantitative frequency.

   With the exception of four beads, this type was found only in Phase II (from the end of the 10th century to the middle of the 11th century) at Halimba, where it is in third place based on its incidence in graves and in fourth place based on its total quantity.

Regarding the three aforementioned bead types, it is interesting to note that the chronological distribution of the cylindrical bead with lattice pattern (Type 12) and the tapered cylindrical beads (Type 35) at Fiad-Kérpuszta deviates from that derived for them at Halimba.

In the summation of the Halimba bead types, it was proposed that it would be worthwhile to further study the stone beads, the cadmium yellow segmented (single and multiple) beads, and the small, dark blue, double beads. Ground stone beads of the polyhedral type with eight sides were found (n = 8) in only one grave (No. 220) of Phase II at Fiad-Kérpuszta. Thus, they do not occur here in any sequence based on frequency, although they are present at Fiad-Kérpuszta during the same period when they are fashionable at Halimba. Neither of the other two types was found at Fiad-Kérpuszta. This is also the case with the dark blue, segmented (single and multiple) beads (Type 2*).

The Type 16 collared-cylindrical bead with silver or gold foil is especially important at Fiad-Kérpuszta (Tables 4-5; Pl. IXC, bottom). This type was discovered in three Phase II graves (Nos. 120, 227, 769; a fragmented piece in each) and one Phase III grave (No. 560) at Halimba. Sub-types of this bead have been found at several other Hungarian cemeteries of the late 10th-12th century, including the cemetery of Tiszaluc-Sarkadpuszta (Kovács 1986), Szabolcs Petofi Street (Kovács 1976:371), Letkés Brickyards I-II (Bakay 1978) and Esztergom-Kovácsi (Zolnay 1965:155-156).

The statistical and comparative studies conducted on the beads from the Fiad-Kérpuszta cemetery suggest that it would be worthwhile to compare the data on the collared-cylindrical beads with silver or gold foil (Type 16), the cylindrical beads with lattice pattern (Type 12), and the tapered cylindrical beads (Type 35) with the beads recovered from other contemporary find sites after they have been analyzed using the same methodology.

Coin-Dated Bead Strings at Fiad-Kérpuszta

Coins were uncovered in 14 Phase II graves at Fiad-Kérpuszta and those from 10 of them could be classified (Table 6). Only two of the graves (Nos. 117 and 337) also contained beads.

The bead string from Grave 117, dated to A.D. 1063-1074 by the silver obolus of Salamon, is composed of 10 disc-shaped beads (Type 27), 23 tapered-cylindrical beads (Type 35) and 42 very small "gravel" beads (Type 37).

Consisting of 11 collared-cylindrical beads with silver or gold foil (Type 16), the bead string from Grave 337 was found with the silver denarius of László I which dates to the period A.D. 1077-1095. However, since the circumference of this coin has been shaved, Szoke (1953:283) believes that it was placed in the grave at the turn of the 12th century or just slightly later.

Table 6.
The Incidence of Coin- and Bead-producing Graves at the Cemetery of Fiad-Kérpuszta.

Phase	Total Graves	Graves Without Burial Goods	Graves with Burial Goods	Graves with Beads	Graves with Coins	Graves with Coins and Beads No.	Graves
I							
II	301	206	35	16	14°♂♀	2	117° 337♀

♂ man's grave
♀ woman's grave
° child's grave

THE BEADS FROM TISZAESZLÁR-BASHALOM I

Situated on the south side of the Tisza River in northeastern Hungary (Fig. 1), the Tiszaeszlár-Bashalom I cemetery was the burial site of an extended family during the 10th century. This date is based on the recovered coins (Dienes 1976) and corresponds approximately to Phase I at Halimba. The cemetery was utilized continuously by three consecutive generations. The successive male heads of the extended family were interred in the center of the cemetery, with the women and most of the children being buried to the right while the men were interred in the left wing (Fig. 8).

A total of 24 graves were uncovered. Twenty-two of these were excavated by Lajos Kiss in 1945. Nánder Fettich and Mihály Párducz excavated Grave 23 in 1948, and István Dienes investigated Grave 24 in 1958. The archaeological material from the 1945 excavations is in the Jósa András Museum in Nyíregyháza under Inv. No. 63.1069.1 - 63.1152.1. The material from the later excavations is in the Medieval Collection of the Hungarian National Museum under Inv. No. 2/1949 and 60.7.1 "A".

