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Asian Beadwork

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Cover. *Asian Beadwork:* Betel bag, Rindi region, Southeastern Sumba, ca. 1915. European and Asian glass beads, brass bells, palm leaf plaitwork; 24 cm h. x 32 cm w. (excluding the straps). Thomas Murray collection (photo: Don Tuttle).

Back Cover. *Asian Beadwork:* Loincloth, probably Alak peoples, Attapeu region, South Laos, ca. 1950. Cotton, wool, European glass beads; 467 cm 1. x 37 cm w. John Barker collection (photo: Don Tuttle).

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KARLIS KARKLINS, editor

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PROSPERITY, REVERENCE AND PROTECTION: AN INTRODUCTION TO ASIAN BEADWORK

Valerie Hector

Fascinating and diverse beadworking traditions have flourished in Asia for more than 1000 years, with the preponderance of surviving specimens dating to the 19th and 20th centuries. Based on a lecture presented at the Third International Bead Conference in Washington, D.C., in 1995, this article introduces Asian beadwork as a fruitful topic of inquiry for bead specialists. Representative examples produced in the last millennium by various cultures in South Asia, mainland and island Southeast Asia and East Asia are shown and discussed. Although they certainly testify to the material wealth of their makers, in many cases these pieces also carry spiritual implications. As the study of Asian beadwork is still in its infancy, it is hoped that this article will inspire others to conduct further research on the subject.

INTRODUCTION

In these heady days of great interest in all things beaded, when monographs on African and American Indian traditions abound, it is curious that so little attention has been devoted to Asian beadworking traditions. There are plenty of studies on the beads themselves, whether of indigenous or foreign manufacture, but comparatively few on the objects created or embellished with beads, beyond simple necklaces. This article begins to redress this imbalance by introducing general cultural, historical, iconographic and technical issues raised by an examination of items "composed or adorned with beads, with units subordinate to the whole" (Dubin 1992). Usually, "beadwork beads" are small, measuring less than 5 mm in diameter (*see* Francis 1980,6[3]:7). Colloquially, they are called "seed" and "bugle" beads. This discussion focuses on representative examples drawn from a wide variety of cultures in South Asia (India and Nagaland), mainland Southeast Asia (Myanmar and Laos), East Asia (China and Japan) and island Southeast Asia (Malaysia, Indonesia and the Philippines) (Fig. 1). Such a broad perspective, touching upon many environments, languages, religions, social systems and aesthetic sensibilities, necessarily leaves out much of interest. Nevertheless, it does afford opportunities for comparisons between beadworking traditions, thus revealing significant similarities and differences. Considered together, the examples gathered in this article constitute an impressive array and demonstrate a multitude of approaches for assembling beads in two- and three-dimensional compositions. Before discussing each of these pieces in some depth, I will present more general information concerning sources for the study of Asian beadwork, early examples of Asian beadwork, the social, economical and spiritual contexts of Asian beadworking traditions, and Asian beadworking materials and techniques.

Sources on Asian Beadwork

Any review of the literature on Asian beadwork is destined to be rather brief as so little has been written and so few examples have been published. A careful search turns up six monographs devoted largely or wholly to the subject, one on South Asian beadwork (Nanavati, Vora and Dhaky 1966) and five on island Southeast Asian beadwork (Chee 1989; Dunsmore 1978; Ho 1987; Loebèr 1913; Whittier 1973). Of these, only Loebèr pursues a comparative approach, examining beadwork from a number of Indonesian traditions. Fewer than three dozen recent articles or book chapters address aspects of Asian beadwork in some depth, and many of these also concentrate on single traditions in island Southeast Asia: Chen

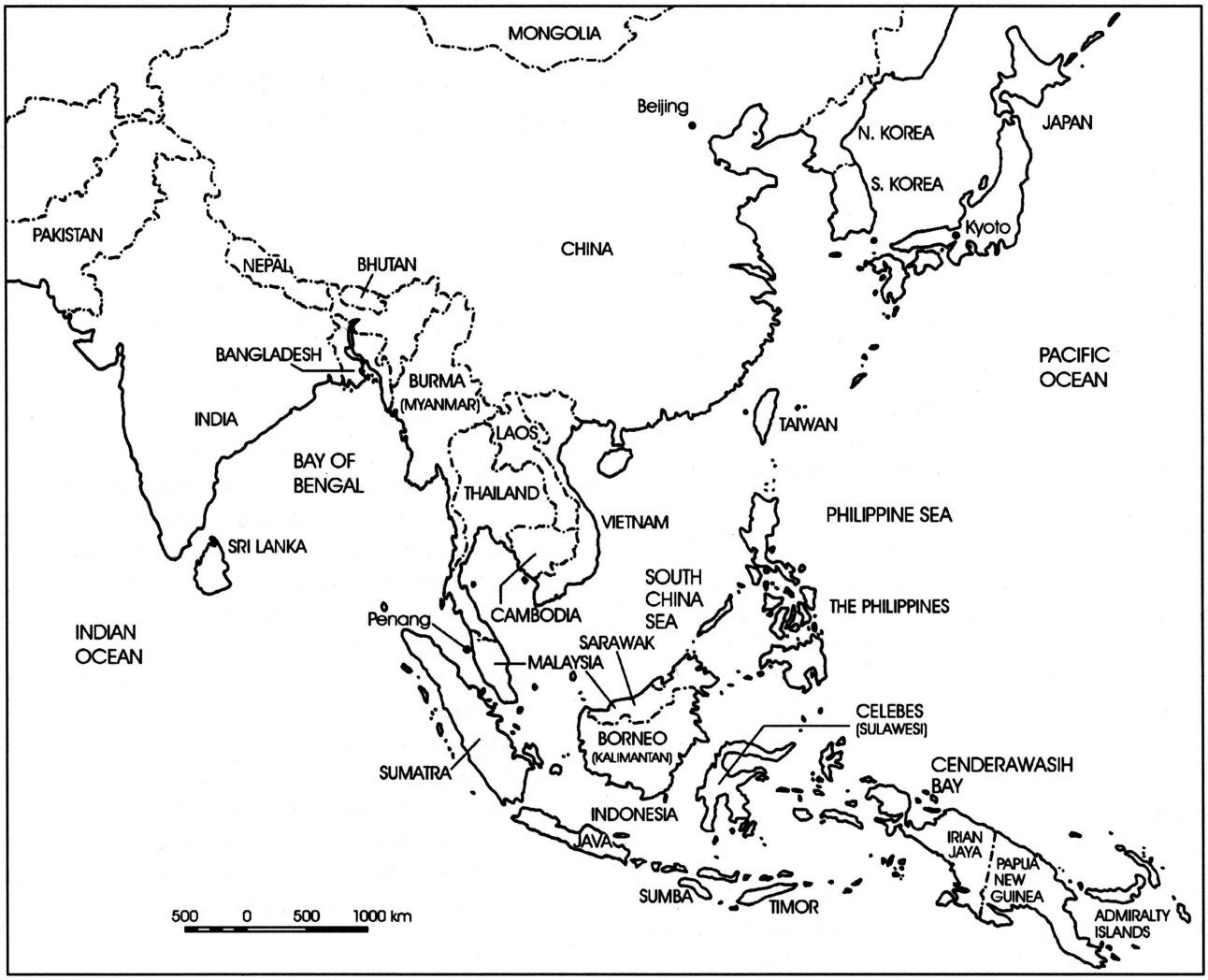

Figure 1. Map of Asia showing places mentioned in the text (drawing: Dorothea Kappler).

(1988); Dubin (1987); Francis (1992a, 1994); Holmgren and Spertus (1989); van Hout (1995); Liu (1995); Maxwell (1980); Maxwell (1990); Munan-Oettli (1983, 1989); Nooy-Palm (1969); Pastor-Roces (1991); Sibeth (1991); Solyom and Solyom (1984); Taylor and Aragon (1991); and Whittier and Whittier (1988). By contrast, mainland Southeast Asian and East Asian traditions have fared relatively poorly, perhaps because of their seemingly limited scope and inaccessibility to researchers. It is entirely possible that important, but little-known, reference works on Asian beadwork exist in various Asian languages.

Notwithstanding this dearth of written material, much can be learned by studying museum and private collections which contain examples that are occasionally well documented as to date and place of manufacture or acquisition. Needless to say, a great many collections must be consulted before the scope of even one tradition can be comprehended in all of its aesthetic and technical complexity. Moreover, it bears remembering that every collection suffers from an inherent bias in that it contains "material the original owners/manufacturers were prepared to part with, for whatever reason," and consequently cannot be considered representative (Heidi Munan 1996: pers. comm.). While this kind of collections research is costly and time consuming, it yields insights that cannot be obtained in any other way. Rewarding results can also be gained from fieldwork, with close

study of a particular tradition in the context of daily life. The most comprehensive recent example is Herbert Whittier's (1973) study of the Kenyah Dayak peoples of Borneo. Whittier elucidates the intricate network of social relations and religious beliefs that are involved in the production of Kenyah baby carriers decorated with beads and beadwork. Of course, fieldwork can be undertaken only in cultures with ongoing, or not-yet-forgotten, beadworking traditions. With the inevitable push to modernize in so many formerly remote parts of Asia and the continual erosion of longstanding cultural values, traditional art forms like beadwork are rapidly becoming irrelevant. In the present study, I have drawn heavily upon the sources listed in the References Cited and tried to synthesize information from textile historians, bead specialists and anthropologists. Although I have examined hundreds of pieces in museums and private collections in the last ten years, I have not undertaken any fieldwork or investigated other arts besides beadwork. In some cases, my observations will undergo future correction or refinement.

Early Asian Beadwork

Thanks to the ravages of climate and use, the natural fiber threads used in many pieces of beadwork disintegrate quickly, leaving behind masses of individual beads with little clue as to their original order. Most surviving examples of Asian beadwork are no more than 200 years old. Consequently, the early history of Asian beadwork is not easily written. Archaeological evidence suggests that spectacular beadworking traditions may have existed thousands of years ago in Asia among the Harappan peoples who lived during the third and second millennia B.C. in the Indus River Valley of what is now Pakistan and Gujarat State, India. Thousands of tiny beads made of steatite paste, each measuring 1.0 mm in diameter by 1.0-3.0 mm in length, have been found in excavations of Harappan towns (Hegde, Karnath and Sychanthavong 1982:239). The Harappans also manufactured other types of stone beads. Unfortunately, it is impossible to know what kinds of compositions were formed with them, apart from the simple necklaces which are depicted on clay figurines of this era.

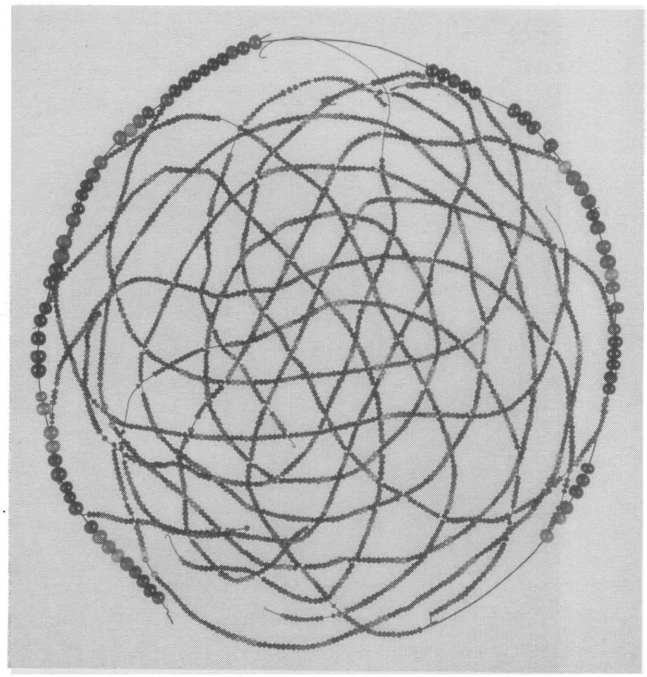

Figure 2. Flower basket, 8th century. Japanese glass beads, silver wire; 36 cm diameter. Courtesy of The Shōsō-in Treasure House, Nara, Japan (photo: Benrido Co. Ltd.).

Some of the earliest intact examples of Asian beadwork were made in Japan using durable silver wire and Japanese glass beads. Fascinating beaded baskets have been found in the Shōsō-in imperial storehouse on the grounds of the Todai-ji temple complex at Nara (Fig. 2; *see* Blair 1973:Pl. 89). Dating to the 8th century, these baskets were used by Buddhist monks during temple flower-scattering ceremonies (Blair 1973:383-384). Other singular artifacts have survived as well, including a braided belt with bead embellishment, also from the 8th century (Blair 1973:Pl. 5), an 11th-century lantern bearing blue glass beads in its niches (*see* Blair 1973:Pl. 13) and two bead-decorated pagoda-shaped containers (Blair 1973:134). Clearly, these few centuries gave rise to beadwork of surpassing beauty and diversity in Japan.

According to Peter Francis, Jr., the first "unequivocal literary reference to the art of beadwork" appears in the 13th-14th-century writings of the Indian poet Nam Dev:

> Everything is Govinda
> Everything is Govinda
> There is nothing without Govinda

Figure 3. *Thangka*, showing the Buddhist deity Vighnantaka. China, Xixia empire, early 13th century. Silk slit-tapestry weave, inwoven pearls; 102.3 cm h. x 74 cm w. © The Cleveland Museum of Art, 1996, J.H. Wade Fund.

Just as there is one thread
And on it are woven breadthwise and lengthwise
Hundreds of thousands of beads
So is everything woven unto the Lord
(Francis 1981,6[6]:6, citing *Grantha Sahib* 2352).

In this potent metaphor, beadwork forms the very fabric of the universe, implicitly joining secular and sacred realms; a humble activity becomes a transcendent endeavor. No examples of these early panels seem to have survived, but if Nam Dev's bead count can be taken literally, they must have been quite large, measuring many feet across. Probably, they were composed of very small glass beads of Indian manufacture, connected in a technique that was already old in Nam Dev's day (Francis 1981,6[6]:6). Also by the 13th century, weavers in China were inserting tiny pearls into the ground of silk slit-tapestry-weave *thangka* panels depicting Buddhist religious figures (Fig. 3; *see* Reynolds 1995:Pl. 9). Beads were surely put to more prosaic uses as well in these early centuries, but the tendency to incorporate them into objects with overtly religious themes or functions cannot be ignored. As we shall see, this tendency continues in later centuries.

The Social, Economical and Spiritual Contexts of Asian Beadworking Traditions

We do not know when the early Asian beadworking traditions got underway or, indeed, whether some of them should be called "traditions" at all. We are on firmer ground when discussing traditions of the last century, ones which vary considerably in scope. Extensive traditions, with regional stylistic variations, flourished in some areas such as Gujarat State and Borneo (*see* Nanavati, Vora and Dhaky 1966:73-75). More limited traditions developed in southern Laos and northwest Myanmar where beadwork was used sparingly to decorate woven textiles. These variations may reflect cultural preferences for bead embellishment or access to suitable materials, or both. Whether large or small, each tradition comprises conventional types of articles worked in conventional motifs, colors, compositional formats, materials and techniques. Such homogeneity derives from culturally prescribed rules of design and function which have prevailed for many centuries. According to customary belief, if these rules are not observed, an object may not properly fulfill its intended function (*see* Taylor and Aragon 1991:27 ff.). Still, we can often discern the subtly personal within the formulaic: in the fluidity with which a motif is rendered, or the care with which a technique is executed, or the striking manner in which colors or motifs are juxtaposed. Thus, no matter how closely tradition regulates appearance, there is always some potential for individual creative expression. A beadworker's talent, inclination and technical expertise determine to what extent this potential is realized.

Many Asian beadworking traditions were practiced by women who drew upon the same repertoire of designs that they used in other textile arts, such as barkcloth, embroidery, weaving and basketry. In a few cases, some beadwork was made by men (*see* Maxwell 1990:63; *also* Hamilton 1994:109) or by professional embroiderers (*see* Chee 1989:78; *also* Nanavati, Vora and Dhaky 1966:68). In most of the cultures under discussion, daily life was organized around the demands of agriculture, horticulture and animal husbandry. Beadwork was done in the quiet hours. Like other textiles that consumed large quantities of effort and expense, beadwork was often, but not exclusively, reserved for special ceremonial occasions when prosperity was celebrated, or protection from negative influences was requested, or reverence for beneficent spiritual forces was expressed. During these ceremonies, beadwork helped connect the world of man and the world of the gods or spirits. This generalization holds true whether Hindu, Buddhist, Islamic or animist beliefs influenced the production of the piece under consideration. The major principles of Hindu and Buddhist religions may not need rehearsing, but those of animism may be less familiar. Briefly, animism posits the belief that every entity in the universe possesses a soul which deserves respect (*see* Taylor and Aragon 1991:29).

Many animist religions also involved veneration of deities and ancestors who were believed to regulate events on earth. Although we cannot describe any of these in depth, various animist worldviews permeated the cultures of the Naga, Chin, Alak, Toraja, Dayak, south Sumatran, Sumbanese and Cenderawasih Bay

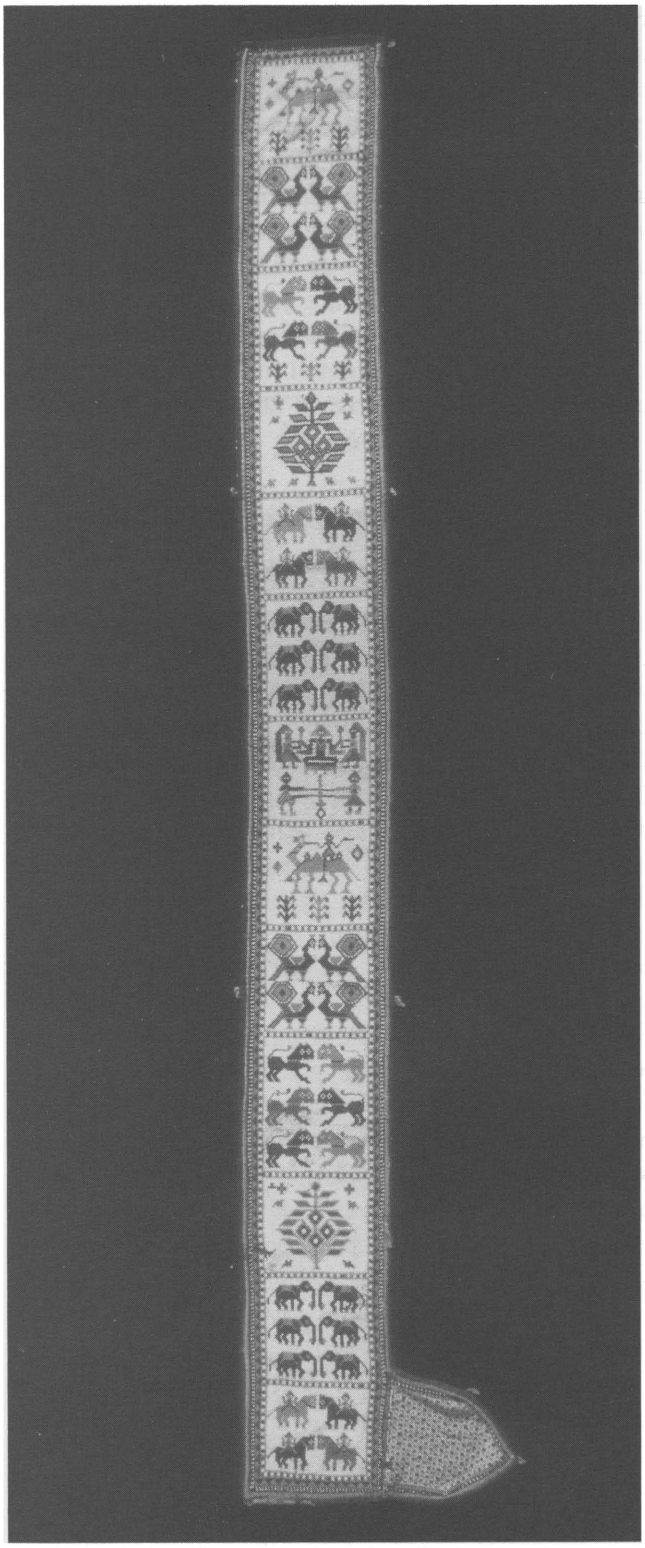

Figure 4. Vertical door panel (fragment), Kathi peoples, Saurashtra region, Gujarat State, ca. 1900. European glass beads, cotton; 182 cm h. x 36 cm w. Private collection (photo: Chris Cassidy).

peoples whose beadwork is discussed herein. In addition to its role in the spiritual realm, beadwork simultaneously served a more secular purpose by advertising the owner's prosperity, social status and group affiliation. In many Asian cultures, ownership of beads and beadwork affirmed a level of social and economic success beyond the reach of the poor. In several respects, then, the examples pictured in this article should be viewed as "small pieces of vast symbolic worlds" that cannot be adequately understood apart from the contexts in which they were created (*see* Rodgers 1985:21; *also* Maxwell 1990:63-66; Schneider and Weiner 1989:4-10). Only the barest details of these spiritual, social and economic contexts are touched upon in this article.

Typically, when not in use, pieces of beadwork lay stored away in quiet, dark places; such periods of rest might enable them to survive a century or more. From time to time, repairs or alterations might have been necessary. The upper left corner of the dance apron in Pl. IA, for instance, was obviously restored at some point. Less kindly, the vertical portion of the *sakhia* in Fig. 4 was cut horizontally into two pieces, possibly to reduce its size. Eventually, as natural fiber threads began to disintegrate, some pieces might have been taken apart and reconstructed (*see* Nooy-Palm 1975:36). Thus, the same set of beads could have been used in several consecutive editions of the same type of piece over the course of several centuries. Alternatively, an entirely different piece may have been fashioned with the old piece serving as a guide, other beads being incorporated as needed. In this way, traditional designs, techniques and materials were perpetuated from one generation to the next with subtle changes being introduced along the way. In some cultures, preserving traditional ways of doing things honors the ancestors, deities or spirits who were believed to have initiated these ways generations ago.