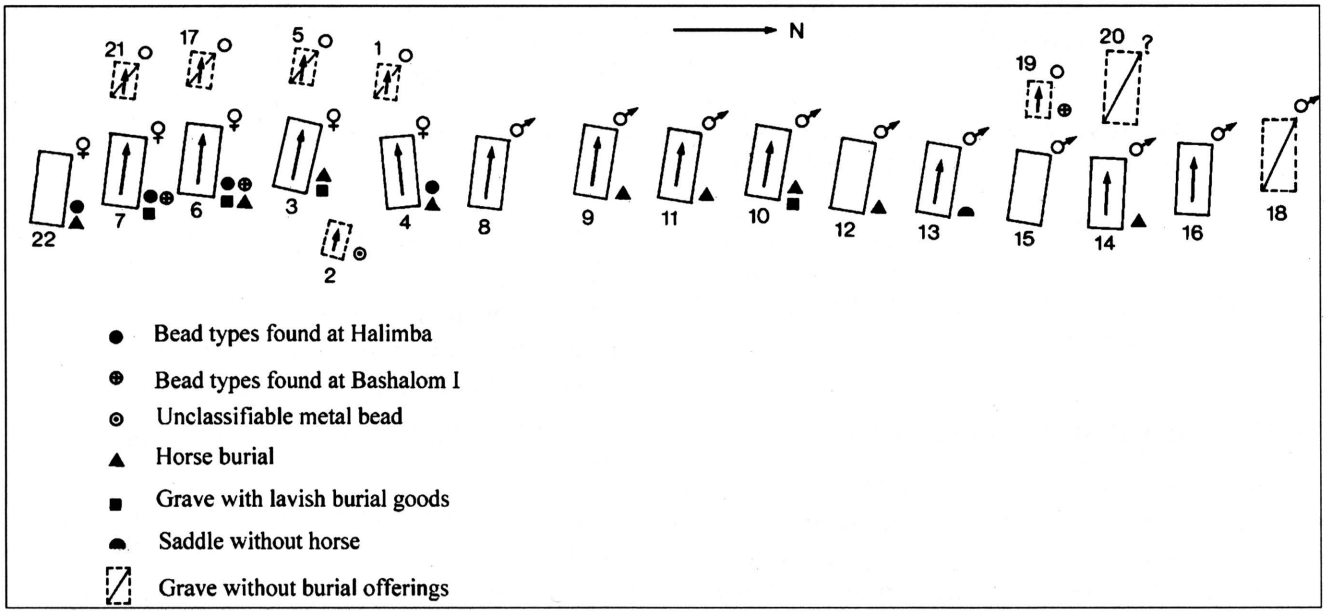

Figure 8. Burial distribution at the cemetery of Tiszaeszlar-Bashálom I.