Beadworking Materials

Of course, only beads made of sturdy materials such as glass, stone and metal could survive repeated wear. By contrast, beads made of certain plant materials might begin to fragment after only a few decades. Fragile and desiccated, the tubular bamboo

Figure 5. Vest, China, late 19th century. Bamboo beads, linen, cotton; 55 cm h. x 45 cm w. Private collection (photo: Chris Cassidy).

beads on the vest in Fig. 5 split easily when pressed between the fingers. Despite their perishability, a great many other plant materials appear in any inventory of the beads used in Asian beadwork. These range from orchid stems to cloves or other dried flower buds, and seeds such as Job's tears (*Coix Lacryma-Jobi*) as well as various fruit pits (*see* Loebèr 1913:8-13). More durable beads of various modified animal substances also occur regularly in Asian beadwork, especially beads of bone (Pl. IB) and shell (Pl. IIA), which often had to be shaped and drilled with simple tools. Long before the process of beading began, countless hours were expended in the manufacture of the 3 mm x 0.5 mm mother-of-pearl discs that adorn the B'laan blouse in Figs. 6-7 (*see* Pastor-Roces 1991:104 ff. and Pls. 69-70, 153-159; *also* Maxwell 1990:Fig. 83). Similar disc beads have been produced in Asia for more than 10,000 years, since beadmakers in India first learned to make them from ostrich eggshell (Francis 1988:102). Indeed, some of the earliest examples of Asian beadwork may have featured shell-disc beads. In contrast to beads

Figure 6. Blouse, B'laan, southern Mindanao, Philippines, ca. 1920. Mother-of-pearl-disc beads, cotton; 34 cm h. x 113 cm w. Private collection (photo: Eileen Ryan).

made of other materials, one rarely encounters metal beads in Asian beadwork. Their conspicuous absence might relate to prohibitive weight, cost or size factors.

The emergence of glass as a beadmaking material in China and India around 1000 B.C. (*see* Francis 1988:106; Francis 1990:119) led to new possibilities for beadwork, especially in the area of color. Over the centuries, as technology improved, major manufacturing industries got underway and eventually exported their products to other parts of Asia and the world. Peter Francis, Jr., has studied these industries and their products in great depth (e.g., Francis 1982, 1988, 1990, 1992a-d). Francis identifies two major types of Asian glass beads measuring 5 mm or less in diameter which are relevant to our discussion as they can be found in extant examples of Asian beadwork: "Indo-Pacific" beads and "coil" beads (*see* Francis 1992a:Pl. 4A; *also* Adhyatman and Arifin 1993:Pl. 77). Indo-Pacific beads probably originated with Tamil Indians at Arikamedu in southeastern India during the 3rd century B.C. or earlier (Francis 1992d). These beads were fashioned from drawn glass tubes in a variety of sizes and monochromatic colors (Francis 1990:8 ff.; *see also* Adhyatman and Arifin 1993:Pls. 37-39). In time, Indo-Pacific beads were manufactured not only in South Asia, but also at sites in mainland and island Southeast Asia (Francis 1990). Until the 13th century, "Indo-Pacific beads were *the* trade bead of the ancient world" (Francis 1990:20), being exchanged for all kinds of products and services. Indo-Pacific beads have apparently embellished objects for about two millennia; bronze

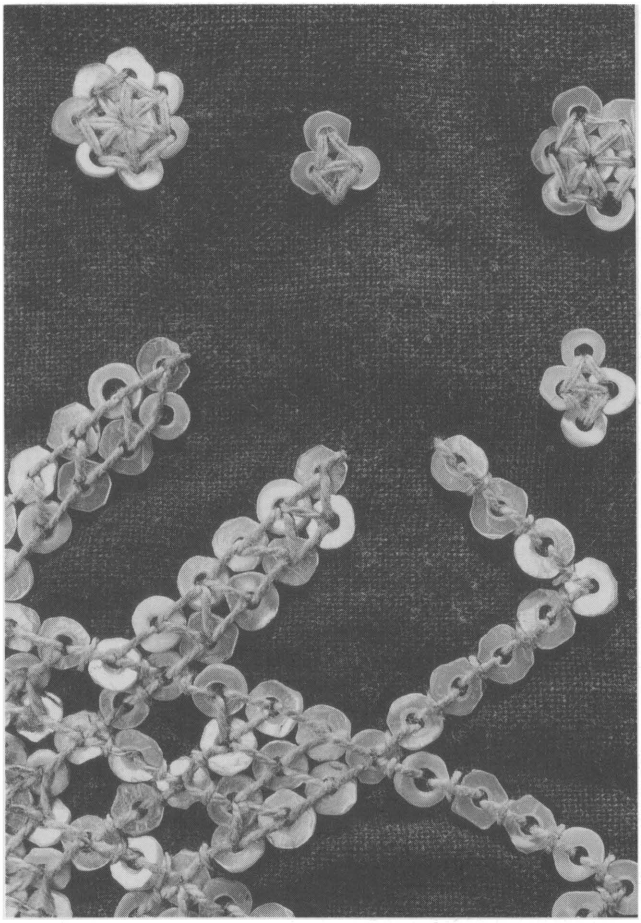

Figure 7. Detail of the beadwork on the B'laan blouse shown in Fig. 6 (photo: Eileen Ryan).

objects found in Dongson-era (200 B.C.-A.D. 200) archaeological contexts in Indonesia still have such glass beads adhering to their surfaces (Thomas Murray and Frank Wiggers 1996: pers. comm.; *see also* Shirley Day Ltd. 1993). As we shall see, both the Naga belt in Pl. IB and the south Sumatran mat in Pl. IIB contain beads that may have come from the Indo-Pacific beadmaking tradition.

"Coil" beads, formed by winding molten glass around a mandrel (*see* Francis 1992a:2), constitute a second major type of Asian glass bead (*see* Francis 1992a:Pls. 3B, 4A). While some may have been made in northern India (Peter Francis, Jr. 1996: pers. comm.), others were made in China, as well as by Chinese beadworkers outside of China (Francis 1990:123), possibly as early as the 10th century (Francis 1992c:11). Monochromatic and typically fairly irregular, Chinese coil beads were produced in one-, two- and three-twist varieties, all generally distinguished by a significant lead content (Francis 1990:123). Large-scale exportation of Chinese coil beads to Korea, Malaysia, Sumatra, Borneo, the Philippines and elsewhere was under way by the 12th century (Francis 1992c:11-12); *see also* Francis 1990:122). At about this same time, parts of the Indo-Pacific beadmaking empire began to collapse. In the resulting vacuum, coil beads flourished from the 12th to the 17th century, but eventually declined in popularity, though some are still made today (Francis 1992c:12). Older examples of Southeast Asian beadwork may contain Chinese coil beads, sometimes mixed with European and Indo-Pacific glass beads (Pls. IIB, IIIA-B). Rarely, coil beads appear exclusively, as on an old fragmented *kandaure* in the Tropenmuseum collection (personal observation: cat. no. 3733-1; *see also* cat. no. 3865-25, and Rijksmuseum voor Volkenkunde [RVV] cat. no. 2107/13). *Kandaure* are large conical beadwork ornaments created for ritual display and wear by the Sa'dan Toraja peoples of Sulawesi. Given the range of dates for Chinese coil beads, it is reasonable to postulate that the Toraja's glass beadworking tradition commenced some centuries ago.

Compared to Indo-Pacific and Chinese coil beads, European glass beads arrived late in Asia. They did not begin to dominate in the Asian maritime bead trade until the late 19th or early 20th century (Peter Francis, Jr. 1996: pers. comm.). It seems to be the case, however, that at least by the 1830s, if not before, European drawn-glass beads occasionally found their way into beadwork produced in parts of Indonesia. For example, the RVV has a beadwork belt collected in the Lesser Sundas region in 1837, which appears to have European drawn-glass beads 3-4 mm in diameter on it (pers. obs.: cat. no. 1/155; *see also* cat. no. 1/158). By about 1865, as we shall see, European drawn-glass beads were surfacing in beadwork made in western India, albeit in smaller sizes and more vivid colors. Judging by the sheer volume of pieces produced with them in the late 19th and early 20th centuries, European drawn-glass beads inspired many Asian beadworkers. Because of these beads, new saturated colors entered the repertoire, such as deep pinks, rosy reds and subtle purples. With this magnificent rainbow of colors, beadworkers achieved new effects, such as the delicate shading of foliage

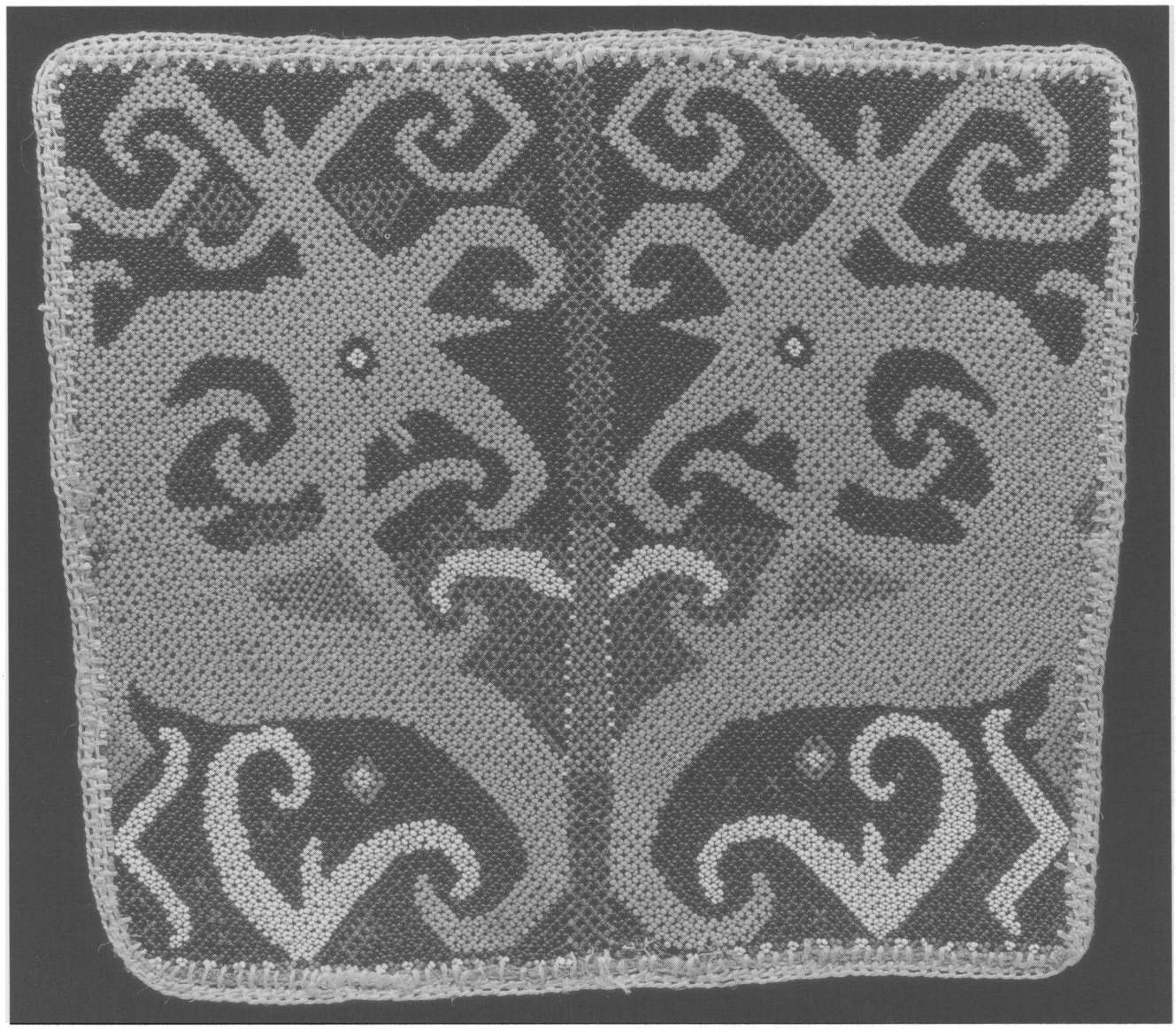

Figure 8. Beadwork panel from a baby carrier, Kenyah Dayak, Borneo, ca. 1900. Glass beads, pineapple-fiber thread; 21.5 cm h. x 25.5 cm w. Private collection (photo: Don Tuttle).

(*see* Pl. IVB). Also, because they could be obtained in very small, uniformly graded sizes, European beads made possible the production of exceedingly fine beadwork with precise delineation of curvilinear forms (Fig. 8). In addition, faceted varieties lent new shimmer to compositions in which they were used (Pls. IVA-B).

With notable exceptions—such as the silver-wire threads used in 8th-century Japan—beads in Asia have for millennia been strung on threads culled from animal or, more commonly, vegetable materials. Just producing these threads necessitated great labor. Where weaving traditions existed, beadworkers might appropriate the same hand-spun cotton threads that were used in cloth. In the case of the Dayak peoples of Borneo, on the other hand, while a few beadworkers used handmade cotton threads, most individuals used threads scraped from pineapple-tree leaves, or creepers (*see* Tillema 1989:Pls. 150-151). These threads could be made fine and stiff enough to pass twice through beads as small as 1.5 mm in diameter without the use of a needle. While needles were not

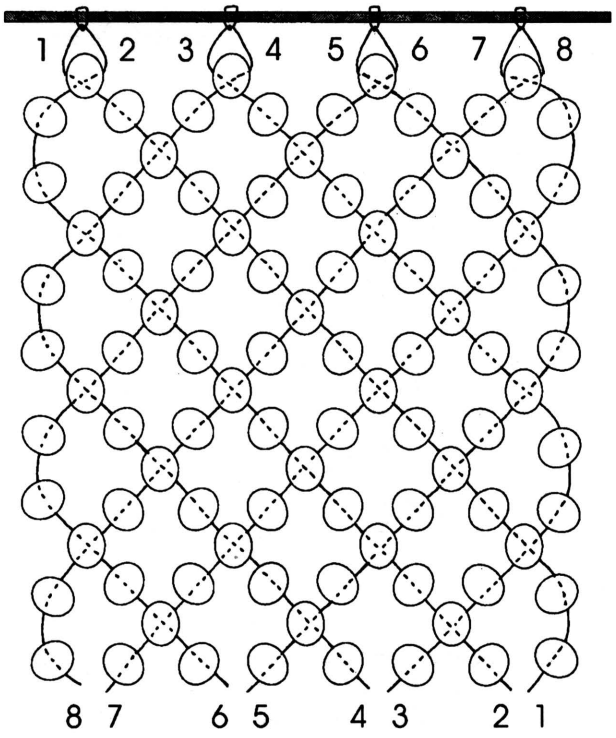

Figure 9. Multiple diagonal-thread weave that yields a diamond-like pattern, with connections formed through the beads (*see* Pl. IVB)(this and all the diagrams that follow were prepared by Alice Scherer of the Center for the Study of Beadwork, Portland, Oregon).

necessary for weaving beads of any size with such stiff thread, such threads could not pierce cloth (Munan 1989:60). Long before European steel needles were introduced, needles of bone, thorn, horn and shell were used for beadwork in many areas. Even after commercial, mercerized cotton threads began to appear in Asia in the second half of the 19th century, given a choice, most Asian beadworkers apparently continued to use their own indigenous threading materials.

Beadworking Techniques

Little that is definitive has been written about Asian beadworking techniques. Some writers provide verbal accounts of marginal value (*see* Nanavati, Vora and Dhaky 1966:76-77). Others include excellent diagrams, showing techniques used in specific traditions: Blair (1973:Fig. 68); Bolland (1980:301); Dunsmore (1978:11 ff.); Ho (1987:49 ff.); Lemaire (1953, 1960); Munan-Oettli (1983); Nooy-Palm (1975:35). The writings of Lemaire must be singled out for their great accuracy and scope. Even taken together, these studies form an incomplete survey. At least part of the problem lies in the potentially destructive nature of technical analysis: as so few

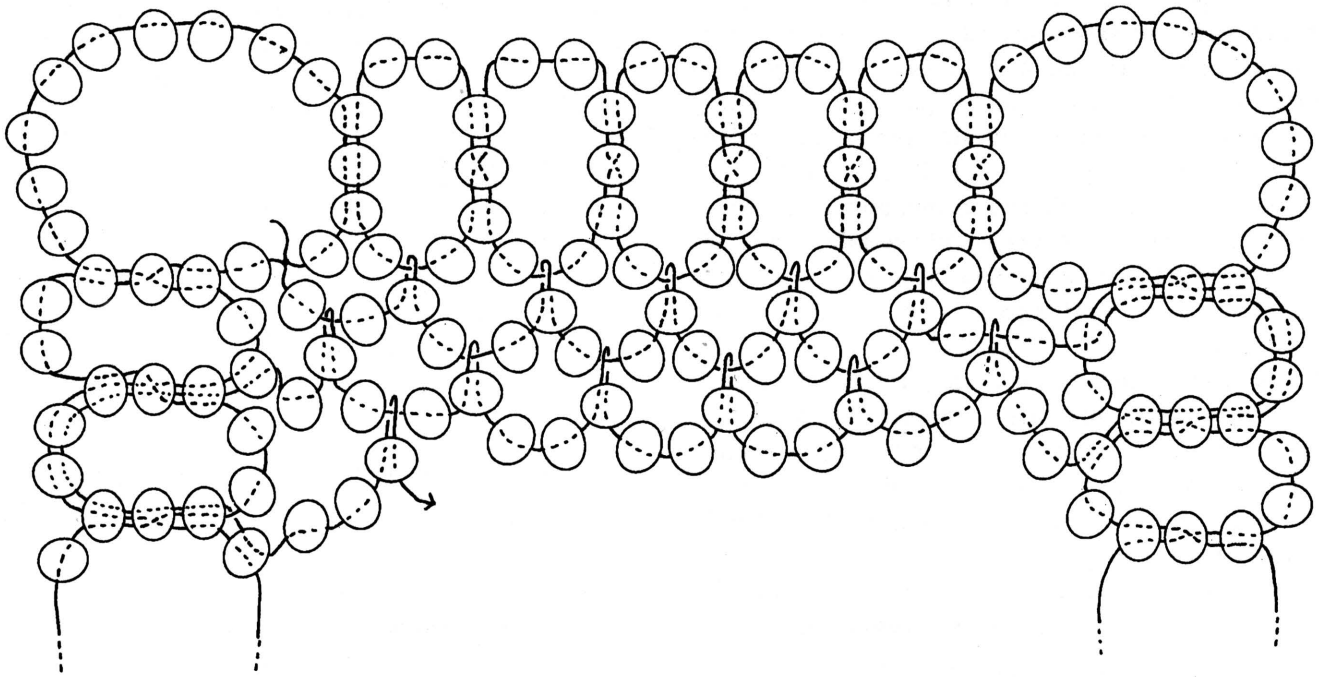

Figure 10. Continuous horizontal-thread weave, with connections formed by threads passing through the beads and over threads in the preceding row (*see* Fig. 4).

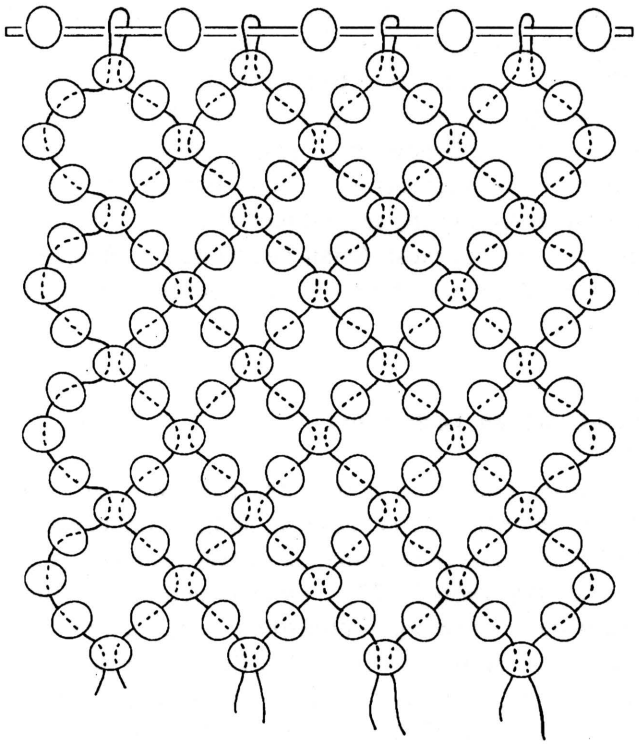

Figure 11a. Multiple vertical-thread weave, open variation, that yields a diamond-like pattern, with connections formed through the beads (*see* Pl. IIIA, cover).

pieces can be studied in progress, finished pieces must be cut apart or otherwise unravelled to ascertain thread structure (*see* Orchard 1975:104-106). This kind of careful examination is essential, especially with more complicated techniques, as completely different underlying thread structures can produce very similar bead patterns (cf. Figs. 9-11a). Much remains to be accomplished in this arena. To begin with, we might inquire how widely certain techniques are distributed in Asia and how closely they resemble techniques used in other parts of the world. Because so many beadworking techniques are based on, or related to, textile techniques, and because some techniques may have spread from one area to another due to trade or movements of peoples, we can expect considerable overlap across the continents. Indeed, some of the techniques diagrammed in this article (and variations thereof) have also been used by North, Central and South American Indians, among others (*see* Orchard 1975:esp. Figs. 107, 116, 118, 199, 123, 125).

Most scholars agree that beadworking techniques in general can be divided into two broad categories

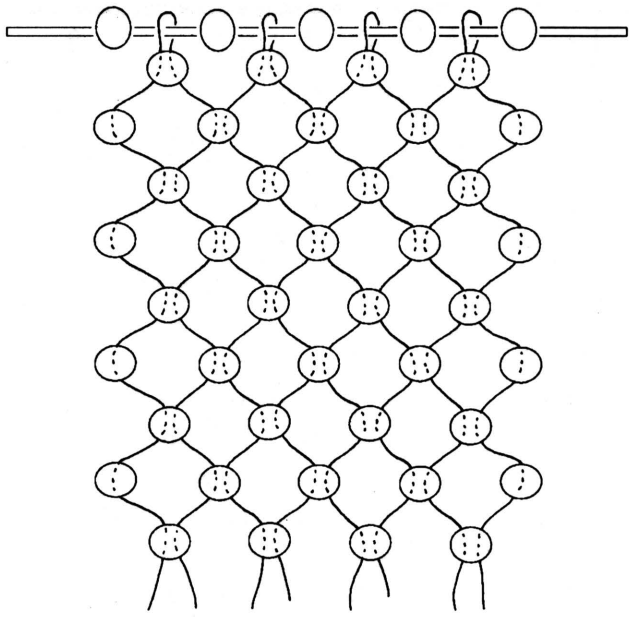

Figure 11b. Multiple vertical-thread weave, closed variation, that yields a brick-like pattern, with connections formed through the beads (*see* strap of bag, cover).