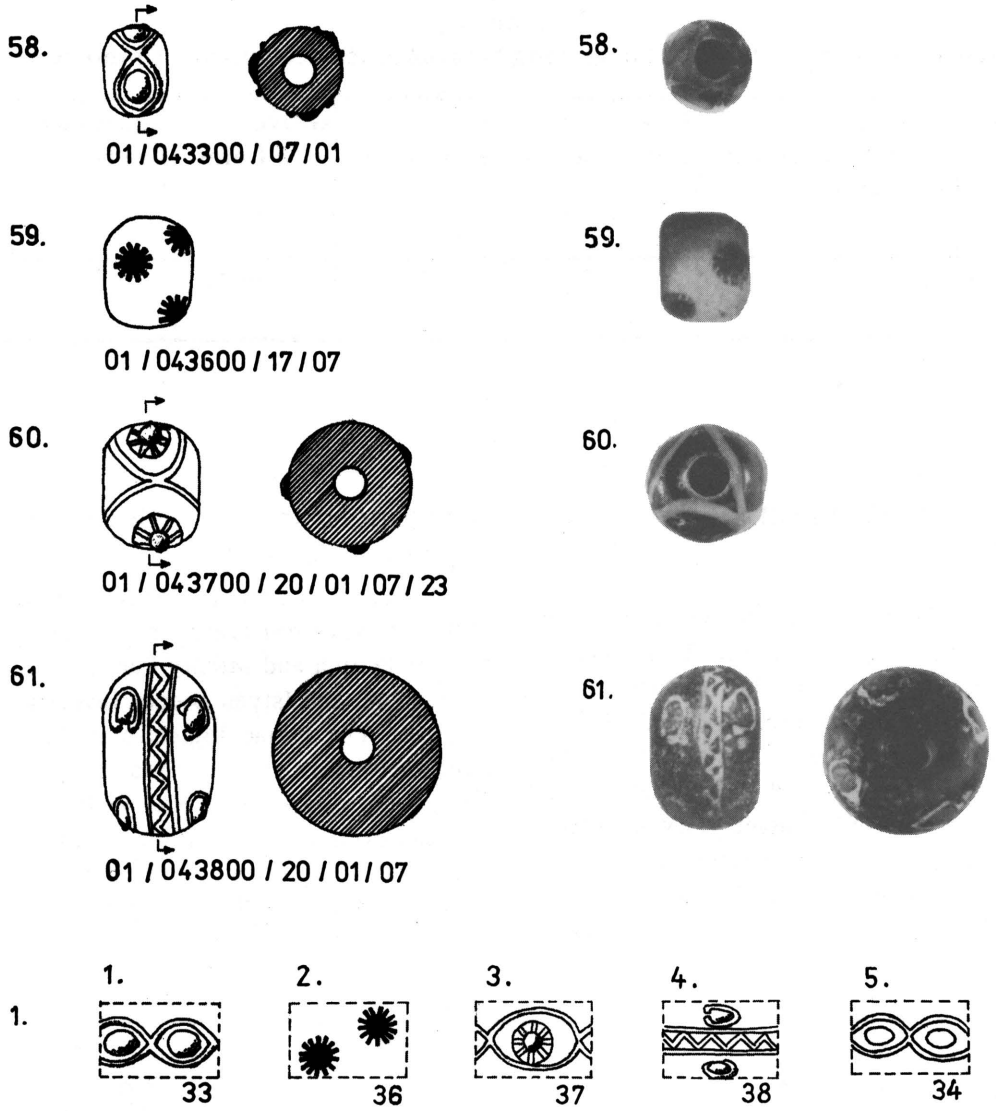

Figure 9. New bead types and decorative elements encountered at the cemetery of Tiszaeszlár-Bashalom I (1:1); *see* Table 7 for descriptions.

Due to the small number of graves and the particular mode of burial, the typological/diagonal statistical method could not be applied to the bead collection from this site.

The Tiszaeszlár-Bashalom I Bead Types

The beads from the Tiszaeszlár-Bashalom I cemetery are primarily composed of glass. A fragmented metal bead was also found, but it was not classifiable. There were also other articles that were used as beads, just as at Halimba and Kérpuszta, but they did not include cowries. No stone beads were encountered.

Thirteen bead types were recorded for Tiszaeszlár-Bashalom, evidence of diverse bead material. Eight of these have counterparts at Halimba:

Type 1*: Flashed, segmented (single and multiple);

Type 2*: Segmented (single and multiple), dark blue;

Type 4*: Segmented (single and multiple), cadmium yellow;

Table 7.
New Bead Types and Decorative Elements Encountered at the Cemetery of Tiszaeszlár-Bashalom I.

Type	Description
58	Flattened spherical beads with eyes in the openings created by two intersecting wavy lines: a) Flattened spherical, with three raised eyes in each of the openings created by two raised wavy lines that intersect three times (Ornamentation #33); red eyes on a black background, white lines (01/043300/20/07/01); b) Flattened spherical, with three inset eyes in the openings created by two inset wavy lines that intersect three times (Orn. #34); red eyes on a black background, red lines (01/043400/20/07); c) Flattened spherical, with four raised eyes in the openings created by two inset wavy lines that intersect four times (Orn. #35); white eyes on a black background, red lines (01/043500/20/01/07).
59	Flattened spherical, decorated with raised rayed eyes (Orn. #36); no longer extant, this bead is described on the basis of a photograph (01/043600/17/07).
60	Flattened spherical, with raised rayed eyes on a contrastingly colored background set in the openings created by two raised wavy lines which intersect three times (Orn. #37); white lines on a black background, raised turquoise dot with red rays on a white background (01/043700/20/01/07/23).
61	Flattened spherical, four raised eyes in inlaid loops on either side of an inset zigzag line situated between two inset stripes (Orn. #38); white stripes and loops on a black background, red eyes (01/043800/20/01/07).