(*see* Lemaire 1960:215; *also* Seiler-Baldinger 1994:114). The first category encompasses techniques in which the beads are affixed to a ground of cloth or other material, by the appliqué methods of sewing or couching (Figs. 12a-c; *see also* Pls. IIA-B, IVA), or by pressing beads into a malleable compound such as resin or wax (*see* Francis 1981,6(4):6; *also* Indonesisch Ethnografisch Museum 1973:Fig. 103;

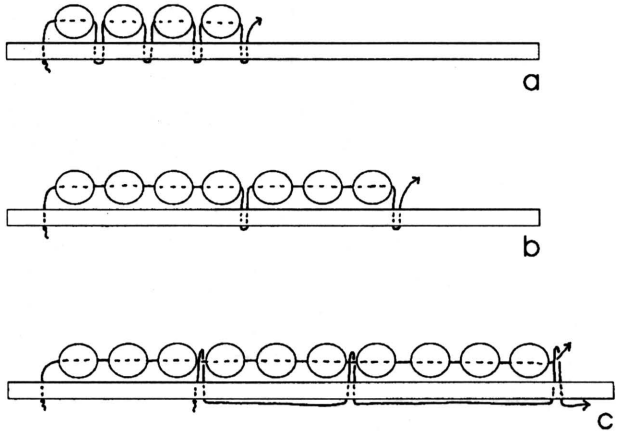

Figure 12. Appliqué method: a, involving beads sewn individually to a ground material (*see* Pl. IVA); b, involving beads sewn in small groups to a ground material (*see* Pl. IIA); c, involving the couching of strung beads to a ground material (*see* Pl. IIB).

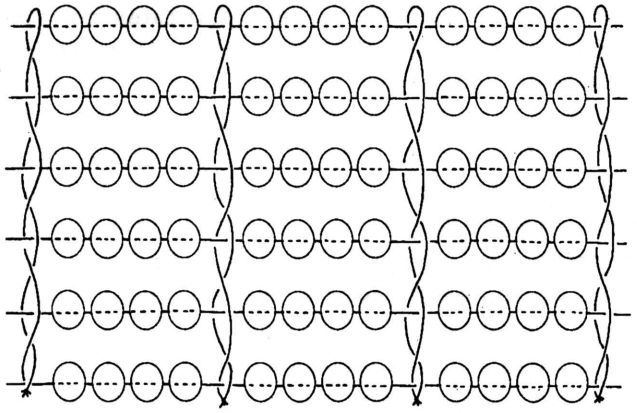

Figure 13. Weave involving twined vertical threads looping over bead-bearing horizontal threads (*see* Pl. IB).

Jacobs 1990:229). In the second category, the beads themselves, in combination with threads, form the ground so that no cloth or other supporting material is needed (Figs. 4-5, 9-11a-b, 13-17; *see also* Pls. IA-B, IIIA-B, IVB, cover, back cover). The second category is far more complex and systematizing it has evidently proven difficult for the one scholar who has made the admirable attempt (*see* Seiler-Baldinger

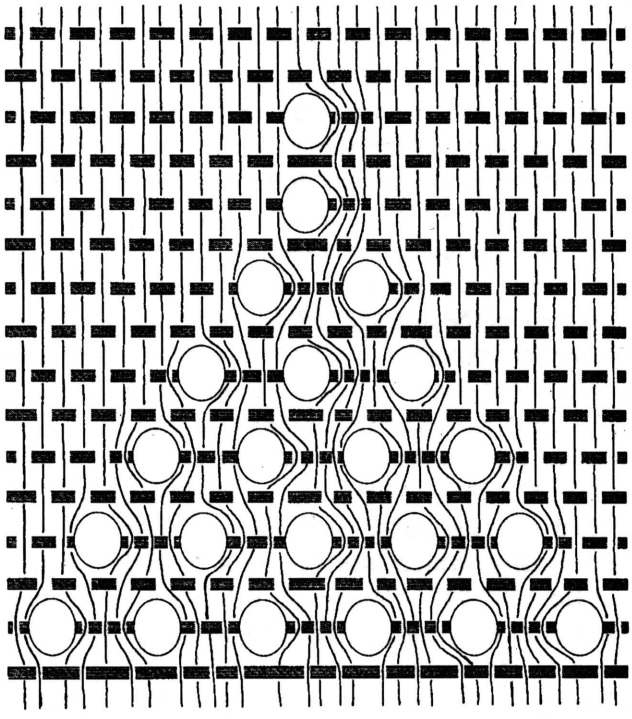

Figure 14. Diagram of beads strung on weft threads and secured between warp threads in the plainweave portion of a loincloth (*see* back cover).

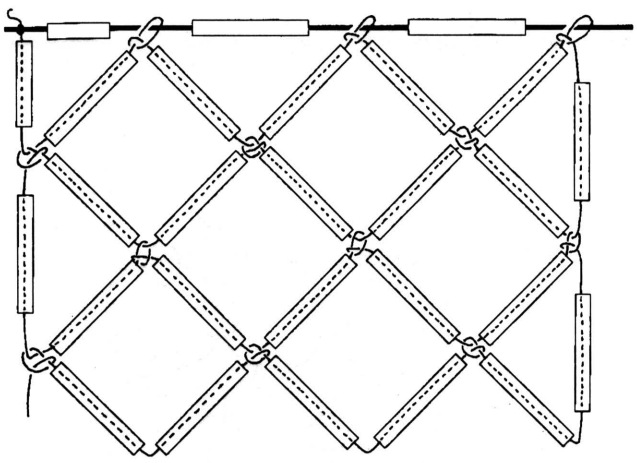

Figure 15. Horizontal-thread weave that yields a diamond-like pattern, with connections formed by knots (*see* Fig. 5).

1994:114-121). For the introductory purposes of this article, and with the cautionary note that this is a gross generalization, I will call all of the techniques in this second category "weaves." There are various kinds of weaves which can progress with or without looms or other supporting devices. Some weaves involve beads connected by a single, continuous, horizontally

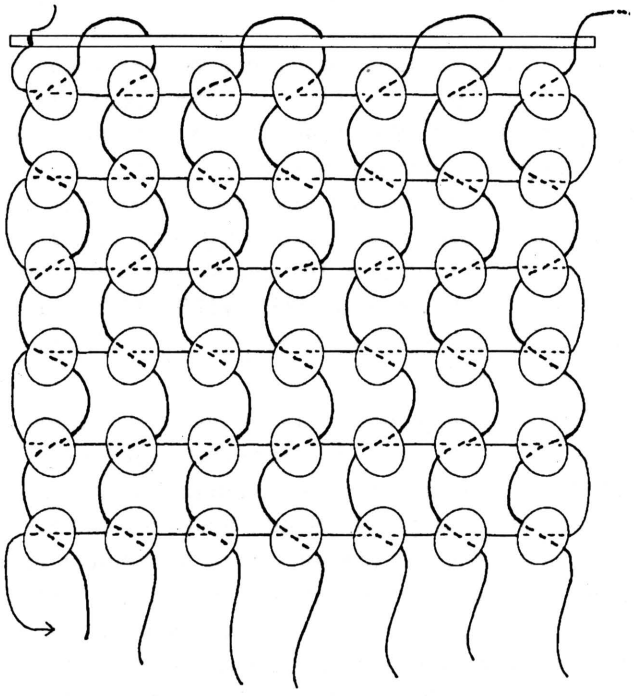

Figure 16. Weave that uses warp and weft threads, and inclines beads at 45° angles in a herringbone-like pattern, with connections formed through the beads (*see* Pl. IIIB).

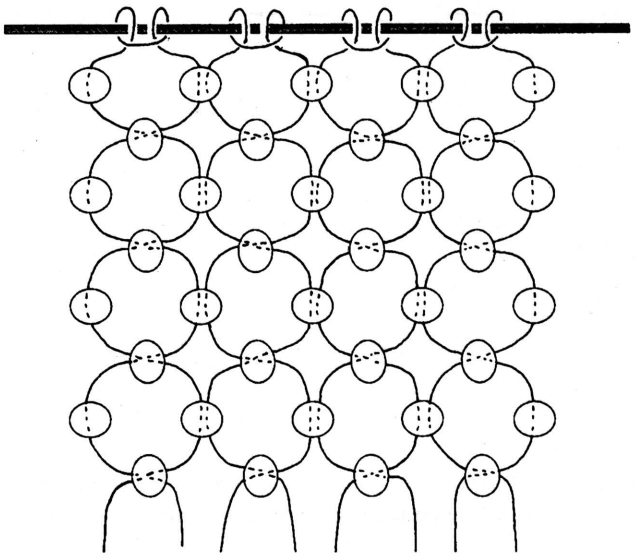

Figure 17. Multiple vertical-thread weave that inclines beads at 90° angles, with connections formed through the beads (*see* Pl. IA).

moving weft-like thread (Figs. 10, 15). Others entail multiple, discontinuous, vertically or diagonally moving warp-like threads (Figs. 9, 11a-b, 17). Still others require both warp or warp-like threads and weft or weft-like threads (Figs. 13-14, 16). I have intentionally avoided using colloquial names for these weaves because they are notoriously inconsistent (*see* Seiler-Baldinger 1994:114-121). Sometimes, the two categories outlined above overlap in a single piece. This occurs, for example, when areas of woven beadwork are attached to a ground material, whether for support or for decorative effect, or both (*see* Fig. 4; Pls. IIB, IIIB, IVB; *also* Holmgren and Spertus 1989:Pls. 1-3; Maxwell 1990:Pls. 200-203).

The diagrams that accompany this article are not exhaustive, but they do represent many of the techniques most frequently encountered in 19th- and 20th-century examples of South, Southeast and East Asian beadwork. Although several techniques are known and used in most cultures, a single technique usually takes precedence during a given period of time, but there are exceptions to this rule, as in the traditions of the Straits Chinese, for example. While most pieces are constructed using just one technique, there are pieces worked in two or even three techniques. Each technique facilitates certain aesthetic effects and limits others. As suggested earlier, skilled beadworkers can manipulate such variables to their advantage, and develop subtle nuances of color and form by altering bead spacing and thread tension. For example, comparing the pieces shown in Pls. IIB and IVA, it becomes apparent that a single technique—appliqué—can yield very different aesthetic effects. In the former piece, beads are sewn to the ground material individually, tightly and densely, as if precision and perfection matter (Fig. 12a). In the latter piece, beads are attached more casually and loosely, in groups of three or more, almost as if the sheer physical presence of the beads, in a bold arrangement, signifies much (Fig. 12c). Moreover, bead grading also affects the appearance of a piece. During the grading process, the beadworker painstakingly sorts through the beads, selecting for use only those that meet specific size or shape requirements. While beads of uniform size and shape create one effect, irregular beads create another. Occasionally, function may dictate technique. For example, air circulates easily in the open spaces of the bamboo-bead vest in Fig. 5, a garment specifically designed to provide ventilation.

To gauge the relative degree of physical effort invested in the manufacture of various pieces of beadwork, and to understand their structure, we need two uniform measurements that are independent of the size of the piece being considered (*see* Ho 1987:47). These measurements are provided in Table 1. In the first place, we need to measure bead density, expressed as the average number of beads per square centimeter (b/cm^2). Two factors determine bead density: bead size and beadwork technique. Density varies greatly from one tradition to the next and within individual traditions, but some generalizations can be made. The Straits Chinese, for example, routinely worked near the upper limits of maximum potential bead density, which may run as high as 246 b/cm^2 (*see* Ho 1987:54). Composed of beads 1.25-1.5 mm in diameter which are united in the weave diagrammed in Fig. 9, the wedding bed panel in Pl. IVB contains an average of 183 b/cm^2, not including the tassels. In comparison, the peoples of Nagaland typically worked in the medium to lower ranges of bead density. Using beads 3-4 mm in diameter and the twined

Table 1.
Estimates of Average Bead Size, Density and Quantity for Selected Beadworked Objects.

Object Description	Geographical Origin of Object	Figure/Plate No.	Average Bead Diameter in Millimeters	Approximate Total Area of Beadwork in Square Centimeters*	Average No. of Beads per cm^2	Average No. of Connections per cm^2	Average No. of Beads per Connection	Total Beads United in Object
Door Panel	Gujarat State, India	Fig. 4	2	1,272	81	27	3	103,032
Belt	Nagaland (India)	Pl. IB	3 - 4	355	15	2	7.5	5,325
Blouse	N.W. Myanmar	Pl. IIA	2	358	42.5	17	2.5	15,215
Loincloth	S. Laos	Back Cover	2	437	24.5	24.5	1	10,707
Vest	China	Fig. 5	1.5 (x 5.5 l.)	1,460	17	8.5	2	24,820
Panel	China	Pl. IVA	1.5 - 1.7	305	179	179	1	54,595
Wedding Bed Panel	Penang, Malaysia	Pl. IVB	1.25 - 1.5	965**	183	61	3	176,595
Mat	Lampung, S. Sumatra	Pl. IIB	2 - 5	152***	29	7.25 - 9.6	3 - 4	4,408
Dance Apron	S.C. Sulawesi	Pl. IIIA	2.5 - 4	213**	38	12.6	3	8,094
Betel Bag	S.E. Sumba	Front Cover	2.5 - 3.5	619**	30	10	3	18,570
Vest	W. Kalimantan (Indon. Borneo)	Pl. IIIB	3.5 - 4	637	38	38	1	24,206
Dance Apron	Cenderawasih Bay, Irian Jaya	Pl. IA	3 - 4	459	24	24	1	11,016

* Measuring beaded portions only, and including both front and back sides when necessary.
** Not including tassels and/or straps.
*** Due to the presence of repairs/restorations, all figures provided for this specimen must be regarded with caution.

interconnection of single strands diagrammed in Fig. 13, the Naga assembled an average of only 15 b/cm^2 in the belt shown in Pl. IB. The Kathi peoples of Gujarat State worked in the medium ranges of potential bead density, typically in the neighborhood of 81 b/cm^2. In some cases, when beadwork covers only a small portion of a piece (Pls. IIA, back cover), b/cm^2 can be measured for the entire piece or for the beaded portions only. As indicated, Table 1 provides b/cm^2 for the beaded portions alone, and takes into account both front and back sides of a piece, when necessary (Fig. 5; Pls. IIA, IIIB, cover).

Another important measure of effort expended, which also varies with bead size and beadwork technique, lies in the number of connections per square centimeter (c/cm^2). Connections occur when threads pass around other threads (Fig. 15) or through beads (Fig. 9), or both (Fig. 10). While some techniques progress slowly, attaching only one bead per connection, others attach more, thereby allowing the work to progress more quickly. For example, it is instructive to contrast b/cm^2 and c/cm^2 for the panels in Pls. IVA-B. Similar bead sizes were used in both pieces and similar b/cm^2. Yet the panel in Pl. IVA arguably required greater labor per square centimeter because every bead is connected individually instead of in groups of three as in the other panel. As a general rule, leaving aside various subtle issues such as whether the thread was purchased ready-made or produced from scratch, pieces with the highest b/cm^2 and the highest c/cm^2 demanded the greatest effort and expertise. It is difficult to avoid the conclusion that preferences for extremely labor-intensive beadwork compositions sprang from fundamental aesthetic assumptions, according to which beauty or value emerged in part from painstaking effort.

SOUTH ASIAN BEADWORK

India: Gujarat State

One of the earliest extant pieces of west Indian beadwork manifests the same tendency to grand scale noted in Nam Dev's metaphor. Measuring more than five by eight feet (1.72 m x 2.62 m), the opulent "Pearl Carpet of Baroda" features cabochon diamonds, emeralds and rubies set against a ground of white seed pearls and colorful European glass beads, all densely embroidered onto a deerskin panel by court jewelers (Welch 1985:437-438). Commissioned by the Maharaja Gaekwar Kande Rao of the city of Baroda in Gujarat State about 1865, the pearl carpet was supposedly part of a set of four which were to have been sent in honor of Baroda's Muslim peoples to the tomb of Mohammed in Mecca. The carpet accordingly displays a classical Islamic-design format with floral and arabesque motifs laid out in gracious formal patterns, recalling the fabulous decorations of the Taj Mahal (Welch 1985:437-438). In adherence to Islamic law, no living creatures are depicted. For mysterious reasons, this carpet seems never to have made it to Mecca (Welch 1985:437-438).

The few glass beads that appear in the Pearl Carpet of Baroda herald the dawn of a new era in Indian beadwork. In the late 19th century, India began to import glass beads in earnest because the domestic glass-beadmaking industry was once again in decline. By 1880, 1.8 million pounds of glass beads had arrived, mostly from Venice (Francis 1982:6). Port cities on India's west coast received numerous shipments (Nanavati, Vora and Dhaky 1966:65) which apparently spurred the production of pieces worked solely in glass beads. Within a few decades, an extensive tradition had developed in Gujarat State, nourished in large part by traditional Hindu religious iconography. For centuries, this region had produced and exported to other parts of Asia some of India's most renowned woven and embroidered textiles which provided ample reservoirs of motif, composition and theme. Thus, Europe's vast quantities of uniform, colorful glass beads poured into skilled and talented hands.

Made around 1890, the *sakhia* fragment shown in Fig. 4 manifests the typical characteristics of many pieces produced in this tradition. To begin with, it was made to decorate the home (*see* Nabholz-Kartaschoff 1986:171, Pl. 16; *also* Nanavati, Vora and Dhaky 1966:81-88). About 1.82 m long, such monumental architectural ornaments were customarily displayed in pairs, one on either side of the door, to welcome visitors to the home on festive occasions (Irwin and Hall 1973:83), and to prevent maleficent influences from crossing the threshold (Rivers 1996:87). Next, the *sakhia* is characteristically pictorial. The inspiration for such long, narrow, pictorial beadwork panels and their embroidered predecessors may derive from sculptural stonework friezes on Hindu and Jain temples in the Gujarat region (Irwin and Hall 1973:83). In a sense, the panels reproduce the atmosphere of the temple in the home. Like many pieces of Gujarati beadwork, the *sakhia* freely juxtaposes elements from sacred and secular worlds without binding them together into a coherent narrative. The universe that is thereby constructed seems benevolent: deities from the Hindu pantheon take their place alongside characters from well-known folk tales, vignettes drawn from everyday life, and nature's flora and fauna (Nanavati, Vora and Dhaky 1966:83, 89-98). Geometric designs also abound in this tradition as demonstrated by the pendant tab at the bottom of the *sakhia* and the carefully delineated borders (Nanavati, Vora and Dhaky 1966:98-100).

Such borders contribute to the formal division of space that also distinguishes many pieces of Gujarati beadwork (Nanavati, Vora and Dhaky 1966:Pls. 80-111). Within these borders or frames, individual motifs are themselves carefully placed, whether singly or in symmetrical groups. Larger structures emerge as the density of these motifs varies from frame to frame and open areas alternate with crowded ones. All motifs take shape against a stark white background which adds to the sense of formality. It is possible that the ubiquitous appearance of white backgrounds in Gujarati beadwork stems from a desire to emulate seed pearls. Such was the fame of the Pearl Carpet of Baroda in its day that, in this respect, it may have served as a model. It should be noted, however, that the cotton grounds of Gujarati embroideries are sometimes white, as are the walls of many Gujarati homes, and these may also have influenced the color preferences of local beadworkers. Still yet another, more practical, explanation can be imagined: if white

outnumbered the other available bead colors, it would have made sense to fill large spaces with white beads.

Considering the masterful presentation of its subject matter, the *sakhia* in Fig. 4 could have been the work of professional embroiderers, commissioned by Kathi peoples in the rural Saurashtra region of Gujarat State to produce items for a bride's dowry (*see* Nanavati, Vora and Dhaky 1966:19, 68; *also* Irwin and Hall 1973:73 ff., 83-84). It must have taken months to unite the *sakhia's* 103,000 2-mm-diameter beads at the rate of 81 b/cm^2 in the continuous horizontal-thread weave that is so common in this tradition which typically attaches three beads per connection (Fig. 10; *see* Lemaire 1960:Figs. 12-13). As wealthy members of the land-owning nobility, the Kathi could afford such displays of prosperity. Kathi families eventually amassed many types of two- and three-dimensional beaded objects such as fans, gaming boards, pillows, rose-water bottles and inkwells (Nanavati, Vora and Dhaky 1966:81-88). Many of these were produced not by professional embroiderers, but by Kathi women and girls participating in the new craze for all things beaded which apparently continued until the 1930s. During the festival season from October to March, an entire room of a Kathi house would be devoted to the exhibition of beadwork and other luxury items (Nanavati, Vora and Dhaky 1966:81-87).

With its prominent depictions of animals normally associated with wealth and nobility (e.g., elephants, peacocks, lions and horses), the *sakhia* proclaims Kathi prosperity and social status. At the same time, the presence of the Hindu goddess Mahalakshmi in the seventh frame from the bottom, just below eye-level, registers Kathi respect for the divine forces that govern human affairs (Fig. 18). Mahalakshmi is the goddess of transcendent fortune or destiny (Danielou 1991:262), and a favorite deity in Gujarati textile art (Nanavati, Vora and Dhaky 1966:89). Seated on her lotus flower pedestal, accompanied by two attendants, she blesses her devotees with fertility, abundance and domestic happiness. Just below her, in a common domestic activity, two figures churn curd. Implicitly, the *sakhia* solicits the deity's continuing benevolence so that the family and home will always prosper. Perhaps only these two interrelated desires—to celebrate worldly success on the one hand and to venerate the forces that bestow it on the other—could propel the undertaking of beadwork on such a grand scale.

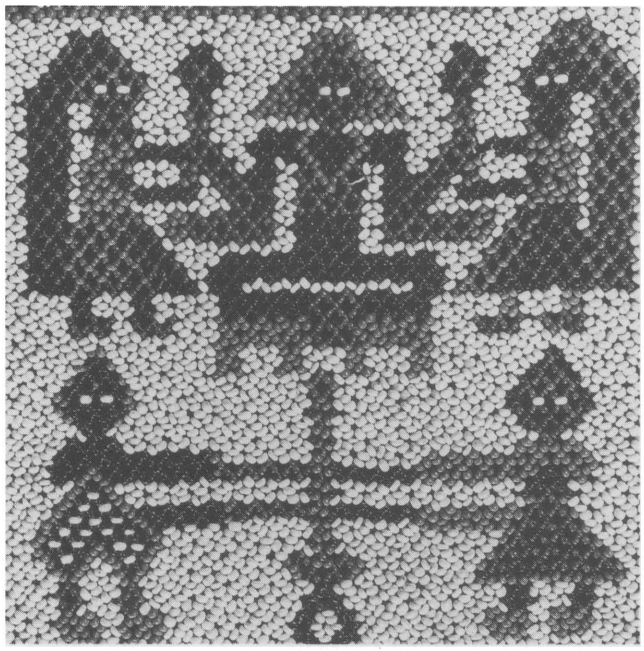

Figure 18. Detail of the *sakhia* fragment, showing the Hindu goddess Mahalakshmi with attendants. Area of detail: 12 cm^2 (photo: Eileen Ryan).