Type 6: Spherical, ribbed;

Type 7: Flattened spherical;

Type 20: Wheat-kernel-shaped;

Type 32: Ring-shaped;

Type 37: Very small, "gravel."

Four new sub-types (based on size and color) were recorded within these types:

Spherical, ribbed, dark blue (n = 6);

Flattened spherical, light green (n = 7);

Wheat-kernel-shaped, dark blue (n = 20);

Ring-shaped, a large (2.4 cm diameter) variation of green glass (n = 32).

New bead types (those not found at Halimba-Cseres) are illustrated in Fig. 9 and described in Table 7. The new types were found in two graves (Nos. 17 and 21) along with types encountered at Halimba, revealing that the new types at Bashalom belong to the same period as the beads from Phase I at Halimba; i.e., the second half of the 10th century.

Grave 17 contained the following types:

Type 6: Spherical, ribbed (n = 4);

Type 59: Flattened spherical, with rayed eyes (n = 1);

Type 61: Flattened spherical, with eyes within loops situated on either side of a zigzag line running between two parallel stripes (n = 1).

The following types were found in Grave 21:

Type 1*: Flashed, segmented (single and multiple) (n = 1);

Type 2*: Segmented (single and multiple), dark blue (n = 2);

Type 4*: Segmented (single and multiple), cadmium yellow (n = 5);

Type 7: Flattened spherical (n = 1);

Type 20: Wheat-kernel-shaped (n = 1);

Type 37: Very small, "gravel" (n = 1);

Type 58: Flattened spherical, with eyes in the openings created by two intersecting wavy lines (n = 3);

Type 60: Flattened spherical, with rayed eyes in the openings created by two intersecting curved lines (n = 1).

At Halimba, the aforementioned bead types were associated with Phase I which encompasses the second half of the 10th century. However, the ring-shaped beads were not present at Halimba during this phase.

Type 58 flattened spherical eye beads have also been found at a number of other contemporary Hungarian sites, including Grave 23 at Budakeszi (n = 4), Grave 76 at Letkés Brickyard II (n = 1 or 2)(Bakay 1978:116), Graves 23 and 41 of Szob Vendelin-dulo (n = 15)(Török 1956:130-132), Grave "A" of Szob Highway on the Ipoly River (n = 8)(Bakay 1978:53-55), Grave 28 of Csongrád-Vendelhalom (n = 6)(Párducz and Tary 1939), Tiszanagyfalu (n = 1), Graves 9, 23 and 25 at Tímár Agricultural Production Cooperative Farm I (n = 12)(Kovács 1976:383-389), Grave 371 at Szabolcs-Petofi (n = 8)(Kovács 1976:387), Graves 1, 5 and 6 at Bodrogszerdahely (Streda nad Bodrogom)(n = 13)(Erdélyi 1961-62), Újfehértó-Micskepuszta (n = 1)(Jósa 1914a:201-206), Graves 5 and 9 at Nagyhalász-Kiszomborhegy (n = 7)(Jósa 1914b:183), an unknown site in the Kisvárda region (n = 2)(Jósa 1914b:183), Grave 3 at Szeged-Bojárhalom (n = 1)(Reizner 1891:107, 108)), and Grave 59 at Szob-Kiserdo (n = ?)(Bakay 1978:37).

Type 60 flattened spherical beads with rayed eyes have been recovered from Grave "A" of Szob-Highway on the Ipoly (n = 1)(Bakay 1978:53-55), Grave 2 at Pilin-Leshegy (n = 1)(Hampel 1896:13), Tiszalök-Kisvajasdomb (n = 1)(Kiss 1941:76-77), Graves 16, 19 and 34 at Kenézlo-Fazekaszug (n = 12)(Jósa 1914c:322), an unidentified site in the Kisvárda region (n = 4), Grave 2 at Eperjeske (n = 2)(Kiss 1920:42-55), and Rakamaz (n = 7)(Csallány 1959:8, Figs. 1-7).