Nagaland: The Konyak Naga

In its near-total absence of figuration and its usual appearance in items of bodily rather than architectural adornment, the beadwork of the Naga peoples, who inhabit the Nagaland tribal territory of northeastern India and neighboring parts of Myanmar, stands in sharp contrast to that of the Kathi peoples of Saurashtra. On some Naga multi-strand ornaments, the bead materials differ as well. While the Kathi worked almost exclusively with recently imported European drawn-glass beads, the Naga combined these with Asian glass beads and other elements, both local and imported. In this respect, the belt in Pl. IB typifies many Naga multi-strand adornments. Locally made elements may include the rectangular, incised mammal-bone spacers, such as the ones separating the strands at either end of the belt, as well as one of the three antler(?) buttons that serve to fasten the object (Peter Francis, Jr. 1996: pers. comm.). Elements traded into the Naga region include the belt's glass beads which can be divided into three groups. The

most numerous are the irregular, drawn, reddish-brown tubes 3-4 mm in diameter which may be a type of *deo mani* (God's beads) made in Papanaidupet, southern India, in the 13th century or earlier (Peter Francis, Jr. 1996: pers. comm.). Second, there are wound blue beads of the same size which appear in the belt's vertical stripes, and may have been made in China or northern India (Peter Francis, Jr. 1996: pers. comm.). Finally, there are European drawn-glass beads produced before the 1920s, such as the transparent-ruby-on-white cornaline d'Aleppos in the belt's central stripe, and white specimens with green, blue, and pink stripes. Also present are translucent white beads cased in a thin layer of clear glass which were not produced after about the 1870s (Peter Francis, Jr. 1996: pers. comm.). Thus, the belt reflects the large-scale trading networks in which the Naga participated, as well as these peoples' long-standing appreciation of imported glass beads.

Also evident is the ability of the Naga to synthesize the old and the new, the indigenous and the foreign. While many of the belt's materials may be relatively recent and of foreign manufacture, the beadworking technique is probably ancient and indigenous: individual strands are connected by means of two-strand twining, with both s- and z-twists used at random (Fig. 13; *see also* Seiler-Baldinger 1994:Fig. 58a-b; Lemaire 1960:Fig. 5). Two types of unidentified vegetable fibers are used, one for the horizontal and another for the vertical threads (Peter Francis Jr. 1996: pers. comm.).

The geometric motifs on these multi-strand ornaments, usually limited to simple lines and rectangles, are difficult to interpret, but broadly resemble the designs on some Naga woven cloths (*see* Jacobs 1990:292). Groups of Konyak Naga women encase themselves in these beadwork ornaments during the Spring Festival (Jacobs 1990:87, 112, 131). This village-wide ritual seeks to ensure continuing agricultural and human fertility with dancing, drinking, symbolic feeding of captured enemy skulls and sacrifices to Gawang, the Konyak High God (Jacobs 1990:86). Fertility is a central concern for the rice-growing Naga, not just for subsistence, but for attaining the wealth necessary to increase status (Jacobs 1990:33, 117). Beads and beadwork ornaments attest to such increases in status, thereby demonstrating the attainment of fertility. Not unlike grains of rice, beads are small, valuable and numerous. As obvious symbols of material and spiritual abundance, they appear in the fertility rituals of a number of Southeast Asian groups. The Maloh peoples of Borneo, for example, wear elaborate beaded textiles during harvest ceremonies in the belief that such a display will trigger a bountiful rice crop the following year and secure communal prosperity (Maxwell 1980:135; *see also* Maxwell 1990:142). As a matter of fact, in parts of Borneo, small, colorful glass beads are specifically "equated with rice grains" in certain agricultural rituals (Sellato 1989:26).

BEADWORK IN MAINLAND SOUTHEAST ASIA

Myanmar (Burma): The Chin

Like their neighbors, the Naga, the Chin peoples of Myanmar's remote northwestern regions have employed beadwork mostly in items of personal adornment, sometimes incorporating it into their handwoven garments. The woman's sleeveless blouse in Pl. IIA consists of a plainweave cotton ground embellished with scarlet-colored, continuous silk supplementary weft threads in the upper half, and cowrie shells and appliquéd, opaque reddish-brown European drawn-glass beads 2 mm in diameter in the lower half (Fig. 12b). Technically similar approaches, also involving glass beads appliquéd onto a handwoven cloth ground, have been used by many other mainland groups, notably the Pwo Karen and Lisu of northern Thailand (*see* Campbell 1978:151,158; *also* Lewis and Lewis 1984:81, 253). At present, the paucity of published information about these blouses precludes our knowing exactly which group made them or for what occasion. The few sources on Chin textiles do not mention them, although brief glimpses of Chin beadwork can be found in the literature (*see* Lehmann 1963:Fig. 1; *also* Parry 1932:37 ff.). Current scholarly opinion favors an origin among the Haka, Mara or Falam groups in the hilly northern Chin area (Dr. Michael C. Howard 1996:pers. comm.; *see also* Howard 1994:Pl. 99). The blouse's luxurious decoration certainly suggests ceremonial wear. Among the Lakher Chin who live on the Indian side of the border, beaded cloths formed part of the dowry of aristocratic women who

reportedly wore them at weddings and dances (Parry 1932:38).

Blouses of this type characteristically feature diamond motifs in various configurations; the small, repeating geometric motifs that characterize much of Chin art are especially evident here (*see* Lehmann 1963:195). Clearly, the large diamond trellises formed by the beads parallel the subtler, more complex shapes created by the silk supplementary weft threads; the beadwork, in other words, echoes the weaving in both form and color. Arranged in quatrefoils, even the sturdy cowries address the diamond theme. Diamond (or rhomb or lozenge) motifs recur time and again in the arts of many cultures. They have been used for millennia in Southeast Asia, appearing, for example, on bronze drums of the Dongson culture of northern Vietnam which flourished from about 600 B.C. to around A.D. 200 (*see* Taylor and Aragon 1991:64-67). Perhaps this prevalence can be attributed to the simplicity of the diamond shape which is easily rendered in textiles and other media (Heidi Munan 1996: pers. comm.). Then again, it is possible that, in some cultures at least, diamond motifs once possessed a symbolic significance that has been obscured with the passage of time.

The red, white and black color triad on the blouse may also have its roots in the ancient past. Many Southeast Asian textiles and other objects display this triad (Maxwell 1990:56, 66, 98), and it turns up frequently in beadwork as well (Loebèr 1913:26-27). Particularly in the case of beadwork, it is difficult to know to what extent the availability of certain bead colors influenced the appearance of this triad. In general, buyers of imported beads and other trade goods might have had to "tailor their cosmic schemes to what was available" or affordable (Heidi Munan 1996: pers. comm.; *see* Munan 1989:57). That said, whatever the medium, in some areas these colors may have carried particular symbolic associations which ostensibly related to ancient dualistic principles of social or cosmological organization common to many Southeast Asian cultures. These oppositions aligned the color red with men, the sacred upper world, the sun and the left, while black, or blue-black, aligned with women, the profane lower world, the moon and the right (Gittinger 1979:35; Maxwell 1990:58, 98). White seems to have been a mediating color, unifying the other two (Maxwell 1990:98). Comparable conceptual dualisms also structured aspects of Chin social and cultural life, and, thus, may underlie the very refined use of color in the blouse in Pl. IIA (Lehmann 1963:173-174).

Southern Laos: The Alak (?)

Evidence of another, small, mainland Southeast Asian beadworking tradition has been preserved in the man's loincloth pictured on the back cover. This may be the work of the remote Alak peoples of Attapeu or nearby Xekong or Salavan provinces of southern Laos (Dr. Michael C. Howard 1996: pers. comm.). Like the Chin blouse, it seems to invoke the ancient red-white-black (or, in this case, indigo blue) color triad, and further incorporates several shades of yellow. Once again, diamond motifs figure prominently in the beaded areas, along with other repeating geometric motifs such as crosses and isosceles triangles. Relatively little fieldwork has been conducted among the Alak so it is difficult to interpret the symbolic significance, if any, of such designs. Beaded loincloths with figurative motifs, such as humans riding animals, have also been made in southern Laos (Dr. Michael C. Howard 1996: pers. comm.).

In technical respects, the loincloth is quite different from the Chin blouse where the beads were attached to the cloth after it was woven. While the long, narrow body of the Alak loincloth consists simply of warp-faced plain weave, the two ends alternate bands of this weave with bands of discontinuous, counter two-strand twining (Dr. Mattiebelle Gittinger 1996: pers. comm.; *see also* Emery 1966: Fig. 300). As we have seen, the Konyak Naga also favored two-strand twining. Weft threads in both plainwoven and twined areas of the loincloth carry European glass beads 2 mm in diameter which have been painstakingly secured between warp threads, making the beads an integral part of the ground fabric (Figs. 14, 19). This general technique of weaving beads into a cloth ground dates to at least the 13th century in Asia and could be much older (Fig. 3). Other, more recent examples of this sort of technique can be found in island Southeast Asia, in the handwoven textiles of the Batak peoples of northern Sumatra and the Maranao peoples of Mindanao in the

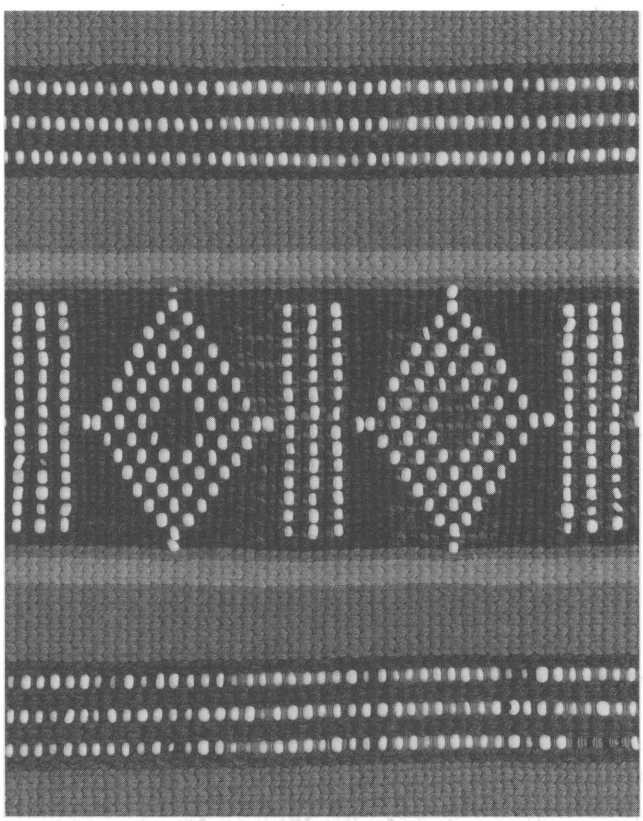

Figure 19. Detail of an Alak loincloth, showing the beads in twined areas (*see* back cover). Area of detail: 9.75 cm h. x 12.25 cm w. Private collection (photo: Don Tuttle).

Philippines (*see* Khan Majlis 1991:Pls. 40, 43; *also* Maxwell 1990:Pl. 490; Niessen 1993:Pls. 13, 64a). In one of the few discussions of beadwork technique in the Asian textile literature, Bolland (1980) has analyzed the methods by which the Angkola Batak work beads into the ground of their large *ulos godang* textiles.

Nor are the Alak alone in embellishing loincloths with beads: various beading techniques have been employed on the loincloths (or sashes) of the Ga'dang of Luzon in the Philippines (*see* Maxwell 1990:Pls. 89, 91; *also* Pastor-Roces 1991:Pls. 20, 118), the Jorai of south-central Vietnam (*see* Fraser-Lu 1989:Pl. 21) and the Batak of northern Sumatra (*see* Niessen 1993:Pl. 12). White seems to be the preferred bead color on many of these loincloths, followed by yellow; perhaps these were the colors most easily obtained in remote areas. Still, to the Western observer at least, in their diminutive size and paleness, these beads call to mind grains of rice. We do not know whether the rice-growing Alak made such an equation. Certainly, the careful aligning of the beads suggests that they were quite precious to their owners, as was rice itself. The connection between beads, rice and fertility that holds for the Naga, Dayak and other Southeast Asian groups may, accordingly, extend to these loincloths as well. Implicitly, their basic purpose, to cover a man's genitals, corresponds to a fertility theme. Other oblique references to fertility may be encoded in the rows of isosceles-triangle motifs that appear in border areas of some Alak and Ga'dang loincloths (*see* Maxwell 1990:Pls. 89, 92). Similar arrangements of such *tumpal* motifs on Indonesian textiles have been linked to the Hindu rice goddess Dewi Sri (*see* Maxwell 1990:205) and to generalized, archaic Indonesian notions of fertility (*see* Taylor and Aragon 1991:39).

BEADWORK IN EAST ASIA

China

Beyond the pearl-embellished *thangka* mentioned above, few early examples of Chinese beadwork have been brought to light in the Western literature (*see* Blair 1973:Pl. 131; Francis 1990:122; National Palace Museum 1986:Pls. 111, 126, 146, etc.). Surely one of the most engaging is a three-dimensional miniature pagoda acquired by Queen Hedvig Eleanora of Sweden in the early 18th century (Fig. 20; *see* Setterwall, Fogermarck and Guyllensvärd 1974:28, 187, 309). Blue, green and pearly white glass beads of unknown origin conceal the bamboo framework of this octagonal, nine-story pagoda from the K'ang Hsi period (1661-1722). While it is difficult to gauge the extent of recent beadworking traditions in China, one or more traditions seem to have existed, encompassing both functional and decorative items. Although the bamboo-bead vest in Fig. 5 is utilitarian in nature, its elegant simplicity invites contemplation. Worn next to the skin, or between layers of clothing, such *chu i* or *han san* (Field Museum: catalogue information for no. 127920) provided ventilation for the wearer and protected outergarments from perspiration. Examples with sleeves have also been documented (*see* Chee 1987:111; *also* Tseng 1976:27). As they are lightweight and have large perforations, tubular bamboo beads serve the ventilating purpose quite well, especially when conjoined in such an open

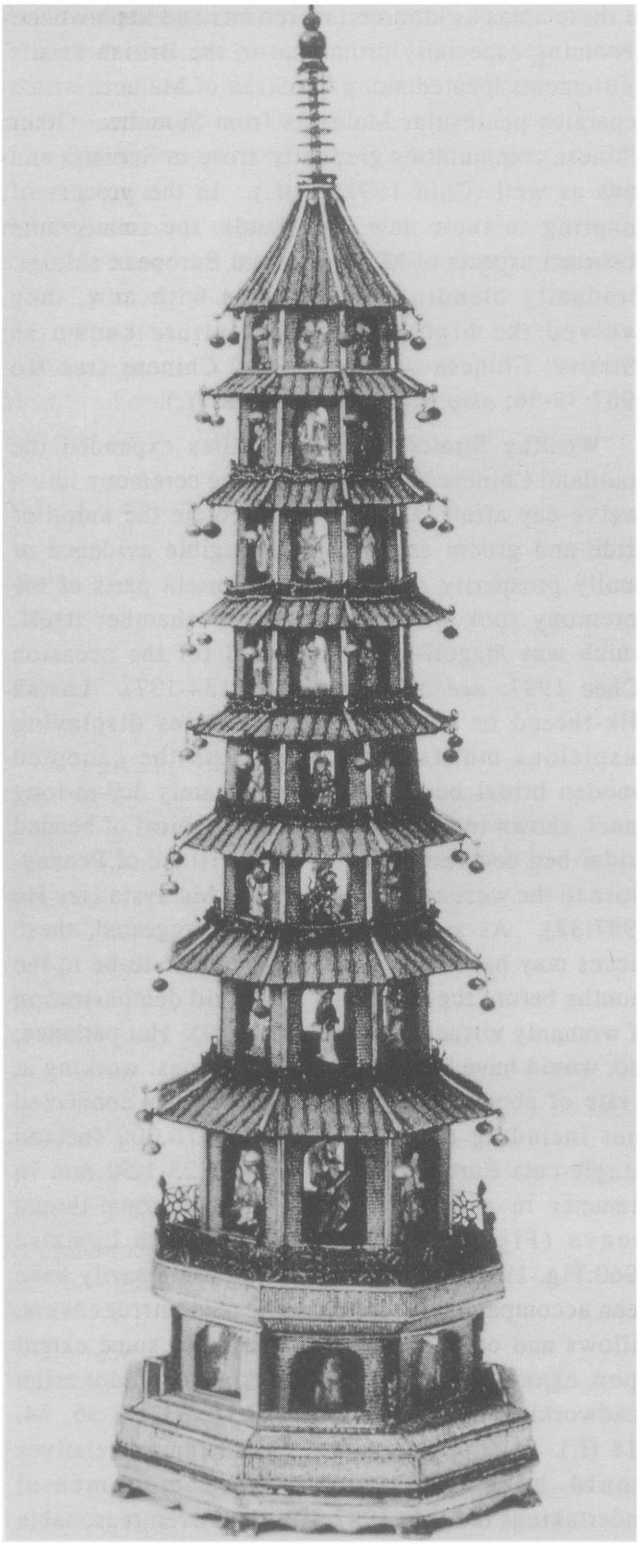

Figure 20. Miniature Pagoda, China, ca. early 18th century. Bamboo, glass beads, kingfisher feathers; 86 cm h. x 30 cm w. Courtesy, The Royal Collections, Stockholm (photo: Erik Liljeroth).

manner, which allows plenty of room for air to circulate between beads. The technique proceeds horizontally, as two beads at a time are threaded onto a single, handspun, three-ply cotton thread and secured with an overhand knot (Fig. 15; *see* Seiler-Baldinger 1994:Fig. 25). According to one observer, the very craft of beadwork could have begun in just this way thousands of years ago, as beads were added to the kinds of knotted meshes long used to create fishnets (*see* Loebèr 1913:12-13).

These garments of bamboo beads seem to have functioned in both ritual and secular contexts. Bridal couples may have worn them during wedding ceremonies beneath beautifully embroidered robes (Chee 1987:111). Chinese farmers and actors apparently wore them as well during their various labors (Field Museum: catalogue information for no. 127920). Bead sizes certainly varied, perhaps according to the ultimate use of the garment. While the vest in Fig. 5 consists of very fine beads averaging a delicate 5.5 mm x 1.5 mm (pers. obs.), garments destined for mundane activities called for cruder beads measuring 9.5 x 2.5 mm (pers. obs.). Whatever the ultimate use of these decidedly practical garments, the beads themselves might have afforded a modicum of symbolic spiritual fortification. In Chinese thought, the bamboo plant represents strength and endurance (Williams 1976:33-34), just the qualities that might benefit those who donned such garments.

The spiritual significance of the panel in Pl. IVA, on the other hand, is open to some interpretation. According to unpublished Field Museum catalogue information (no. 232529), the panel was probably made in southern China,[1] where it may have served as a wedding gift. This small piece from the late 19th century tenders a moralistic inscription, likely drawn from a poetic text (Dr. Bennet Bronson 1996: pers. comm.). In bold black characters located in parallel vertical panels, the rhyming couplet reads: "This intoxication has no relation to wine; to smell perfume does not indicate (real) flowers." "Intoxication" may refer to marital bliss; "perfume" may hint at the temptations of infidelity (Field Museum: catalogue information for no. 232529). Curiously, the vertical orientation of the inscription conflicts with the horizontal orientation of the central vignette (Dr. Bennet Bronson 1996: pers. comm.). Nevertheless, as if all of nature affirms the union, the motifs in the

vignettes surrounding the inscription reinforce its message by drawing upon ancient symbolic associations. As a prominent image in Buddhist and Taoist religious iconography, and the central motif of the panel, the lotus flower signals purity because it rises from the mud unstained; it also represents fertility because it harbors many seeds (Field Museum: catalogue information for no. 232529; *see* Williams 1976:255-258). In Chinese thought, paired mandarin ducks symbolize conjugal fidelity because, once mated, they never part (Williams 1976:146-147). Butterflies stand for joy and summer (Williams 1976:51-52, 146-147). Thus, in their more beguiling fashion, these attractive creatures of the natural world seem to advance the inscription's supposed encomium to marital happiness and fidelity. Yet, if we pursue another theory of the panel's function, the symbolism takes an ironic twist. In size and general format, the panel resembles a type of advertisement once favored by Chinese prostitutes: a rectangular section of embroidery affixed to the front of a dress or blouse (Dr. Marshall Wu and Judy Wu 1997: pers. comm.). Such a function could account for the vertical orientation of the inscription, but more research is called for.

The panel in Pl. IVA consists of about 55,000 faceted (single-cut) European glass beads 1.5-1.7 mm in diameter, individually sewn to a beige silk ground at the rate of about 179 b/cm^2 (Fig. 12a; *see* Field Museum: catalogue information for no. 232529). Great clarity of detail can be achieved in this way; the characters in the inscription could hardly have been rendered as precisely, or as elegantly, using another technique. Chinese beadworkers also used this technique to produce other items, such as slippers, purses and belts (*see* Sherrill 1930:309).

BEADWORK IN ISLAND SOUTHEAST ASIA

Malaysia: The Straits Chinese of Penang

During the later 19th and early 20th centuries, Chinese settlers in peninsular Malaysia and Indonesia developed an elaborate beadworking tradition renowned for its carefully coordinated sets of wedding decorations executed in European glass beads. Chinese people had been emigrating from southern China to towns in Southeast Asia for several centuries. By the 19th century, they had established themselves in these areas as laborers, merchants and landowners, becoming especially prominent in the British Straits Settlements located along the Strait of Malacca which separates peninsular Malaysia from Sumatra. Other Chinese communities gradually arose in Sumatra and Java as well (Chin 1991:15 ff.). In the process of adapting to their new homelands, the immigrants absorbed aspects of Malaysian and European culture. Gradually blending old customs with new, they evolved the highly syncretic culture known as "Straits" Chinese or "Peranakan" Chinese (*see* Ho 1987:35-36; *also* Maxwell 1990:260 ff.).

Wealthy Straits Chinese families expanded the mainland Chinese three-day wedding ceremony into a twelve-day affair, as much to celebrate the union of bride and groom as to display tangible evidence of family prosperity and honor. Important parts of the ceremony took place in the bridal chamber itself, which was magnificently outfitted for the occasion (Chee 1987; *see also* Chin 1991:134-137). Lavish silk-thread or beadwork embroideries displaying auspicious motifs stretched across the canopied wooden bridal bed. The approximately 1.9-m-long panel, shown in detail in Pl. IVB, is typical of beaded bridal-bed decorations made on the island of Penang, close to the west coast of peninsular Malaysia (*see* Ho 1987:32). As some scholars have suggested, these pieces may have been made by the bride-to-be in the months before the ceremony as a vivid demonstration of womanly virtues (Chee 1989:16-19). Her patience, too, would have been abundantly obvious: working at a rate of about 183 b/cm^2, she eventually connected (not including the tassels) about 176,000 faceted (single-cut) European glass beads 1.25-1.50 mm in diameter in a demanding, multiple diagonal-thread weave (Fig. 9; *see* Ho 1987:47; *also* Lemaire 1960:Fig. 19). Such a panel would customarily have been accompanied by matching beaded mirror covers, pillows and other decorations, based to some extent upon examples in local Malaysian or Indonesian beadworking traditions (Ho 1987:16, 31, 33-36, 74, 118 ff.). Undoubtedly, servants or female relatives would have assisted in these monumental undertakings (*see* Ho 1987:49). It is even reasonable to speculate that Chinese embroidery workshops in Malaysia, Indonesia or China filled some of the demand for these labor-intensive ornaments (*see* Chee 1989:78) which may have been produced on

commission (*see* Chin 1991:29-35). These intriguing possibilities notwithstanding, Straits Chinese women certainly made some, if not all, of their own beadwork (*see* Ho 1987:13, 17, 31-34, 49; Figs. 14-16).

Like its smaller, mainland Chinese counterpart, the bed panel in Pl. IVB adopts traditional Chinese iconography in pairing a particular flower with a particular bird (*see* Williams 1976:192). Peonies alternate with phoenix birds against a ground of verdant foliage. Both motifs have auspicious symbolic associations: peonies with springtime, affection and prosperity; phoenixes with summertime, the bride and the bridal couple (Ho 1987:36; *see also* Williams 1976:320-326). Saturated colors, carefully shaded, impart vitality and a sense of visual depth to the dense Straits Chinese composition which contains many reds and greens, colors "regarded... as the most propitious... for weddings and marital bliss" (Ho 1987:113).

INDONESIA

Sumatra: The Lampung Region

Like the Straits Chinese, the peoples of the Lampung region of southern Sumatra expended great effort in the production of beadwork for marriage celebrations and other important occasions. Exposed to many foreign influences as a result of contact with seafaring traders seeking Sumatran pepper and other products, the coastal-dwelling peoples of the area also developed a syncretic culture which merged animist, Hindu-Buddhist and Islamic elements (van Dijk and de Jonge 1980:13-30). Many Lampung woven, plaited, embroidered and beaded textiles betray this cultural complexity with a sophisticated iconography best interpreted by the specialist (*see* van Dijk and de Jonge 1980; Gittinger 1979:79 ff.; *also* Holmgren and Spertus 1989:71 ff.; van Hout 1995).

Technically, the mat in Pl. IIB consists of lengths of strung beads couched through a coarse plainweave cloth (Fig. 12c) onto a ground of rattan plaitwork backed with a late 19th- or early 20th-century Javanese cotton batik. Pieces of mica nestle in two of the open areas between beads near the lower edge of the mat, a typical treatment of this reflective mineral on other examples of beadwork from southern Sumatra (*see* Holmgren and Spertus 1989:Pl. 39). It is possible that mica once filled other open areas on the mat as well, but we cannot know for sure.

Approximately 50% of the beads on the mat appear to be opaque, single-twist, Chinese coil beads, colored lemon yellow, turquoise blue, reddish brown, bright orange, black, and white. Coil beads can be observed on at least one other Lampung beadwork mat collected earlier this century, now in the Tropenmuseum (pers. obs. of cat. no. 1771-497; *see* van Hout 1996:Pl. 1).

The reddish brown and bright orange varieties of the coil beads have particular significance in the Lampung area, and in other parts of the Indonesian archipelago. Peter Francis (1992b) has identified them as *mutiraja* (literally "pearls of the king"), beads which are highly valued and owned only by aristocrats in certain parts of Indonesia (*see also* Adhyatman and Arifin 1993:76; Francis 1992a:11-12, Pl. 4a). *Mutiraja* may have been in production since the 10th century if not before (Francis 1992b).

Very little has been published on glass bead nomenclature in the Lampung region, but it seems that the coil beads (as well as other beads of similar color) may have been referred to there by the more common, generic term *mutisalah* (literally "false pearls"). Francis (1992a:11-12) defines *mutisalah* as a "class of small, opaque reddish or orange glass beads essential for marriages and other ceremonies" in certain parts of Indonesia; a class which includes beads of various manufacturing categories, including Indo-Pacific drawn-glass beads. According to Francis (1992b), *mutiraja* constitute but a single group of *mutisalah*. Although the mat in Pl. IIB bears only a few *mutiraja*, perhaps a short strand's worth, their presence implicitly affirms the aristocratic origins of the owner, and the importance of the ceremony or ceremonies for which the mat was produced. By contrast, other beaded objects from the Lampung region contain many hundreds, even thousands, of *mutiraja* (*see* Gittinger 1979:Pl. 60; *also* Maxwell 1990:Pl. 131).

Because the mat contains such an unusual assortment of beads, no doubt collected over many decades from a series of native and foreign merchants, it is worthwhile to discuss these beads further. Besides Chinese coil beads, the mat may contain Indo-Pacific

glass beads of a greenish-blue color. Francis (1996: pers. comm.) believes that these beads could have originated in the Srivijayan Indo-Pacific bead industry, from roughly the 7th to the 12th century. In addition, there are European drawn-glass beads, such as green-cored Cornaline d'Aleppos which were made in Venice between ca. 1650 and 1830, and in Holland between ca. 1597 and 1697 (Francis 1996: pers. comm.). These have a layer of opaque reddish-brown glass overlying a translucent green core, and are easily confused with opaque reddish-brown *mutiraja*. Francis (1996: pers. comm.) also identifies two 3-mm-diameter, hollow, faceted, mold-blown beads of silver-lined amber glass which appeared in Europe around 1810, and in Asia thereafter. Thus, most of the mat's beads date to the 19th century or before, though some are probably later additions (Francis 1996: pers. comm.). Judging by visual examination alone, one might estimate that perhaps 75-90% of the beads on the mat are original.

The mat's precise function is unknown. Its rather small size leaves us wondering whether it could be a fragment of a larger piece, such as a beaded *palepai* (or *selesil*), a long rectangular mat with multiple vignettes (*see* Solyom and Solyom 1984:Fig. 24; *also* Maxwell 1990:Fig. 57). Much larger, rectangular beaded mats have tentatively been identified as *tampan maju*, or ritual gifts from the groom to the bride, which acknowledged and consolidated the myriad of new relationships formed as a result of the marriage (Gittinger 1979:22-25, 97, Pl. 60; *see also* Chase Manhattan Bank 1997:Juli; Holmgren and Spertus 1989:87; van Hout 1995:3-4). Importantly, the very materials used on such *tampan maju* may be understood to enact a metaphorical marriage of their own. In many Indonesian societies beads are classified along with metal as "hard" objects that are masculine in nature and made or obtained by men. Textiles, on the other hand, are "soft" goods, feminine by nature, because women make them (Gittinger 1979:35; Maxwell 1990:58-63; van Hout 1995:28). The combination of two such opposing—but complementary—materials theoretically augments the mat's spiritual potency, enabling it to repel negative and attract positive influences to a marriage (*see* Rodgers 1985:42, 51; *see also* Taylor and Aragon 1991:37-38).

The iconography of the mat in Pl. IIB is somewhat difficult to evaluate. Certain aspects of the iconography, such as the scrolling horizontal lines at the top and bottom of the central motif, call to mind a *tampan maju* from the Lampung region whose imagery has been interpreted as representing a "tree of life" (Chase Manhattan Bank 1997:Juli). Whether symbolizing fertility in general or the carefully ordered universe, tree motifs have appeared on textiles in many parts of Indonesia (*see* Maxwell 1990:341ff.). However, in addition to these floral motifs, when observed from a certain point of view, the mat in Pl. IIB seems to delineate stylized figurative elements, such as a pair of eyes, a nose, a grimacing mouth and a well-defined penis (Thomas Murray 1996: pers. comm.). More research is needed to elucidate the implications of this complex floral/figurative motif.

Perhaps only in the Lampung region could such sophisticated motifs be rendered so deftly, in such a relatively coarse, even hasty, beadworking technique where lengths of strung beads 2.0-5.0 mm in diameter are couched to the ground fabric at 3-4 bead intervals. Areas left unbeaded, to accommodate sparkling, irregular bits of mica or other filler material, also lessen the beadworker's burden. Clearly the antithesis of the meticulous aesthetic of the Straits Chinese, this ancient beadworking technique adapts easily to the expansive curvilinear designs, undulating fields of color and loose structure favored in many Lampung beadwork compositions (*see* Holmgren and Spertus 1989:87). Undoubtedly, such a relatively undemanding technique facilitated the production of the monumental pieces that were once made in this tradition (*see* Holmgren and Spertus 1989:86-93).

Sulawesi: The Sa'dan Toraja

According to ritual speech of the Sa'dan Toraja peoples of south-central Sulawesi, ancestors descend to earth on stairs of beadwork (Nooy-Palm 1979:271), and beadwork covers the door to the dwelling-place of the supreme God, Puang Matua (Nooy-Palm 1986:161). Puang Matua himself is likened to a *kanduare*, a cone-shaped beadwork ornament which symbolizes abundance (Nooy-Palm 1986:189). Appropriately, beads and beaded ornaments figure

prominently in religious rituals of the Sa'dan Toraja which seek to renew the ancient ties between deities, ancestors and mortals.

The dance apron or *sassang* in Pl. IIIA exemplifies much Sa'dan Toraja beadwork. Worn by women during *ma'gellu* dances that conclude the funeral ceremonies of deceased noblemen, some *sassang* depict a series of sturdy hooked motifs across an upper horizontal panel, with numerous fringe elements suspended from it (*see* Barbier and Newton 1988:266-267; *also* Nooy-Palm 1969:Pl. VIII). These *sekong* motifs ostensibly represent squatting ancestor figures with four hooked "limbs" extending outward from a central "torso" (Holmgren and Spertus 1989:64). They appear on Toraja woven textiles as well, and in the textiles of other Indonesian cultures. So closely are these motifs associated with ancestors that during parts of the funeral ceremony, bamboo effigies of the newly deceased may carry rectangular beaded bags with *sekong* motifs on them (*see* Crystal 1985:Pls. 172-173). Displaying *sekong* motifs during funeral rituals activates the benevolence of these ancestors whose favor the Toraja habitually seek so that their rice crops may flourish, and their family groups prosper and multiply.

The purposeful application of color underscores the symbolic significance of the apron's *sekong* motifs. The four most prominent colors on the apron—yellow, red, black and white—frequently co-occur in Toraja beadwork, textiles and other arts. Each of the colors has particular associations: yellow, with the sun and the realm of the ancestors; red, with the blood of sacrificial animals; black, with ashes and death; white, with the supreme god Puang Matua (Wassing-Visser 1982:76-77). The natural color of the tablet-woven band at the top of the apron may also be significant (*see* Nooy-Palm and Schefold 1986). Without entering further into the complexities of Toraja color symbolism, it will simply be noted that, like the *sekong* motifs themselves, these colors metaphorically function together to "keep the cosmic balance in equilibrium" (*see* Wassing-Visser 1982:76-77). Glass beads form an especially effective medium for the expression of this message as they project a vibrancy unmatched by the gentler, more muted colors of Toraja woven-cotton textiles. Not surprisingly, the "dark red" and "dark yellow" beads used to work the *sekong* motifs appear to have been somewhat more highly regarded than the other varieties; in Toraja ritual speech, these beads are implicitly equated with gold, a color sacred to the ancestors (van der Veen 1965:87, verse 423). In one of the few documented reversals of typical Indonesian custom, male specialists made these dance aprons, as well as other glass-beadwork articles (Nooy-Palm 1975:35). Since men make metal jewelry in many parts of Southeast Asia, beadwork made by men can be interpreted as another form of jewelry (Maxwell 1990:63). Toraja beadworkers used a multiple vertical-thread weave common to many Indonesian groups (Fig. 11a; *see also* Lemaire 1960:Fig. 16; Nooy-Palm 1975:35) and heirloom beads of Asian and European origin. Specifically, about 80% of the beads on the apron in Pl. IIIA are single-twist, Chinese coil beads 2.5-4.0 mm in diameter; the rest are predominantly European. It is worth emphasizing, however, that women made the cotton card-woven bands at the top of the aprons, which formed the stabilizing base of the beadwork (*see* Bolland 1972:179-180). Thus, production of these aprons seems to have entailed the cooperation of both sexes, and engendered a harmonious balance of dualistic forces. So this attractive beadwork dance apron recapitulates dualities of great concern to the Toraja, and many other Southeast Asian peoples, such as male /female, heaven/earth, and ancestors/mortals (*see* Nooy-Palm and Schefold 1986:40).

Sumba: The Rindi Region

Beadwork also played a pivotal role in funeral ceremonies for wealthy nobles in the Rindi domain of southeastern Sumba. Such funerals occasioned the display of many beadwork articles such as betel bags (Khan Majlis 1991:Pl. 219), breast ornaments (Khan Majlis 1991:Pl. 220; *see also* Alpert 1977:Pl. 48), baskets (Forth 1981:174-175) and spindles (Adams 1969:158). In addition, royal female mourners might wear handwoven skirts with beadwork embellishment (*see* Adams 1969:84, and Figs. 19, 21-23, 51; *see also* Alpert 1977:Pl. 47). Like the Sa'dan Toraja, Sumbanese viewed certain beads as precious talismans from the ancestors (Adams 1969:154), spiritually well suited to making articles that help speed the newly deceased on his journey to the ancestral abode. The beadwork betel bag shown on

the cover probably stored ingredients for preparing the mildly stimulating betel quids (composed of areca nut, lime and gambier) that were offered to the newly deceased and the ancestors during segments of funeral ceremonies (*see* Forth 1981:71 ff.). At the same time, the bag and its contents symbolically equipped the deceased with essential implements for life in the hereafter (Khan Majlis 1991:Pl. 204). In a sense, at least temporarily, such betel bags formed part of the "costume of the dead" (*see* Adams 1969:156).

Not unlike Kathi beadwork of Gujarat State in India, southeastern Sumbanese beadwork of the early 20th century tends to pictorialism without attempting narrative structure (*see* Holmgren and Spertus 1989:Pls. 1-3, 14). Beadwork betel bags, for example, prominently display large motifs associated with the upper classes, such as skull trees (*see* Volkenkundig Museum Nusantara cat. no. S-1780), deer (*see* RVV cat. no. 03/22), horses (*see* Khan Majlis 1991:Pl. 219), birds (*see* Rodgers 1985:Pl. 50) or stylized anthropomorphic figures (*see* Lemaire 1953:Fig. facing p. 8). Smaller vegetal and zoomorphic forms frequently surround this central motif against a background of white or, more commonly, black beads (*see* Adams 1969:84). Purely geometric designs are also known, and may have been more common in the 19th century. Inside some of the bags is a sturdy palm-leaf plaitwork lining which supports the heavy weight of the beads. Tassels, straps and other accoutrements (such as metal bells and large glass beads) occasionally remain intact into the late 20th century, as the nearly complete example on the cover reveals. Technically, as it features the multiple vertical thread weave common to many parts of Indonesia, this bag is typical of most Sumba beadwork. Less typical is the appearance of both open (on the body of the bag) and closed (on the strap) variations of this weave in a single piece (Fig. 11a-b; some scholars have erroneously identified these variations as two separate techniques: *see* Adams 1969:85). Like many early 20th-century examples, the bag displays large numbers of European drawn-glass beads 2.5-3.5 mm in diameter, as well as a few beads of Asian origin.

The crowned rampant lion gazing outward that dominates the body of the betel bag (*see* cover) also appears on a number of other beadwork bags, and on many Sumbanese woven textiles as well. Its central, commanding position and active stance assert its prowess. As lions are not native to Sumba, the source of this motif lies largely in the flags and coins awarded to Sumbanese nobles for several centuries by Dutch traders and colonizers as tokens of favor (Adams 1969:137-138). Perceiving the rampant lion as a symbol of rank and authority, Sumbanese nobles adapted it to their own ends. So desirable was this prestigious foreign motif that eventually rulers of the aristocratic Rindi domain in southeastern Sumba exercised a virtual monopoly on its use. Thus, this bag probably originated in Rindi, as did many pieces of Sumbanese beadwork (*see* Rodgers 1985:54, 171; *also* Adhyatman and Arifin 1993:Pl. 4). Flanking the rampant lion, four horses rear up as if in readiness to convey the soul of the deceased to the spirit realm (*see* Alpert 1977:Pl. 48). Like rampant lions, horses also signify wealth, nobility and prowess to the Sumbanese (Adams 1969:136).

Yet, for all of its size and foreign prestige, the rampant lion on the bag is situated in a decidedly Sumbanese context and surrounded with indigenous motifs. Smaller in scale but greater in number, multicolored snakes writhe across the background of the bag and offset the lion's rigidity with their own sinuous movements. In many parts of Indonesia, snakes evoke the watery underworld which is associated with femininity. A single snake also marks the lion's torso, perhaps providing an "X-ray view" of its intestines (Thomas Murray 1996: pers. comm.), or foreshadowing the metamorphosis that the corpse must undergo as the soul sheds the body and ventures from one realm to the next (*see* Forth 1981:188). As creatures that adapt to multiple environments, snakes may serve as ideal metaphorical vehicles to transport human souls (*see* Adams 1969:167). Moreover, given their latently feminine symbolic nature, snakes may be emblematic of death itself which the southeastern Sumbanese classify as a feminine process (Forth 1981:205-206). A more lengthy analysis of the bag might further illuminate the presence of gender, color and number symbolism, and delve more deeply into Sumbanese notions of life and death.

Kalimantan (Indonesian Borneo): The Iban or Maloh

One of the world's most fascinating and prolific beadworking traditions developed on the island of Borneo among the Dayak peoples of the interior rainforest. Commentators have marvelled at Dayak beadwork for decades and the protective, mythological beings it so frequently portrays (Fig. 8; *see also* Loebèr 1913:7, 35). Although the vest in Pl. IIIB lacks such beneficent beings, its central function may still have been the spiritual protection of the wearer, possibly a shaman of the Iban (Robert J. Holmgren 1986: pers.comm.), Maloh, or Ibanic Kantu' or Mualang (Heidi Munan 1996: pers. comm.) peoples living in the Kapuas River region of western Kalimantan. We will soon have more to say about the possible origin of the vest. Since they are hard and long-lasting, glass beads symbolize strength and longevity to some Dayak groups (Maxwell 1980:135-136). Thus, they are ideal for the fabrication of symbolic "armor" to deflect malevolent spirits (Maxwell 1990:137). The close weave that unites the beads certainly creates the appearance of an impenetrable surface. Although they obtained glass beads through long-established trading networks, the Dayak believed that some varieties possessed magical qualities stemming from their supernatural origin. In addition to offering protection, then, such a vest of glass beads might facilitate communication with the unpredictable supernatural world (*see* Gittinger 1979:218).

While long, narrow, stone- or shell-decorated vests may have been fairly common in some parts of Borneo in the late 19th century (*see* Schärer 1963:56, Fig. XVIII, ill. 21; *also* Indonesisch Ethnografisch Museum 1973:Fig. 94; Khan Majlis 1984:Fig. 696; Sellato 1989:171; Taylor and Aragon 1991:159-163), their counterparts in glass beads were evidently rare (P.T. Boskma 1987: pers. comm.). Various proscriptions supposedly governed the manufacture of vests in some areas. In the Embaloh tributary region of the Kapuas River, for example, women could reportedly work on such items only during specific "solemn" occasions (Juynboll 1910:329-330; *see* RVV cat. no. 959/128). The beadworking endeavor itself, in other words, appears to have been a crucial, ritualized process designed to ensure the spiritual efficacy of the garment being made. It is difficult to say whether this tendency to ritualize the beadworking process extended to other types of items or other areas of Borneo. Although there is little evidence, the precise beads selected for use might also have heightened a vest's defensive capacities. A sizeable number of the glass beads (3.5-4.0 mm diameters) assembled in the vest in Pl. IIIB are the opaque reddish-brown *mutiraja*, so valuable in many parts of Indonesia. In addition, there are other Chinese coil beads of uncertain age and European beads.

The vest manifests vestiges of an archaic design repertoire. Both front and back display numerous concentric diamond motifs arranged in a grid-like format of ancient origin, one that recurs repeatedly in Southeast Asian material culture (*see* Bellwood 1979:Fig. 7.19; *also* Spertus and Holmgren 1977:Pl. 18). In addition, the back side ends in a border of scroll motifs, strikingly similar to those painted on a neolithic pottery vessel dating between 1600 and 400 B.C., which was found in Niah Cave, Sarawak, in Malaysian Borneo (*see* Bellwood:1979:216-217). Interestingly, 20th-century beaded jackets made in southern Thailand also display concentric diamond motifs in a grid format (*see* Ginsburg 1975:69). Nowadays such *thap suang* are worn by performers in *manora* dance dramas, but it has been suggested that at one time they may have been worn by shamans in ritual contexts (Maxwell 1990:127). In other words, although proof is lacking, analogous beadwork shaman's garments may once have existed in mainland and island Southeast Asia.