The Bead-producing Graves at Tiszaeszlár-Bashalom I

Twenty-seven beads were recovered from six of the 24 graves at Tiszaeszlár-Bashalom. Four of these were women's graves and two were children's. Beads were the only burial goods in two graves (Nos. 2 and 19), both of which contained children. Grave 19, which had been disturbed, contained only Type 60 flattened spherical beads with rayed eyes (n = 3). With the exception of this grave, all bead-producing graves were located in the right wing of the cemetery.

The five other bead-producing graves contained bead types which were either all common to Halimba (Graves 1, 22), or were a mixture of Halimba types and the new types unique to Bashalom (Graves 17, 21). In regard to the unclassifiable metal bead from Grave 2, it is worth noting that no metal beads were associated with Phase I at Halimba.

The two graves (Nos. 17, 21) which produced bead types common to both Halimba and Bashalom were located beside each other (*see* Fig. 8). Both were women's graves which contained lavish burial offerings without the interment of a horse. Interestingly, there were relatively large quantities of beads (in strings) in these two graves (n = 6 and 15, respectively). With the exception of Grave 19, which contained three beads, the remaining graves contained only one bead each. Bead Type 58 was found in Graves 19 and 21 which are temporally close to one another.

Coin-Dated Beads at Tiszaeszlár-Bashalom I

Unfortunately, none of the coins recovered from the cemetery of Tiszaeszlár-Bashalom I came from bead-producing graves. Thus, they are of no use in dating the specific types, although they do help to date the cemetery.

CONCLUSION

This study of the beads recovered from three completely excavated 10th- to 12th-century cemeteries within the borders of present-day Hungary resulted in the identification of 61 distinct types and a large number of sub-types. The bulk of these were found at Halimba-Cseres, the largest (932 graves) and longest used of the three cemeteries (230 years). Only a few new types were recorded at the other two cemeteries, both of which contained substantially fewer graves (388 and 24, respectively) and were used for a shorter period of time (ca. 100-125 years).

The most significant of the recovered types were identified using statistical methods based on quantitative frequency and frequency of grave incidence. Those which are of special importance at the two largest cemeteries are Types 40-49

Table 8.
The Temporal Ranges of Selected Bead Types at Various 10th- to 12th-Century Sites in Hungary.

Site	Type	Period*		
		I	II	III
1.	40-49			
Halimba-Cseres				
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I				
Esztergom-Kovácsi				
Szob Vendelin-dulo				
Szob Highway on the Eipel				
Szabolcs Petofi Street				
2.	16			
Halimba-Cseres				
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I				
Letkés-Ziegelei I				
Letkés-Ziegelei II				
Szabolcs Petofi Street				
Tiszaluc-Sarkadpuszta				
Esztergom-Kovácsi				
3.	1*: cadmium			
Halimba-Cseres	yellow			
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I				
Szob Vendelin-dulo				
4.	12			
Halimba-Cseres				
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I				
Tiszalök Fészekalja-dulo				
5.	35			
Halimba-Cseres				
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I				
Szabolcs Petofi Street				

Site	Type	Period*		
		I	II	III
6. Halimba-Cseres	58			
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I		———		
Szob Highway on the Eipel		———		
Szeged-Bojárhalom		———		
Letkés-Ziegelei II		———		
Timár LPG Meierei I		———		
Bodrogszerdahely (Slovak Republic)		- - -		
Újfehértó-Micskepuszta		——		
Nagyhalász-Kiszomborhegy		——		
Szob Vendelin-dulo		——		
Csongrád-Vendelhalom		———		
Szabolcs Petofi Street		- - - - - -		
Szob Kiserdo		———		
7. Halimba-Cseres	60			
Fiad-Kérpuszta				
Tiszaeszlár-Bashalom I		———		
Szob Highway on the Eipel		———		
Rakamaz		———		
Tiszalök-Kisvajasdomb		———		
Eperjeske		———		
Piliny-Leshegy		- - - - -		
Kenézlo-Fazekaszug		———		

*Period I: 10th century.
Period II: late 10th century to the first half of the 11th century.
Period III: second half of the 11th century to the first half of the 12th century.