Most pieces of Asian beadwork are constructed using a single technique. The vest in Pl. IIIB poses an intriguing exception to this rule. Like the dance apron in Pl. IIIA and the betel bag on the cover, the lower border of the back of the vest is worked in the multiple vertical-thread weave which produces an open diamond pattern and is preferred by many Indonesian beadworkers (Fig. 11a). However, the body of the vest is worked in a more complex technique, one which requires both warp and weft threads and inclines beads in alternating rows at 45° angles, thereby producing a herringbone pattern (Fig. 16; *see* Khan Majlis 1984:Pl. 640; Lemaire 1960:Figs. 6-8; Nieuwenhuis 1907,I:Pl. 25, no. 12; II:Pl. 70a-b; Sellato 1989:Pls. 239, 246). Several Dayak groups apparently favored this herringbone technique in the late 19th century, including the Kayan of the

Mendalam and Mahakam River regions (pers. obs.: RVV cat. nos. 1219/165, 1308/36, 1306/432, 1306/59-60), and the Taman, a Maloh subgroup in the Kapuas River region. More to the point, the Taman in particular are known to have juxtaposed in a single piece both of the techniques used in the vest in Pl. IIIB (pers. obs.: RVV cat. no. 1219/136). Bearing in mind these technical factors, a Taman Maloh origin for the vest looks like a distinct possibility. Apart from Borneo, herringbone weave occurs infrequently in Southeast Asia. It does surface thousands of miles away in Pacific Asia, in the Solomon and Admiralty islands (*see* Heermann and Menter 1990:Pl. 40, nos. 1-2; *also* Borel 1994:206, 222).

Irian Jaya (Indonesian New Guinea): The Cenderawasih Bay Region

While Sa'dan Toraja beaded aprons follow predictable formulas with respect to both color and motif, the beaded aprons of the Cenderawasih Bay region of Irian Jaya demonstrate an intriguing stylistic diversity which has never been systematically analyzed. Indeed, relatively little is known about these triangular or, more precisely, pentagonal aprons which are no longer made in the region (Dr. Michael C. Howard 1996: pers. comm.). The aprons appear in both symmetrical and asymmetrical formats, as shown in van Baaren (1992:Pl. 40); Barbier and Newton (1988:Pl. 32); Hoogerbrugge (1995:Fig. 46); Loebèr (1913:Pl. IX); Maxwell (1990:Pl. 87); Taylor and Aragon (1991:Figs. IX.39-40). During recent fieldwork in the area, Dr. Michael C. Howard (1996: pers. comm.) was informed that all of these aprons were made in the village of Ambai on Yapen, an island in Cenderwasih Bay, and then traded to surrounding areas. Howard's findings confirm statements made by earlier scholars (*see* Maxwell 1990:Pl. 87; *also* Taylor and Aragon 1991:277) and indicate that the aprons were greatly esteemed and widely circulated trade goods. Not much is known about the contexts in which the aprons were used, except that they may have been exchanged during bridewealth rituals (*see* Held 1957:96; *also* Taylor and Aragon 1991:277), or worn by brides during weddings (*see* Held 1957:37). Men may have worn the aprons at times; during agricultural ceremonies, for example (Taylor and Aragon 1991:277). We cannot tell exactly when this glass-beadworking tradition got underway, but it was already well established by 1893, as an outgrowth of the region's ancient shell-beadworking traditions (*see* de Clercq and Schmeltz 1893:Pls. III, X-XXII). Women continued making these beadwork aprons (Fig. 21) until sometime in the mid-20th century.

Most if not all of the aprons are worked in a multiple vertical-thread weave which inclines beads at right angles to one another (Fig. 17; *see also* Lemaire 1960:Figs. 9-11). This weave, which imparts a rectilinear outline to all motifs, was already in use by the 7th century in Japan (*see* Blair 1973:Fig. 68). In most Cenderawasih Bay aprons, European glass beads 3-4 mm in diameter predominate. They are connected at an average rate of 18-30 b/cm^2. Glass beads were brought to this remote area by traders from Indonesia and elsewhere, plying ancient trading routes (Taylor and Aragon 1991:276). Like other island Southeast Asian peoples, the inhabitants of northwestern Irian Jaya once ascribed a supernatural origin to such beads, believing that they were the precious fruit of mythical bead trees supplied by the ancestors (Taylor and Aragon 1991:276-277). Currently, some natives of Yapen Island believe that the beads are seeds of a tree, imported from nearby coastal areas (Dr. Michael C. Howard 1996: pers. comm.). Cotton trade-cloth fringe usually hangs from the bottom of these aprons, but a grass-like natural fiber is used in this capacity on some examples (pers. obs.). The thick, twined threads employed in many aprons were harvested from local sago palms (Dr. Michael C. Howard 1996: pers. comm.).

Although they can cite received wisdom concerning the origin of the beads, current inhabitants of Yapen have trouble explaining the motifs on these aprons (Michael Howard 1996: pers. comm.), and scholars are similarly perplexed. According to one Western ethnographer, some of these motifs resemble women's tattoos. In fact, among the Waropen peoples of coastal Cenderawasih Bay, the word for tattoo marks is *raiwonda* which can be translated as "bead design" (Held 1957:28). The apron in Pl. IA lends tenuous credence to this association. With its elongated vertical torso, concentric diamond head, four scroll-shaped limbs, and base or root consisting of a single, pronounced scroll, the central figure on this apron approximates an anthropomorphic lizard or crocodile. Other beadwork and barkcloth aprons display similar reptilian motifs, whether singly

Figure 21. Woman making a beadwork apron, northwestern Irian Jaya, ca. 1950. Courtesy of Koninklijk Instituut voor de Tropen, Photodepartment (951):677.77: 666.27 N15.

(Maxwell 1990:Pl. 87) or in pairs (*see* Barbier and Newton 1988:Pl. 32; *also* Kooijman 1963:Pl. XXXII, Fig. 3). In some parts of Indonesia, such creatures may have been associated with ancestors (*see* Solyom and Solyom 1984:Fig. 14). Comparable elongated figurative motifs also materialized in Waropen women's tattoos extending up the nose to the forehead (*see* Held 1957:27; *also* Galis 1961:115) and down the center of the chest (*see* Photodepartment, Koninklijk Instituut voor de Tropen [951]:391.92 N 27-8). In addition, scroll motifs similarly appear both in chest tattoos and beadwork aprons, flanking these central figurative shapes. Importantly, as these tattoos tend to be rectilinear, they can be rendered quite accurately by the beadwork technique described above. Despite such analogies, much remains to be learned before this beadworking tradition can be documented adequately.

CONCLUSION

Over the last millennium, the beadwork of Asia has assumed many forms, functioned in many contexts and conveyed many messages, both overt and implicit. As we have seen, beadwork has encoded esoteric notions about social rank and material wealth, gender roles, virtuous behavior, fecundity, death and the relations of the human, natural and supernatural realms. Whether fashioned from locally made or imported beads, worked in complex or simple techniques, redolent with symbolic significance or essentially decorative, the pieces explored in this article attest to the high regard in which this medium was held in numerous parts of Asia. That Asian beadworkers drew heavily on other textile arts cannot be denied; that they developed an art of their own should not be forgotten.

Only a tiny fraction of the Asian beadwork repertoire is represented in this article; little has been said about traditions in Central or Pacific Asia. Fieldwork in the few traditions that have survived into the late 20th century—among the Dayak and Toraja, for example—would teach us much; not only about specific types of beadwork, but about human nature and our ancient fascination for creating structure and meaning from tiny, precious bits of matter.

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ENDNOTE

1. Although information on file at the Field Museum of Natural History suggests that this and other related pieces of beadwork in its collections were made in mainland China, there is some reason to question the accuracy of this attribution (Dr. Bennet Bronson 1996: pers. comm.). Until further research is completed, we must acknowledge the possibility that panels such as the one in Pl. IVA could have been made in island Southeast Asia, by or for the Straits Chinese.

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MEROVINGIAN BEADS ON THE LOWER RHINE

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This paper presents a classification for beads of the Merovingian period in the Lower Rhine region of Germany. Strings of beads recovered from graves are ordered by a seriation (correspondence analysis) which results in an ethnic (Roman vs. Frankish) and chronological structuring of the material. By comparing this with the chronological scheme established for the other associated archaeological finds, it becomes evident that the favored types of beads changed about every two generations. Besides changes in distinctive types, a development in general color preference is also observed.

INTRODUCTION

During the Merovingian period (ca. A.D. 450-750), it was customary in Central Europe to bury the dead uncremated in an extended posture. Apart from their clothing, the deceased were interred with jewelry, weapons and food. The study of these graves and their inventories considerably enriches our knowledge of an epoch for which only a meager number of written records exist. For the Lower Rhine, an area in western Germany (Fig. 1),[1] some 160 find-spots dating to this period are presently known. They have produced some 3,300 grave inventories, approximately 2,200 of which have been published (Fremersdorf 1955; LaBaume 1967; Pirling 1966, 1974, 1979; Siegmund 1989; Stampfuss 1939).[2]

With a few exceptions, the beads discussed here were found in the graves of females. They once formed strands of beads worn around the neck or the wrists; only exceptionally can one prove that they were sewn to clothing. The 7,000 beads found in toto came from only 210 burials; thus, not every woman was buried with a string of beads.

CLASSIFICATION

A comprehensive classification of the beads of the Rhenish Franks has been wanting up till now. Therefore, the beads had first to be grouped into types according to their attributes: the most important being raw material, color, shape and decoration.[3]

Very detailed recording of individual bead characteristics, especially color, had to be rejected since the writer not only had to deal with beads he personally recorded, but also with previously published material. Since, as a rule, the latter contain only rough descriptions, a more generalized definition of the individual attributes was necessary. Also, the resulting types could not be differentiated too finely as they would then be represented by too few examples.

The classified bead types are illustrated in Plate V and described in Appendix A. Generally, the beads are classified primarily according to their raw material (opaque glass, translucent glass and other materials) and their color, whereas shape and decoration form subordinate criteria. Deviating from this are several types of undecorated beads which are grouped according to distinct shapes as opposed to color (Per-1).[4] There follow beads for which a distinct decoration forms the principal attribute of classification (Per-2). Subsequently, the beads are listed by types of opaque (Per-3) and translucent (Per-4) glass. In groups Per-3 and Per-4, the first numeral is suffixed by another which indicates an approximate color; here I restrict myself to the basic colors black (1), white (2), yellow (3), orange and ocher (4), red (5), green (6) and blue (7). Finally, the types are numbered sequentiall, following a period.

As well as decorated beads, the classification contains undecorated ones. However, only those

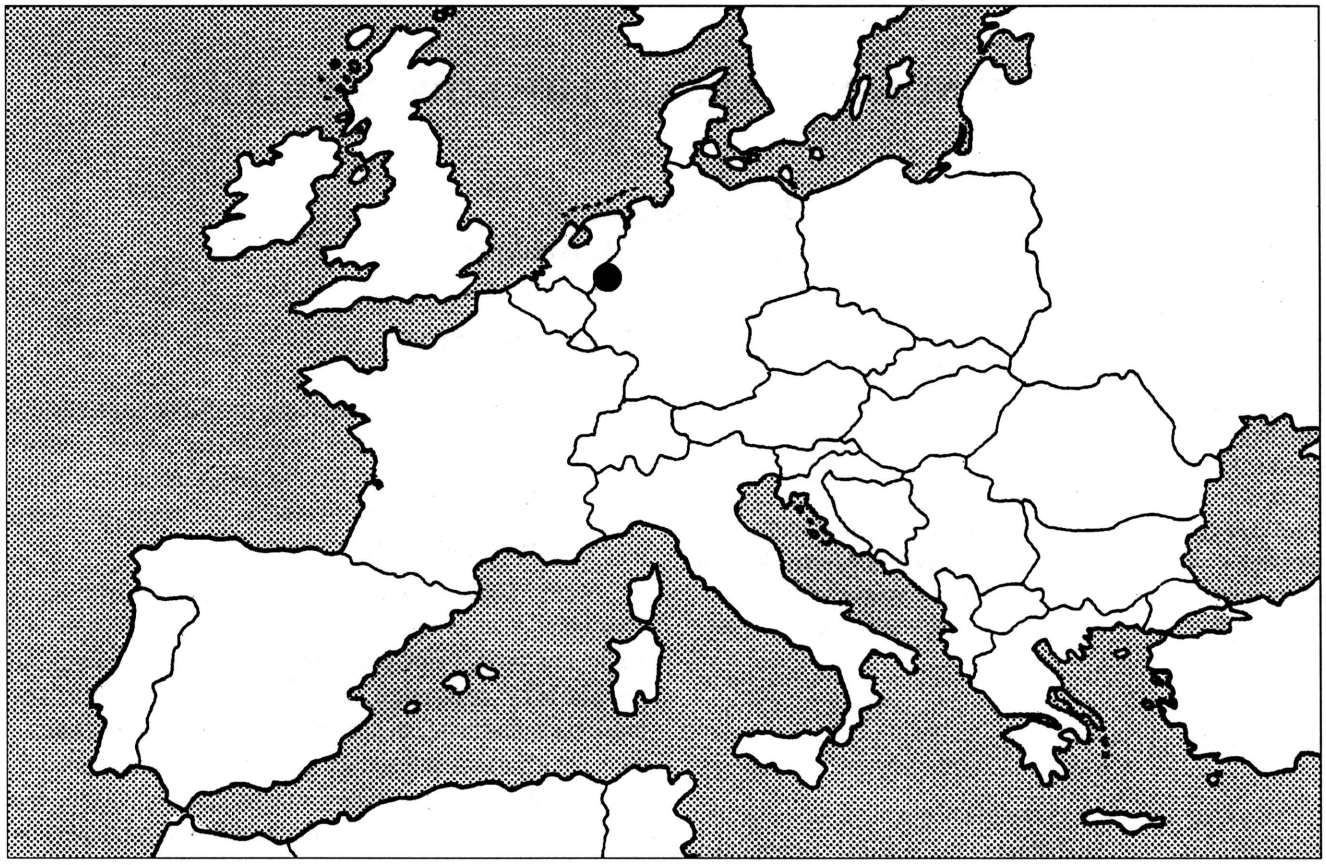

Figure 1. Map of Europe with the Lower Rhine area represented by the black dot (drawing: Irene Steuer).

undecorated beads found to be chronologically relevant have been included. Thus, the study area has produced 117 types derived from 212 strings of beads composed of 4,542 beads in all.

MODEL

It is assumed that the bead types composing bead strands buried with the deceased change through time. A bead type is developed by an artisan and appears occasionally in strings. It subsequently becomes popular (fashionable) and, as a result, appears often in strings, only to slowly fade from the scene afterwards. Since certain beads can be reused or passed from one generation to another over a period of time (inherited or heirloomed), the changes in strand composition occur only slowly. The method of classification used for this model (Gauss' seriation model) is correspondence analysis (Ihm 1983; Zimmermann 1995). By means of an appropriate mathematical method, a contingency table which tabulates the frequencies of all 117 bead types in the 212 strings was thus produced diagonally, a plot of the first two eigenvalues being shown in Fig. 2.[5]

CONTROL HYPOTHESIS

Correspondence analysis almost always leads to a diagonal in a contingency table. The method itself cannot show whether this order is archaeologically useful; it, therefore, needs external control mechanisms. In the present instance, the chronological relevance of the resulting order can be tested in two ways.

Apart from beads, other objects (such as fibulae and pottery vessels) are also found in many graves. Since relative chronologies exist for these, the classification of the beads can be checked against the dating of the accompanying grave goods.

A second method involves an examination of burial distributions at the cemeteries, some of which were laid out systematically in a recognizable pattern; the oldest burials are situated together in one area and subsequent burials are added on to these in recognizable conglomerations (Ament 1976; Siegmund 1982, 1989). Thus, the proposed chronological order for the bead strands can be tested against their location in a cemetery.

CHRONOLOGY

As the comparison between the classification and the control hypothesis shows, the first eigenvalue only imperfectly displays the expected chronology. A more detailed analysis shows that the bead strings are divided firstly into ethnic groups.

The beads discussed here originated from Frankish graves of the 5th to early 8th centuries. Furthermore, some late Roman strings were recorded at the cemetery of Krefeld-Gellep which was continually in use from the Roman period (Pirling 1986). Evidently, during the 4th and 5th centuries, the differences between Frankish and Roman bead strings were so extreme that, in the first instance, an ethnic division occurs, the result of which is that only a moderately satisfactory chronology occurs within the Frankish beads.

Only the second eigenvalue brings the strings and beads into a convincing chronological sequence.[6] The resulting order of beads is presented in Appendix B.

In order to gain a better assessment of the results, the individual strings, corresponding to their chronological position, have been combined into larger groups which have been termed "clusters." These clusters then had to be interwoven into the general Frankish chronology. To this end, the female graves, with all their grave goods, were subjected to a correspondence analysis in which the strings were included at the level of these clusters. Moreover, the clusters were included in the analysis of the areas of utilization within the cemeteries. The results of this are presented in Table 1.[7] This clearly shows that the individual clusters overlap slightly and, as a rule, are strewn over two phases. Strings of beads are, therefore, readily datable but, compared with other artifact groups, chronologically somewhat less sensitive.

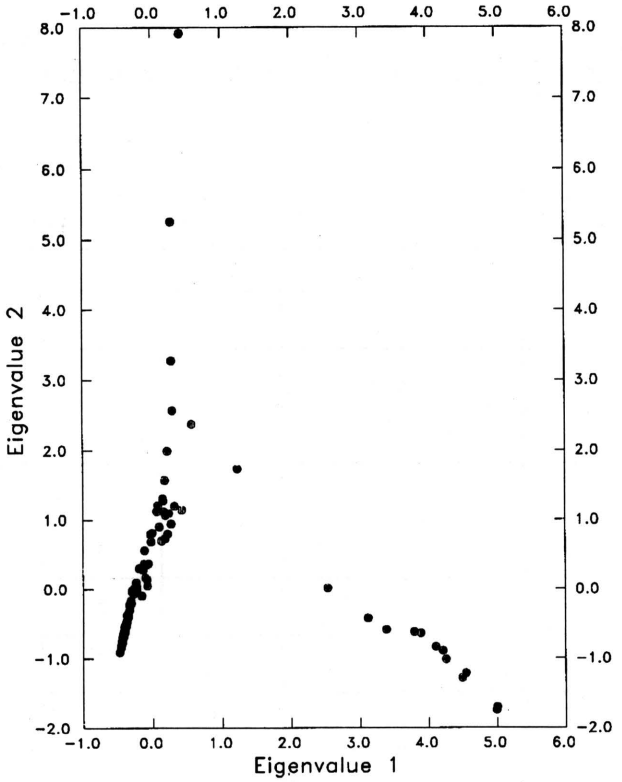

Figure 2. Correspondence analysis of the first two eigenvalues. Eigenvalue 1 represents ethnicity (Roman-Frankish); eigenvalue 2 represents chronology.

TRAIT FREQUENCY

The more important and frequently encountered bead types in the clusters are shown in Plates VIA-VIB, where they are arranged according to their position as determined by correspondence analysis.

Other, more general, tendencies of Frankish bead "fashion" on the Lower Rhine can be better observed at the more abstract level of the clusters.[8] In Fig. 3, the material of the beads composing the strings is tabulated according to the level of the clusters. The scale of reference is the sum of the glass and the amber beads. Amber occurs to a small degree in every cluster but is especially frequent in strings of cluster C; after D its proportion diminishes. It was, therefore, meaningful to include the category "much amber" in

Table 1.
Bead String Clusters and their Relationship to Phases of the Lower Rhine Chronology.

	Bead Clusters									
Phases	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**A.D.**
										705
10								5	12	
										670
9						1		7	3	
										640
8						7	4	7	7	
										610
7					1	8	7			
										585
6				3	5	5	3			
										570
5				5	4	1				
										555
4	1		10	7	4					
										530
3	1		6	1						
										485
2		3								
										440
1										
										400
Roman	17									

the contingency table, where the lower cut-off point was set at 20%; i.e., to qualify, at least 20% of a stand had to consist of amber beads.

Beads of translucent glass dominate the recorded Roman strings of beads in the 4th century (cf. Guido 1978:91 et. seq.). In the early Frankish strings of cluster B, decorated beads of opaque glass are quite frequent—mostly comprising decorated, opaque black beads—as opposed to the later period. In the subsequent clusters, the proportions of the raw materials are roughly similar; noteworthy in cluster F is the much higher ratio of decorated beads. For this reason, the category "many decorated beads" (which excluded black beads) was also incorporated into the contingency table. To qualify, at least 50% of a strand had to consist of decorated beads.

In the case of the segmented beads which enclose silver or gold foil, their proportion remains generally quite low and mostly well below 1.0%. Only in strings of cluster C, and to a lesser degree in D, do they occur more frequently.

In Fig. 4, the color combinations of the bead strings are tabulated according to the level of the clusters. The scale of reference in each case is the sum of the glass beads, with segmented beads enclosing metal foil and millefiori beads having been excluded. The rare ocher-colored beads have been added to the yellow ones and turquoise-colored beads have been included with the blue ones.

A marked transformation in the general color spectrum of the strings is evident. The curve is very similar for the colors blue and green, an increasing proportion of blue going hand in hand with an increasing proportion of green. This is contrary to the development of the color yellow; a very high proportion of yellow beads is characteristic of clusters D-F, reaching a maximum in E. For this reason, the attribute "many opaque yellow beads" was included in

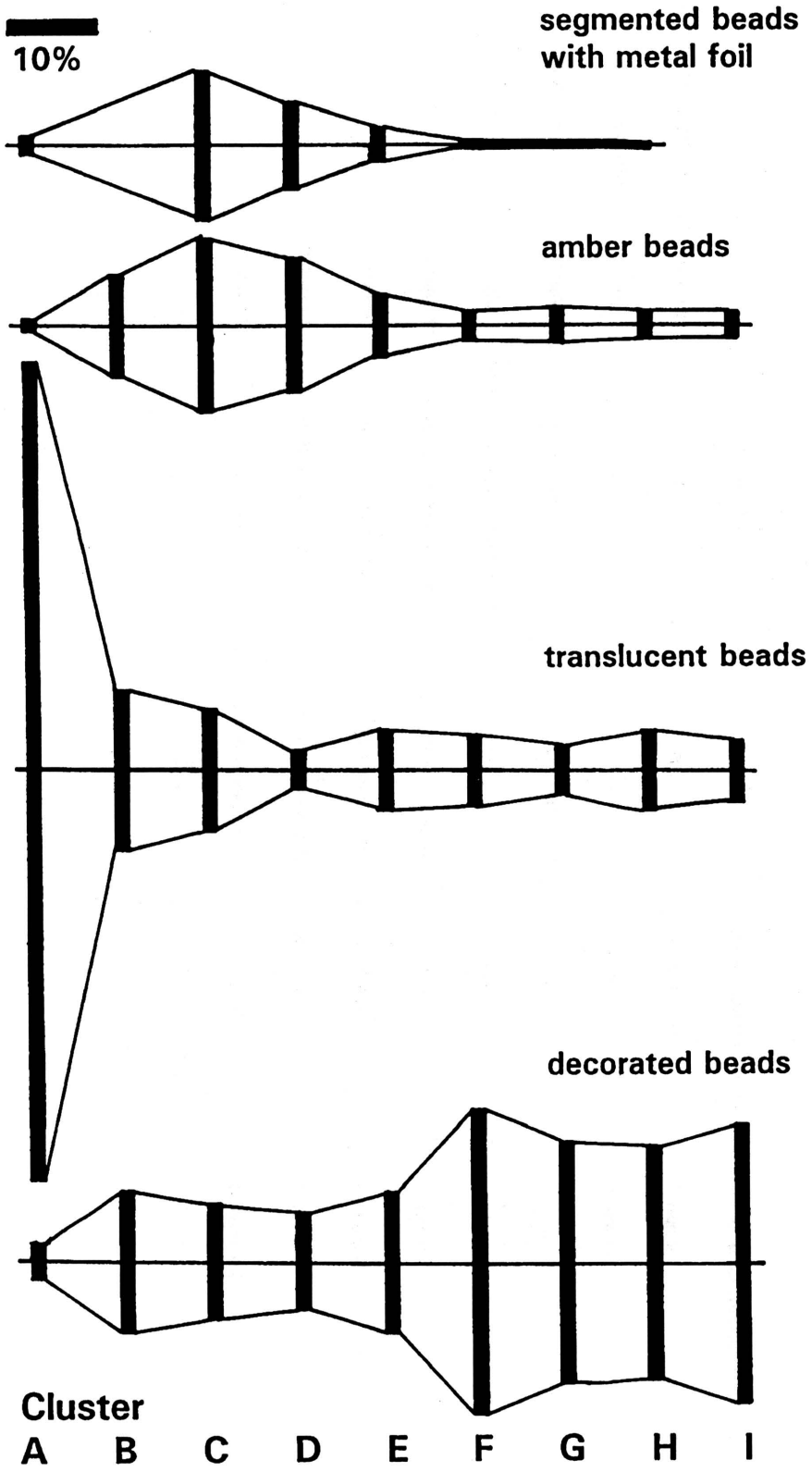

Figure 3. The frequency of several major bead groups in clusters A-I.

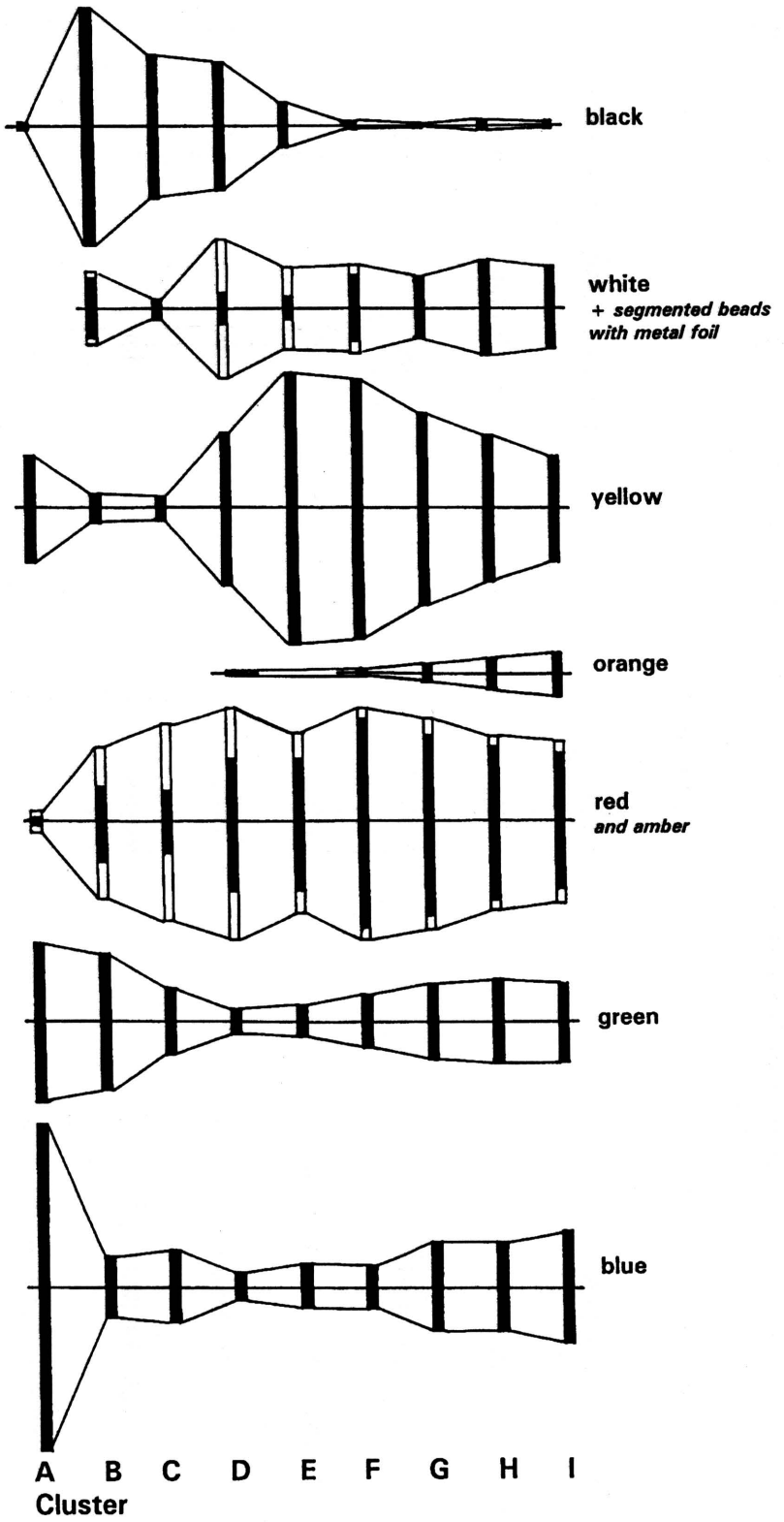

Figure 4. Color frequency among the bead strings in clusters A-I.

the contingency table, with the lower cut-off point being placed at 45%.

The proportion of red beads remains very stable through time, being much less frequent only in clusters A to C. However, if one considers that the more frequently occurring amber beads of clusters B to D also display a mainly reddish hue, the proportion of red beads remains fairly constant throughout the Merovingian period.

The color orange first appears in cluster G and becomes more frequent after cluster I.[9] Since there is a decrease, if only very slight, during this period in red beads, one could regard orange beads as a somewhat lighter substitute for red beads, thereby reinforcing the notion that red beads appeared in about equal proportions during the period under study.

White beads are not generally very common. In Roman strings they occur mostly as translucent white to colorless beads. In the early Frankish strings, white occurs very seldom, but its proportion increases steadily thereafter.

Black beads are very common in the early Frankish strings. After a maximum in cluster B, the proportion of black beads drops in clusters C and D, after which they appear only sporadically.

As a rough generalization, one can see color preference coming full circle when looking at the Merovingian period as a whole. If one considers the amber beads and the opaque red beads as a single group, an approximately constant proportion of red beads can be seen throughout the Merovingian period. In clusters B and C, the strings contain lots of blue and green beads, after which the spectrum shifts considerably towards yellow beads and thence, in clusters G to I, reorients itself to the blue/green mode. Black is very common at the outset, then disappears until a minor reoccurrence in the two most recent clusters (H-I). The question remains whether this picture is applicable to a larger geographical area.

CONCLUSION

A comparison of the new bead seriation presented herein with the chronology of the other grave goods demonstrates that the bead clusters fit in meaningfully. One, therefore, finds confirmation for the proposed classification of the beads into 120 types (*see* Pl. V and Appendix A), as well as the choice of correspondence analysis as a statistical method for obtaining this chronological sequence. However, one finds that the development of "fashion" in beads seems not to keep pace with other grave goods, so that one bead cluster covers two to three chronological phases (approximately 70 years). Comparable studies of the beads from two cemeteries in southern Germany (Theune-Vogt 1990; Sasse and Theune 1996) produced similar results regarding the classification of important types and in the precision of the dating. This suggests that strings of beads were seldom replicated in succeeding generations, but that individual bead types in them were replaced successively.

Apart from the gains regarding bead chronology, the general development of the favored materials and colors can now be demonstrated. Beads of opaque glass dominate the whole Merovingian period (clusters B-I), while translucent glass is common for Roman beads (cluster A). This major difference allowed correspondence analysis to find an ethnic division at its first eigenvalue and the time-related development at the second.

The only non-glass bead material that appears in any notable quantity is amber. Amber beads occur throughout the time frame in low frequencies, although they do become very fashionable for a short time (clusters C-D). Shell beads appear at the end of the Merovingian period.

While red beads are common during the whole Merovingian period, black, green and blue ones are preferred at the beginning, followed by a period with many yellow beads, with a return to green and blue beads at the end. Beads of translucent glass predominate at the outset, then disappear only to reappear with more intensity at the end of the period. One can thus recognize a cyclical course of human behavior regarding the general taste in color.

ACKNOWLEDGEMENTS

Many thanks to Clive Bridger for preparing the translation of this article. Special thanks are extended to Karlis Karklins for the extensive discussion and subsequent improvement of my terminology for beads. Nevertheless, I take full responsibility for any mistakes that remain.

ENDNOTES

1. The study area encompasses the administrative district of Düsseldorf and the County of Heinsberg in the State of Northrhine-Westphalia, Germany. Two other cemeteries a little further to the south have also been included: Junkersdorf and Müngersdorf within the city limits of Köln, as well as the cemetery of Iversheim in the Borough of Bad Münstereifel, County Euskirchen.
2. Color plates of some of the strings analyzed here appear in Fremersdorf (1955:Pl. 133); Pirling (1986:Figs. 156-158, 170); Siegmund and Weiss (1989a:40 [Pl. 8]).
3. For basics, *see* Beck (1928). More relevant to the present study is Ihm, Sasse and Theune (1994). For the Merovingian period, *see* Grünewald (1988); Koch (1977) (however, this only deals with the decorated beads); Sasse and Theune (1996); Theune-Vogt (1990). Chemical analysis of the glass and its colorants is not available. On Alamannic beads from southern Germany, *see* Hoffmann, Buchta-Hohm and Sasse (1988).
4. The prefix "Per-" derives from the German word *Perlen* (beads).
5. The program KORAN V-3.4 was utilized, kindly provided by A. Zimmermann of Frankfurt, whom I warmly thank. Canonical correlation-coefficients of eigenvalues 1-5 are 0.88958, 0.74486, 0.65091, 0.57543 and 0.49096, respectively.

   The term "eigenvalue" is derived from the German *Eigenwert* ("its own value"). Eigenvalues are coordinates in a theoretical space, in this case indicating the relative position of each bead type and string in the diagonally reordered table.
6. Similar results were obtained by Stehli and Strien (1986). The inventories were initially divided regionally; however, the desired chronological order of the attributes occurred also only with the second eigenvalue.
7. In Table 1, the bead strings in each cluster are correlated to the dates derived for each burial based on the other associated grave goods. Consequently, only those strings found in association with other datable finds are recorded.
8. For more information on the special graphics depicted in Figs. 3-4, *see* Clarke (1970:424 [Fig. 1, #3]) and Ford (1962).
9. Orange beads are similarly frequent in contemporary strings of the Wendic period in Denmark (Høilund Nielsen 1986:50 [Table 1], 52 [Table 2]; 1988:38 [Table 1], 41 [Table 2]).

APPENDIX A: INVENTORY OF MEROVINGIAN BEADS ON THE LOWER RHINE

Equivalents in the typologies for decorated beads developed by Koch (1977) and Theune-Vogt (1990), and in those for undecorated beads prepared by Grünewald (1988) and Theune-Vogt (1990), are listed as follows: (Koch Group xx), (Grünewald Type xx) and (Theune-Vogt Type xx).

Shape as the Primary Criterion of Classification

Per-1.1 Heart-shaped bead, translucent glass (Guido 1978: 92 [Fig. 37, #17], 99).
Per-1.2 Long cylindrical bead, translucent or opaque glass, blue (Grünewald Type 55).
Per-1.3 Polygonal bead, opaque glass, five or six sided, large (Theune-Vogt Type 19).
Per-1.4 Polygonal bead, opaque glass, six sided, small.
Per-1.5 Square-sectioned bead of opaque or translucent glass, small (Guido 1978:92 [Fig. 37, #7], 96).
Per-1.6 Cube-shaped bead.
Per-1.7 Pendant bead.
Per-1.8 Flat, almond-shaped bead (*flachmandelförmig*)(Theune-Vogt Type 20).

Decoration (and Shape) as the Primary Criterion of Classification

Per-2.1 Short cylindrical bead of translucent glass (colorless, yellow or green), decorated with an opaque wavy band (white, yellow or green).

Per-2.2 Short cylindrical bead, decorated with a wavy band around the middle and a straight band around either end.

Per-2.3 Short cylindrical bead decorated with combed bands and straight bands around the ends, large.

Per-2.4 Generally short or long cylindrical bead, decorated with straight bands around the ends and a monochrome row of dots (Koch Group 16).

Per-2.5 Long, square-sectioned bead of opaque glass, decorated with dots, one at each corner and in the center of each face (Koch Group 4; Theune-Vogt Type 58).

Per-2.6 Truncated biconical bead of opaque glass, decorated with many monochrome dots of the same color (similar to Koch Group 3).

Per-2.7 Short barrel-shaped bead of opaque glass, decorated with many opaque red dots, large.

Per-2.8 Oblate-disc bead of opaque glass (not black), decorated with a row of monochrome dots (belongs to Koch Group 1).

Per-2.9 Short cylindrical to barrel-shaped bead of opaque glass, decorated with a monochrome row of dots around the middle (belongs to Koch Group 1).

Per-2.10 Short cylindrical to barrel-shaped bead, decorated with bichrome eyes (Koch Group 6-8).

Per-2.11 Reticular bead (Koch Group 48).

Per-2.12 Millefiori bead (*Blättchenmillefioriperle*), short cylindrical, large (concerning Per-2.12-14, *see* Koch 1974).

Per-2.13 Millefiori bead (*Blättchenmillefioriperle*), barrel shaped (Theune-Vogt Type 70.2).

Per-2.14 Millefiori bead (*Blättchenmillefioriperle*), long polygonal, six sided (Theune-Vogt Type 70.1).

Per-2.15 Crumb bead (*Flockenperle*), short barrel-shaped bead of opaque or translucent glass with randomly impressed "dots" of various colors.

Opaque Glass, Sorted According to Color

(N.B. When a specific shape is not provided in the descriptions below, it means that this attribute is not significant in the definition of the bead type. However, the illustrations in Plate V depict the most common shape for each type.)

Black

Per-31.1 Opaque black bead, small (Theune-Vogt Type 24.9).

Per-31.2 Opaque black bead, double or multiple segment.

Per-31.3 Opaque black bead, decorated with a light plaited band (white or white and light blue) and bichrome eyes with dark spots on a lighter background.

Per-31.4 Opaque black bead, elongated biconical, decorated with white antithetic arcs.

Per-31.5 Opaque black bead, decorated with an opaque yellow plaited band with opaque yellow dots.

Per-31.6 Opaque black bead, short barrel shaped, decorated with a wavy band around the middle and straight bands around the ends.

Per-31.7 Opaque black bead, oblate disc or short barrel shaped, decorated with a wavy band.

Per-31.8 Opaque black bead with decoration, not further differentiated.

White

Per-32.1 Opaque white bead, spherical, small; wound manufacture.

Per-32.2 Opaque white, double or multiple-segment bead (Grünewald Type 42).
Per-32.3 Opaque white bead, truncated biconical (Grünewald Type 39; Theune-Vogt Type 15.3).
Per-32.4 Opaque white (or yellow) bead, long cylindrical bead decorated with dots.
Per-32.5 Opaque white bead, decorated with a red plaited band (belongs to Theune-Vogt Type 52.3).
Per-32.6 Opaque white bead, decorated with a green plaited band.
Per-32.7 Opaque white bead, decorated with a blue plaited band (belongs to Theune-Vogt Type 52.3).
Per-32.8 Opaque white bead, decorated with a red plaited band with opaque blue dots in the central fields (Koch Group 21, 1-5).
Per-32.9 Opaque white bead, decorated with a red band.
Per-32.10 Opaque white bead, short cylindrical, decorated with green bands.
Per-32.11 Opaque white bead, elongated square sectioned, decorated with fine green stripes.
Per-32.12 Opaque white bead, cube-shaped, translucent light blue edges with opaque yellow dots, and tricolored eyes (opaque red, opaque yellow and translucent light blue) in the center of each face.

Yellow

Per-33.1 Opaque yellow bead, short cylindrical, small.
Per-33.2 Opaque yellow bead, irregular, small; wound manufacture.
Per-33.3 Opaque yellow bead, spherical, small.
Per-33.4 Opaque yellow bead, asymmetric biconical.
Per-33.5 Opaque yellow bead, truncated biconical (Theune-Vogt Type 15.2).
Per-33.6 Opaque yellow, double or multiple, distinctly segmented bead (Theune-Vogt Type 11.2).
Per-33.7 Opaque yellow bead, decorated with a red plaited band.
Per-33.8 Opaque yellow bead, decorated with a red plaited band and red or green dots.
Per-33.9 Opaque yellow bead, decorated with a green or, less often, a blue plaited band.
Per-33.10 Opaque yellow bead, decorated with red bands or stripes (similar to Koch Group 21,10-12).

Orange

Per-34.1 Opaque orange bead, truncated biconical (Theune-Vogt Type 15.8).

Ocher

Per-34.2 Opaque ocher-colored bead, oblate disc or spherical, small.

Red

Per-35.1 Opaque red bead, long cylindrical (Theune-Vogt Type 31.1).
Per-35.2 Opaque red bead, short cylindrical, small.
Per-35.3 Opaque red bead, oblate disc, small.
Per-35.4 Opaque red bead, irregularly spherical, small (Theune-Vogt Type 10.1).
Per-35.5 Opaque red bead, irregular; wound manufacture.
Per-35.6 Opaque red bead, truncated biconical (Theune-Vogt Type 15.1).
Per-35.7 Opaque red, double or multiple-segment bead (Theune-Vogt Type 11.1).
Per-35.8 Opaque red bead, decorated with a white plaited band.
Per-35.9 Opaque red bead, decorated with a white plaited band and white dots (Theune-Vogt Type 52.2).

Per-35.10 Opaque red bead, decorated with a white plaited band and applied white, layered eyes with green or blue centers.
Per-35.11 Opaque red bead, decorated with a yellow plaited band.
Per-35.12 Opaque red bead, decorated with a yellow plaited band and yellow dots (Theune-Vogt Type 52.1).
Per-35.13 Opaque red bead, decorated with white bands (belongs to Koch Group 42; Theune-Vogt Type 55.2).
Per-35.14 Opaque red bead, decorated with yellow bands (belongs to Koch Group 42).
Per-35.15 Opaque red bead, cylindrical, decorated with a white wavy band.
Per-35.16 Opaque red bead, barrel shaped or truncated biconical, decorated with irregular yellow inclusions.
Per-35.17 Opaque red bead, long truncated biconical, decorated with combed yellow bands.
Per-35.18 Opaque red bead, broad cylindrical, large, decorated with combed yellow bands.
Per-35.19 Opaque red bead, cylindrical, decorated with combed white or yellow bands (Theune-Vogt Type 56.1-2).
Per-35.20 Opaque red bead, decorated with opaque white bands overlaid by a wavy line of a light-colored translucent glass, mostly blue, sometimes green (similar to Theune-Vogt Type 53.1).
Per-35.21 Opaque red bead, long polygonal, six sided, decorated with multicolored bands (Koch Group 45).
Per-35.22 Opaque red bead, decorated with definitely applied, raised yellow dots (Theune-Vogt Type 60.2).
Per-35.23 Opaque red bead, long cylindrical, decorated with opaque white or yellow dots.
Per-35.24 Opaque red bead with interspersed fine black stripes, barrel shaped.
Per-35.25 Opaque red bead containing white and yellow swirls, truncated biconical.
Per-35.26 Opaque red bead containing white and yellow swirls, decorated with straight yellow bands around the ends (Theune-Vogt Type 82.1).
Per-35.27 Opaque red bead containing white and yellow swirls, decorated with straight yellow bands around the ends and middle.
Per-35.28 Opaque red bead containing white and yellow swirls, decorated with straight yellow bands around the ends and a row of yellow dots around the middle.

Green

Per-36.1 Opaque green (or turquoise) bead, short cylindrical, small (Theune-Vogt Type 35.5).
Per-36.2 Opaque green (or turquoise) bead, short cylindrical, large.
Per-36.3 Opaque green (or turquoise) bead, irregularly spherical; wound manufacture.
Per-36.4 Opaque green bead, double or multiple segment, large (Theune-Vogt Type 11.5).
Per-36.5 Opaque green bead, decorated with red bands around the ends (Theune-Vogt Type 71.1).
Per-36.6 Opaque green bead, decorated with opaque yellow dots, long cylindrical.
Per-36.7 Opaque green or blue bead containing banded inclusions of opaque red glass.

Blue

Per-37.1 Opaque blue (or blue-green) bead, truncated biconical (Grünewald Type 25).
Per-37.2 Opaque blue (or blue-green) bead, double or multiple segment.
Per-37.3 Opaque blue bead, oblate disc or short barrel shaped, decorated with a wavy white or yellow band.

Translucent Glass, Sorted According to Color

Per-40.1 Segmented bead enclosing silver-metal foil (Grünewald Type 51; Theune-Vogt Type 30.0; for technique *see* Astrup and Andersen 1987:222-228).
Per-40.2 Segmented bead enclosing gold-metal foil.

Colorless/White

Per-42.1 Translucent white bead, spherical or truncated biconical, small.
Per-42.2 Translucent white or yellow bead, segmented (the individual segments are clearly defined).
Per-42.3 Translucent white bead, long cylindrical, small (Theune-Vogt Type 31.0).

Yellow

Per-43.1 Translucent yellow bead ("honey-colored"), spherical or truncated biconical, small.

Red

Per-45.1 Translucent red bead, oblate disc, small.