Key:
—— Completely excavated cemetery
—— Partial cemetery
- - - The dating of the bead-producing graves is not absolutely certain

(*see* Fig. 5 for the geographical location of the sites)

(considered as one combined type for the purposes of this study) at Halimba and Type 16 at Kérpuszta. In the individual phases of the cemeteries, the Type 4* cadmium-yellow segmented (single and multiple) beads predominate at Halimba, while Types 12 (cylindrical, with lattice pattern) and 35 (tapered cylindrical) are dominant at Kérpuszta. The temporal ranges for the above-mentioned bead types, as well as types 58 and 60 which predominate at Bashalom, are presented in Table 8.

A comparison of the beads recovered from the three completely excavated sites dealt with herein with those from another forty 10th- to 12th-century

sites within and adjacent to present-day Hungary (Fig. 1) reveals that the most significant types at the former sites were present over the whole of contemporary Medieval Hungary.

As a result of this study, some previously held concepts regarding the distribution of certain bead types are no longer valid. For instance, it is now clear that the Type 12 (cylindrical, with a lattice pattern) and Type 16 (collared-cylindrical, with silver or gold foil) beads are not prevalent in just the southern regions, but in the whole of the Carpathian Basin. Furthermore, Type 37 ("gravel") beads have been uncovered in all kinds of cemeteries, and certainly not just in graves which contained horse burials, as proffered by Béla Szoke (Nemeskéri, Lipták and Szoke 1953:285-286).

It is evident from this that Types 12 and 16 were not obtained and used by the southern Slavs living in the territory of Medieval Hungary. Neither was trade with the bead workshops of the Byzantine Empire and Syria solely their privilege, as presumed by Szoke (Nemeskéri, Lipták and Szoke 1953:285-286). On the contrary, the distribution of Types 12 and 16 is further evidence for the presence of a homogenous Hungarian common people possessing established trade relationships with peoples to the East (these two bead types are also found at sites of Kievan Russia).

The occurrence of Type 37 ("gravel") beads in the cemeteries of both the common folk and the middle class shows that both groups obtained their beads via the same trade routes. This is also supported by the distribution of the Type 58 and 60 beads.

ACKNOWLEDGEMENTS

The majority of the color plates accompanying this report were taken by Tibor Kádas. The exceptions are Plates VIIIA and VIIIC, bottom, which were photographed by Krisztina Pálfay, and Plate IXC, top, which is the work of Ágnes Kolozs. All but the beads shown in Plates IXC, bottom, and IXD are in the collections of the Hungarian National Museum, Budapest. The two exceptions are in the Rippl-Rónai Museum, Kaposvár.

The Bead Society of Greater Washington is thanked for providing a grant to help translate and illustrate this paper.

APPENDIX A. COMPUTER CODES FOR THE CLASSIFICATION OF 10TH- TO 12TH-CENTURY HUNGARIAN GLASS BEADS

Code	Description
Material	*(Positions 1-2 in the bead type code)*
00	Uncertain
01	Glass (this category may be further refined)
11	Metal (this category may be further refined)
21	Stone (this category may be further refined)
Shape	*(Positions 3-4 in the bead type code)*
00	Indefinite, uncharacteristic
01	Segmented (single and multiple)
02	Spherical
03	Spherical, ribbed
04	Flattened spherical
05	Flattened spherical, ribbed
06	Cylindrical
07	Long cylindrical
08	Cylindrical, ribbed
09	Cylindrical, collared (spool-shaped)
10	Sub-cylindrical

11 Spindle-shaped
12 Melon-seed-shaped
13 Wheat-kernel-shaped (small ellipsoidal)
14 Biconical
15 Biconical, fluted
16 Truncated biconical
17 Spindle-whorl-shaped, discoidal
18 Spindle-whorl-shaped, biconical
19 Thin, four-sided
20 Disc-shaped
21 Four-sided, prismatic
22 Six-sided, prismatic
23 Ring-shaped
24 Finger-ring-shaped (short truncated convex bicone)
25 Ellipsoidal
26 Ellipsoidal, lobed
27 Ellipsoidal, ribbed
28 Tapered cylindrical
29 Double-tapered cylindrical
30 "Gravel" (very small; 0.2-0.4 cm diameter)
31 Polyhedral, eight sides
32 Polyhedral, with 10 facets
33 Polyhedral, with 12 facets
34 Butterfly-shaped
35 Truncated biconical, with rhombic medial facets
36 Cornerless cube (includes rectangular forms)
37 Finger-ring-shaped, ribbed (*see* Fig. 6, #56 for illustration)
38 Spherical, flattened at one end (*see* Fig. 6, #57)

***Ornamentation** (Positions 5-6 in the bead type code)*

00 No ornamentation
01-10 01 Wavy line, impressed
02 Wavy line, inlaid (*see* Fig. 6 for illustration)
11-20 11 Straight line, inset
21-30 21 Wavy line bordered by straight lines, overlaid
31-40 31 Three raised eyes, impressed
32 Raised eyes in the openings produced by two inset wavy lines that intersect three times
33 Raised eyes in the openings created by two raised wavy lines that intersect three time (*see* Fig. 9 for illustrations of Nos. 33-38)
34 Inset eyes in the openings created by two inset wavy lines that intersect three times
35 Raised eyes in the openings created by two inset wavy lines that intersect four times
36 Raised rayed eyes
37 Raised rayed eyes on a contrastingly colored background, set in the openings created by two raised wavy lines which intersect three times
38 Four raised eyes in inlaid loops on either side of an inset zigzag line situated between two inset stripes
41-50 41 Wavy lines that intersect three times, inset
42 Wavy lines that intersect three times, painted

51-60 51 Rhombic decoration, painted
52 Triangular decoration, painted
61-70 61 Circular decoration, painted
71-80 71 Lattice pattern
81-90 81 Diagonal stripes, impressed
91-99 91 Ellipsoidal ornamentation, inset
92 Ellipsoidal ornamentation, painted

Technology *(Positions 7-8 in the bead type code)*

00 Indefinite, uncharacteristic
01 Lead flash (not to be confused with iridescence)
02 Gold flash between two glass layers
03 Gold foil between two glass layers
04 Silver foil between two glass layers
05 Millefiori
06 Pinched
07 "Cut from glass rods" (very small [0.5 mm] perforation)
08 Ground
09 Wound (produced by winding a molten glass thread around a mandrel)
10 Drawn
11 Silver flash between two glass layers

Color *(Positions 9-10, 11-12, 13-14 in the bead type code)(based on Ostwald's color disc)*

00 Colorless
01 White
02 Yellowish-white
03 Greenish-white
04 Cadmium yellow
05 Yellow
06 Brownish-yellow
07 Red
08 Brown
09 Purple
10 Dark purple
11 Dark blue
12 Pale purple
13 Light blue
14 Turquoise blue
15 Dark green
16 Green
17 Light green
18 Pale green
19 Dark gray
20 Black
21 Gold
22 Yellowish-green
23 Turquoise-green

APPENDIX B: INVENTORY OF THE BEAD TYPES FOUND AT THE HALIMBA-CSERES CEMETERY

Type	Description	Code[1]	Quantity
Glass Beads			
1*	Flashed, segmented (single and multiple) Flashed, segmented (single and multiple), pale green glass Flashed, segmented (single and multiple), colorless glass Flashed, segmented (single and multiple), pale purple glass	01/010002; 01/010011	630
2*	Segmented (single and multiple), dark blue Double bead, small, dark blue (Length: 0.4 cm; Diam.: 0.2 cm)	01/010000/11	104
3*	Segmented (single and multiple), turquoise	01/010000/14	3
4*	Segmented (single and multiple), cadmium yellow	01/010000/04	36
5	Spherical Spherical, dark blue Spherical, with silver flash Spherical, dark grey	01/020000	14
6	Spherical, ribbed Spherical, ribbed, colorless Spherical, ribbed, greenish-white Spherical, ribbed, green	01/030000	7
7	Flattened spherical Flattened spherical, with lead flash, white Flattened spherical, yellowish-white Flattened spherical, brownish-yellow Flattened spherical, dark purple Flattened spherical, dark blue Flattened spherical, green Flattened spherical, dark grey Flattened spherical, black	01/040000	29
8	Flattened spherical, with three eyes	01/043100/08/04	16
9	Flattened spherical, decorated with intersecting wavy lines	01/044200/08	35

* Assigned to the same type on the basis of computer analysis.

[1] The sub-types are not coded to make the appendix easier to read.

10	Flattened spherical, ribbed Flattened spherical, ribbed, white Flattened spherical, ribbed, with lead flash, yellowish-white Flattened spherical, ribbed, greenish-white	01/050000	40
11	Cylindrical Cylindrical, white Cylindrical, yellowish-white Cylindrical, cadmium yellow Cylindrical, dark blue Cylindrical, with lead flash Cylindrical, with gold flash	01/060000	22
12	Cylindrical, with lattice pattern	01/067100/16	7
13	Cylindrical, with wavy line	01/060100/11/05	1
14	Long cylindrical, with a wavy line bordered by straight lines	01/072100/20/01	1
15	Cylindrical, ribbed Cylindrical, ribbed, with gold flash	01/080000	2
16	Cylindrical, collared, with silver or gold foil	01/090004/20	4
17	Sub-cylindrical Sub-cylindrical, dark blue Sub-cylindrical, with lead flash	01/100000	3
18	Spindle-shaped	01/110000/06	1
19	Melon-seed-shaped Melon-seed-shaped, dark blue Melon-seed-shaped, pale green	01/120009	7
20	Wheat-kernel-shaped Wheat-kernel-shaped, yellowish-white Wheat-kernel-shaped, cadmium yellow Wheat-kernel-shaped, dark purple	01/130000	4
21	Biconical	01/140000/11	1
22	biconical, fluted	01/150000/11	3
23	Truncated biconical Truncated biconical, with gold foil	01/160000	6

24	Spindle-whorl-shaped, discoidal Spindle-whorl-shaped, discoidal, turquoise Spindle-whorl-shaped, discoidal, pale green	01/170000	2
25	Spindle-whorl-shaped, biconical	01/180000/20	1
26	Thin, four-sided Thin, four-sided, dark blue Thin, four-sided, light blue Thin, four-sided, pale purple Thin, four-sided, with silver flash	01/190000	7
27	Disc-shaped Disc-shaped, various diameters, purple Disc-shaped, dark blue Disc-shaped, with gold flash, pale green	01/200000	81
28	Disc-shaped, with ellipsoidal ornamentation	01/209100/08/20	1
29	Disc-shaped, millefiori, decorated with stripes	01/200005/07/13/01	1
30	Four-sided, prismatic Four-sided, prismatic, dark blue Four-sided, prismatic, green	01/210000	3
31	Four-sided, prismatic, with triangular or rhombic ornamentation	01/215100/11/21	4
32	Ring-shaped Ring-shaped, white Ring-shaped, cadmium yellow Ring-shaped, pale green	01/230000	9
33	Finger-ring-shaped, diagonal stripe	01/248100/20/07	3
34	Ellipsoidal	01/250000/17	1
35	Tapered cylindrical Tapered cylindrical, yellowish-white Tapered cylindrical, turquoise Tapered cylindrical, with lead flash, yellowish-white	01/280006	59
36	Double-tapered cylindrical	01/290006/15	3
37	"Gravel" (very small) "Gravel" (very small), cadmium yellow "Gravel" (very small), red	01/300000	951

	"Gravel" (very small), brown		
	"Gravel" (very small), dark purple		
	"Gravel" (very small), light blue		
	"Gravel" (very small), green		
	"Gravel" (very small), pale green		
	"Gravel" (very small), dark grey		
	"Gravel" (very small), black		
	"Gravel" (very small), with lead flash		
	"Gravel" (very small), with gold flash		
38	Cornerless cube, with ground corners	01/360008/11	1
39	Cut from glass rods	01/000007	74
	Cut from glass rods, cadmium yellow		
	Cut from glass rods, red		
	Cut from glass rods, pale green		
Stone Beads			
40	Spherical, ground	21/020008	102
41	Spherical, ground, decorated with a wavy line bordered by straight lines	21/022108	1
42	Polished globular, decorated with circles	21/026108	3
43	Flattened spherical, polished	21/040008	1
44	Six-sided, prismatic	21/220008	1
45	Polyhedral, with eight sides	21/310008	2
46	Polyhedral, with 10 facets	21/320008	26
47	Polyhedral, with 12 facets	21/330008	1
48	Truncated biconical, with rhombic medial facets	21/350008	1
49	Cornerless cube	21/360008	2
Metal Beads			
50	Truncated biconical, with quadrilateral facets	11/160000	2
51	Ellipsoidal, lobed	11/260000	7
52	Ellipsoidal (silver), ribbed, decorated	11/270000	1
53	Spherical (bronze), decorated	11/020000	1
Indeterminate Material			
54	Butterfly-shaped	00/340000	1

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