Green

Per-46.1 Translucent green bead, truncated biconical, small.
Per-46.2 Translucent green bead, long cylindrical, small.
Per-46.3 Translucent green to yellow-green bead, long cylindrical (Theune-Vogt Type 43.5).
Per-46.4 Translucent green bead, long polygonal, five or six sided.
Per-46.5 Translucent green bead, cylindrical; wound manufacture.
Per-46.6 Translucent green bead, decorated with a combed feather pattern of opaque white glass.

Blue

Per-47.1 Translucent blue bead, short cylindrical or spherical, tiny.
Per-47.2 Translucent blue bead, truncated biconical, small (Theune-Vogt Type 40.2; Guido 1978:92 [Fig. 37, #12-13], 97).
Per-47.3 Translucent blue bead, truncated biconical, large.
Per-47.4 Translucent blue bead, long cylindrical, obliquely wound.
Per-47.5 Translucent blue bead, elongated biconical.
Per-47.6 Translucent blue bead, truncated-cone (somewhat teardrop-shaped) (Theune-Vogt Type 45.6; similar to Grünewald Type 31 [Schneider-Schnekenburger 1980:36]).
Per-47.7 Translucent blue bead, double or multiple segment.
Per-47.8 Translucent blue bead, short cylindrical, ribbed (Grünewald Type 32).
Per-47.9 Translucent blue or, rarely, another dark color such as green or brown, cornerless cube (*Polyederperle*) (Grünewald Type 30; Theune-Vogt Type 44.6; Guido 1978:92 [Fig. 37, #20], 99).
Per-47.10 Translucent blue (or green) bead, cornerless cube (*Polyederperle*), decorated with bichrome eyes consisting of a light-colored dot with a dark blue center (belongs to Koch Group 9).

Beads of Other Raw Materials

Per-5.1 Rock-crystal bead.
Per-5.2 Amethyst bead (Theune-Vogt Type 90.2).
Per-5.3 Agate bead.
Per-5.4 Meerschaum bead, short cylindrical, large (Theune-Vogt Type 90.5).
Per-5.5 Shell disc (Theune-Vogt Type 90.6; Siegmund and Weiss 1989b).

APPENDIX B: MEROVINGIAN BEAD TYPES IN CHRONOLOGICAL ORDER

I. "Eigenvalue 1" less than 2.0, with increasing value sorted according to "Eigenvalue 2":

Type	Description	EV 1	EV 2	EV 3	Cluster Dominated
5.5	Shell disc	-.477	-.911	.856	I
46.5	Tsl. green, cylindrical, wound manufacture	-.472	-.898	.866	I
32.11	Op. white, square sectioned, green stripes	-.472	-.894	.825	I
47.3	Tsl. blue, truncated biconical	-.456	-.834	.777	I
37.1	Op. blue (or blue-green), trunc. biconical	-.458	-.827	.749	I
2.15	Crumb bead	-.459	-.820	.739	I
2.2	Short cyl., wavy band + bands at ends	-.450	-.803	.722	I
33.5	Op. yellow, truncated biconical	-.447	-.777	.686	I
32.9	Op. white, red band	-.443	-.777	.666	I
36.3	Op. green, irreg. spherical, wound mfr.	-.449	-.768	.661	I
2.3	Short cyl., combed bands + bands at ends	-.451	-.759	.639	I
31.2	Op. black, double or multiple segment	-.440	-.734	.613	H
1.8	Flat, almond-shaped	-.436	-.723	.607	H
35.20	Op. red, white bands/blue wavy line	-.427	-.701	.573	H
47.8	Tsl. blue, short cylindrical, ribbed	-.436	-.695	.549	H
34.1	Op. orange, truncated biconical	-.426	-.681	.567	H
35.6	Op. red, truncated biconical	-.419	-.678	.558	H
32.3	Op. white, truncated biconical	-.426	-.676	.532	H
2.9	Op., cyl./barrel shaped, monochrome dots	-.425	-.671	.537	H
36.7	Op. green or blue with red inclusions	-.421	-.662	.553	H
2.5	Op., long square sect., monochrome dots	-.424	-.655	.546	H
35.7	Op. red, double or multiple segment	-.420	-.648	.482	H
32.2	Op. white, double or multiple segment	-.418	-.637	.492	H
1.6	Op., cube shaped	-.405	-.635	.504	H
2.7	Op., barrel shaped, many red dots, large	-.415	-.615	.448	H
5.3	Agate	-.414	-.608	.465	H
2.1	Short cyl., tsl. yellow/green, wavy band	-.400	-.600	.498	H
36.5	Op. green, red bands around ends	-.399	-.579	.428	H
46.3	Tsl. green-yellow green, long cylindrical	-.400	-.571	.426	H
35.5	Op. red, irregular, wound	-.405	-.546	.365	G
32.1	Op. white, spherical, wound, small	-.407	-.545	.355	G
35.10	Op. red, white plaited band, bichrome eyes	-.382	-.528	.335	G
47.4	Tsl. blue, long cylindrical, wound	-.388	-.525	.315	G
36.4	Op. green, double or multiple segment	-.394	-.518	.319	G
36.2	Op. green, short cylindrical, large	-.389	-.501	.335	G
2.10	Short cyl./barrel-shaped, bichrome eyes	-.381	-.491	.297	G
37.2	Op. blue/blue-green, double or mult. seg.	-.372	-.466	.268	G
32.6	Op. white, green plaited band	-.376	-.460	.236	G
35.15	Op. red, cylindrical, white wavy band	-.364	-.414	.193	G
33.6	Op. yellow, double or multiple segment	-.356	-.408	.215	G
47.7	Tsl. blue, double or multiple segment	-.364	-.391	.151	G
2.4	Cylindrical, bands at ends + mono. dots	-.357	-.387	.161	G

35.23	Op. red, long cyl., white or yellow dots	-.361	-.381	.172	G
36.6	Op. green, long cylindrical, yellow dots	-.372	-.377	.089	G
35.16	Op. red, bbl./biconical, yellow inclusions	-.346	-.333	.085	F
- -	Proportion of decorated beads 50%	-.357	-.297	-.005	F
32.7	Op. white, blue plaited band	-.332	-.296	.083	F
35.19	Op. red, cylindrical, combed bands	-.328	-.252	.019	F
32.10	Op. white, short cylindrical, green bands	-.333	-.239	-.050	F
47.5	Tsl. blue, elongated biconical	-.335	-.221	-.070	F
35.12	Op. red, yellow plaited band + dots	-.318	-.213	-.075	F
35.11	Op. red, yellow plaited band	-.309	-.200	-.016	F
35.8	Op. red, white plaited band	-.316	-.182	-.016	F
33.10	Op. yellow, red bands or stripes	-.312	-.178	-.091	F
32.8	Op. white, red plaited band, blue dots	-.313	-.163	-.126	F
35.27	Op. red with swirls, yellow bands	-.165	-.093	-.017	E
35.13	Op. red, white bands	-.277	-.069	-.171	E
- -	Proportion of op. yellow beads 45%	-.278	-.052	-.251	E
32.4	Op. white or yellow, long cyl., dots	-.285	-.049	-.229	E
35.24	Op. red, fine black stripes, barrel shaped	-.301	-.036	-.264	E
1.7	Pendant bead	-.268	-.031	-.162	E
33.7	Op. yellow, red plaited band	-.273	-.030	-.238	E
33.3	Op. yellow, spherical, small	-.234	-.023	-.191	E
2.6	Op., truncated biconical, mono. dots	-.297	-.019	-.326	E
33.8	Op. yellow, red plaited band + mono. dots	-.266	.015	-.303	E
35.9	Op. red, white plaited band + dots	-.229	.030	-.287	E
33.4	Op. yellow, asymmetric biconical	-.078	.052	-.386	E
32.5	Op. white, red plaited band	-.239	.095	-.245	E
35.25	Op. red with swirls, truncated biconical	-.084	.144	-.232	D
35.26	Op. red with swirls, yellow bands at ends	-.106	.169	-.285	D
33.1	Op. yellow, short cylindrical, small	-.139	.278	-.438	D
35.14	Op. red, yellow bands	-.189	.303	-.606	D
1.3	Op., polygonal, five or six sided, large	-.194	.304	-.009	D
33.2	Op. yellow, irregular, small, wound	-.083	.359	-.575	D
35.4	Op. red, irregularly spherical, small	-.126	.368	-.459	D
35.3	Op. red, oblate disc, small	-.063	.373	-.602	D
33.9	Op. yellow, green or blue plaited band	-.118	.559	-.585	D
36.1	Op. green, short cylindrical, small	-.022	.687	-.937	C
34.2	Op. ocher, oblate disc or spherical, small	.129	.700	-.689	C
2.11	Reticular bead	.179	.734	-.834	C
35.18	Op. red, broad cyl., combed yellow bands	-.032	.795	-.945	C
35.22	Op. red, applied, raised yellow dots	.217	.802	-.699	C
35.2	Op. red, short cylindrical, small	-.005	.813	-.652	C
35.1	Op. red, long cylindrical	.097	.902	-.311	C
- -	Proportion of amber 20%	.266	.944	-.734	C
40.1-2	Segmented bead enclosing metal foil	.266	.945	-1.006	C
31.1	Op. black, small	.186	1.070	-1.038	C
1.2	Long cylindrical, tsl. or op. blue	.232	1.095	-.976	C
2.8	Oblate disc, op., monochrome dots	.161	1.118	-1.109	C
2.14	Millefiori bead, long polygonal, six sided	.063	1.121	-1.293	C

42.3	Tsl. white, long cylindrical, small	.424	1.142	-1.133	C
46.6	Tsl. green, white feather pattern	.318	1.198	-1.243	C
2.12	Millefiori bead, short cylindrical, large	.079	1.208	-1.325	C
5.4	Meerschaum bead, short cylindrical, large	.152	1.274	-.836	C
35.28	Op. red with swirls, yellow bands and dots	.148	1.306	-1.336	C
- -	Proportion of black beads 15%	.221	1.479	-.479	B
35.17	Op. red, trunc. bicon., combed yellow bands	.179	1.574	-1.369	B
31.3	Op. black, plaited white band + bichr. eyes	1.228	1.731	1.040	B
5.1	Rock-crystal bead	.217	1.993	-1.617	B
31.4	Op. black, elong. biconical, antithetic arcs	.570	2.374	.810	B
37.3	Op. blue, oblate disc, wavy white or yellow band	.292	2.571	-1.788	B
31.7	Op. black, oblate disc or bbl., wavy band	.278	3.278	2.086	B
- -	Proportion of decorated black beads 10%	.504	4.427	4.122	B
31.6	Op. black, short bbl., wavy and straight bands	.271	5.255	5.584	B
31.5	Op. black, yellow plaited band and dots	.419	7.917	10.378	B

II. "Eigenvalue 1" greater than 2.0, with increasing value sorted according to "Eigenvalue 1":

Type	Description	EV 1	EV 2	EV 3	Cluster Dominated
47.9	Tsl. blue or green, cornerless cube	2.532	.015	-.633	A
47.1	Tsl. blue, short cyl. or spherical, tiny	3.118	-.420	.202	A
42.2	Tsl. white or yellow, segmented	3.383	-.588	.145	A
46.4	Tsl. green, long polygonal, five-six sided	3.792	-.622	-.272	A
46.2	Tsl. green, long cylindrical, small	3.889	-.641	.349	A
47.2	Tsl. blue, truncated biconical, small	4.109	-.832	.478	A
43.1	Tsl. yellow, spherical or trunc. biconical	4.211	-.890	.168	A
1.1	Tsl. heart-shaped bead	4.256	-1.014	.345	A
42.1	Tsl. white, spherical or trunc. bicon., small	4.494	-1.280	.909	A
1.5	Tsl./op., square sectioned, small	4.546	-1.218	.520	A
46.1	Tsl. green, truncated biconical, small	4.992	-1.746	1.360	A
45.1	Tsl. red, oblate disc, small	5.001	-1.704	1.294	A

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Plate IA. *Asian Beadwork:* Dance apron, Cenderawasih Bay region, Irian Jaya, ca. 1915. European glass beads, cotton; 55 cm h. x 42 cm w. Thomas Murray collection (photo: Don Tuttle).

Plate IB. *Asian Beadwork:* Belt, Konyak Naga peoples, Nagaland, ca. 1925 or before. European and Asian glass beads, bone; 14 cm h. x 99 cm w. Private collection (photo: Chris Cassidy).

Plate IIA. *Asian Beadwork:* Woman's blouse, Chin peoples, N.W. Myanmar, ca. 1925. Cotton, silk, European glass beads, cowrie shells; 46 cm h. x 45 cm w. Private collection (photo: Don Tuttle).

Plate IIB. *Asian Beadwork:* Mat, Lampung region, S. Sumatra, ca. 1850 or before. European and Asian glass beads, metal sequins, mica, rattan plaitwork, cotton; 19 cm h. x 23 cm w. Thomas Murray collection (photo: Dennis Anderson).

Plate IIIA. *Asian Beadwork:* Dance apron, Sa'dan Toraja peoples, S.C. Sulawesi, ca. 1915. European and Asian glass beads, cotton; 41 cm h. x 57 cm w. Thomas Murray collection (photo: Dennis Anderson).

Plate IIIB. *Asian Beadwork:* Vest (back view, top to left), probably Iban or Maloh Dayak, W. Kalimantan (Borneo), late 19th century or before. European and Asian glass beads, cotton; 116 cm h. x 20 cm w. (entire). Private collection (photo: Chris Cassidy).

Plate IVA. *Asian Beadwork:* Panel (top to left), China (?), late 19th century. European glass beads, silk; 29 cm h. x 38 cm w. Courtesy, The Field Museum, neg. #A112962c, Chicago (photo: Diane Alexander White).

Plate IVB. *Asian Beadwork:* Wedding bed panel (detail), Straits Chinese peoples, Penang, Malaysia, ca. 1900. European glass beads, cotton; 25 cm h. x 1903 cm w. (entire). Private collection (photo: Eileen Ryan).

Plate V. *Merovingian beads:* The recorded Lower Rhine bead types; beads are two-thirds life size (drawings by Irene Steuer).

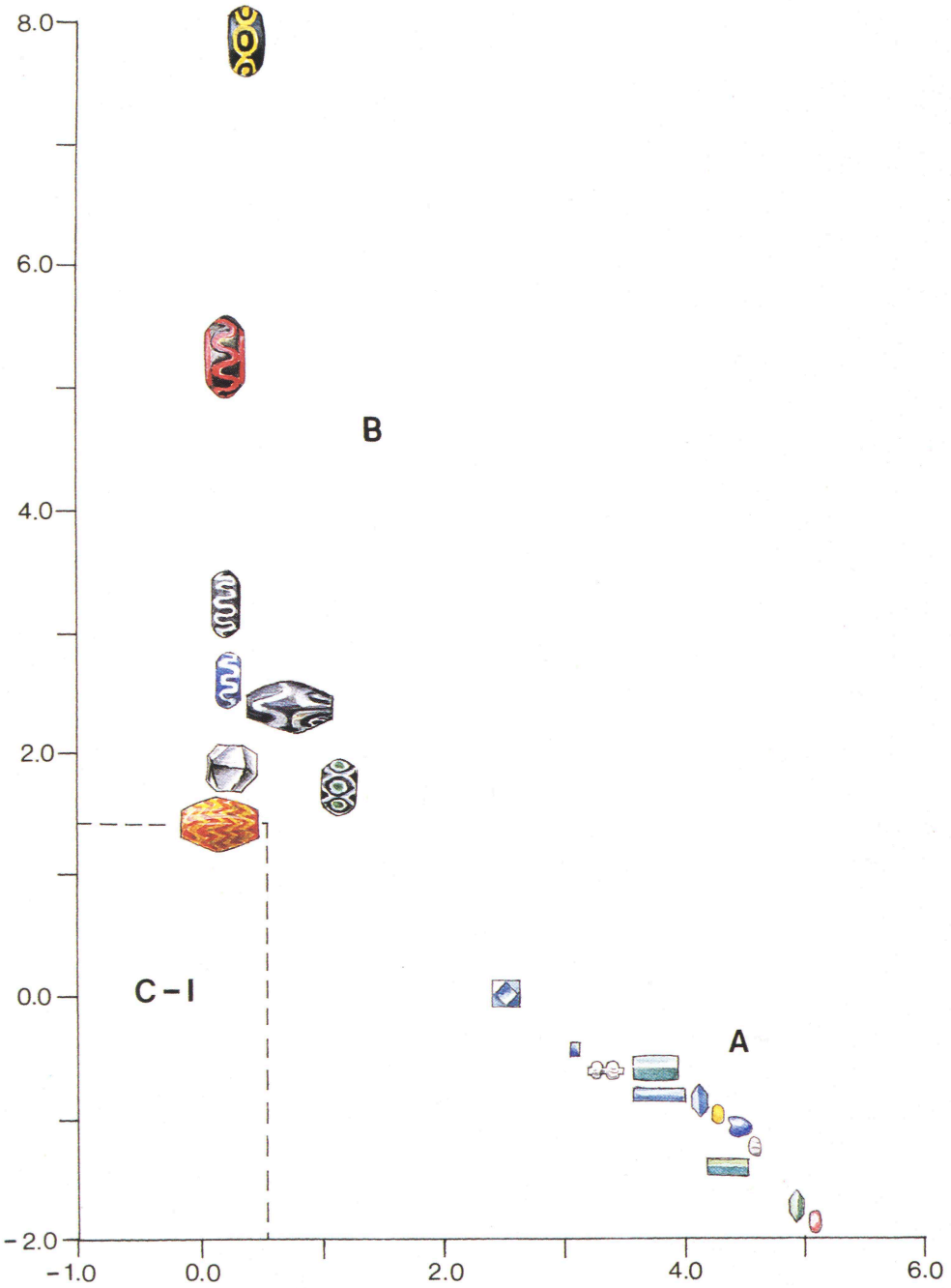

Plate VIA. *Merovingian Beads:* Selected Lower Rhine bead types arranged according to the results of correspondence analysis, clusters A-B (beads are half size).

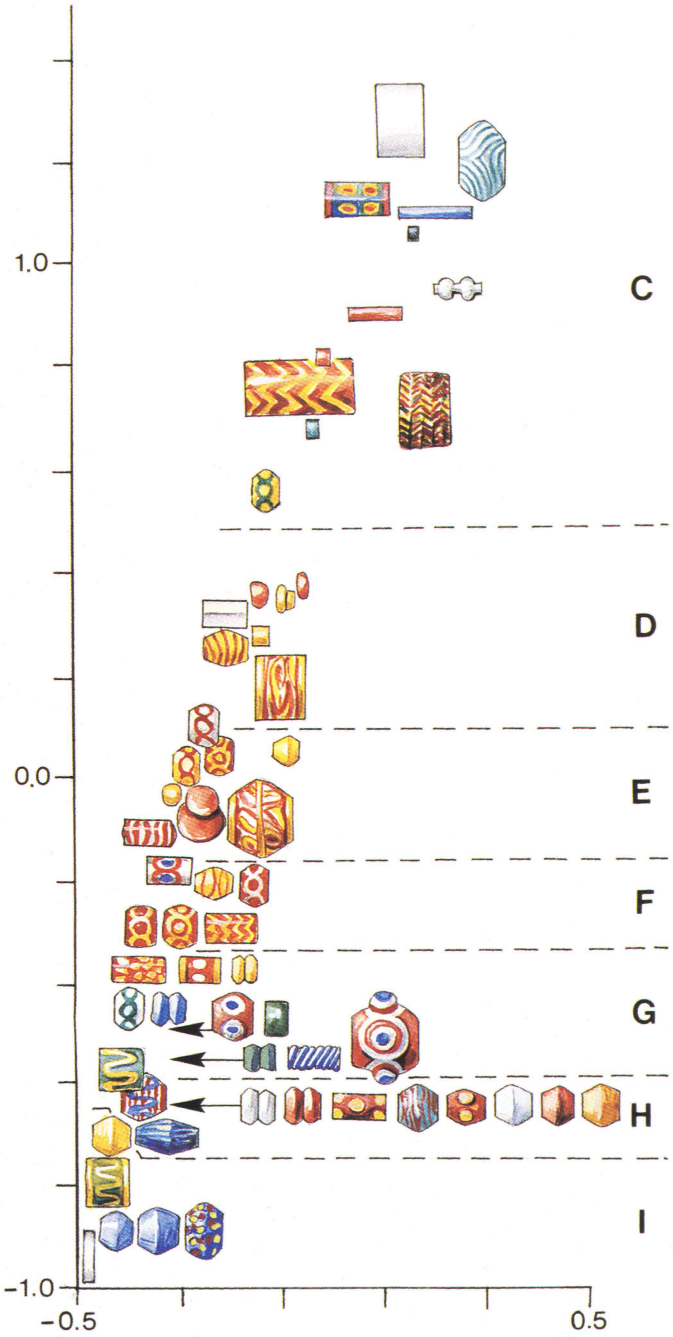

Plate VIB. *Merovingian Beads:* Selected Lower Rhine bead types arranged according to correspondence analysis, clusters C-I (beads are half size).

Plate VIIA. *Orang Ulu Beadwork:* "New" (top) and "old" (bottom) beadworked panels from Mahakam Kayan baby carriers decorated with human figures and a tiger head; upper Mahakam River, Sarawak (Nieuwenhuis 1907,II:P1. 70).

Plate VIIB. *Orang Ulu Beadwork:* Necklaces of Venetian lamp beads and plain yellow "doughnut" beads decorated with frontal "bobbles" composed of many loops of small beads, 1975 (photos by H. Munan).

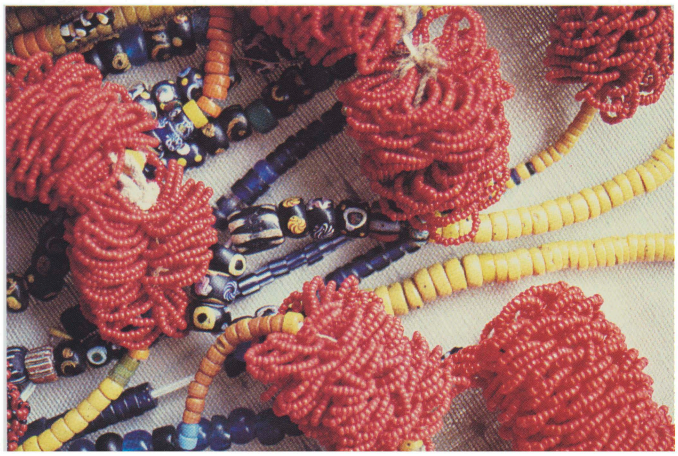

Plate VIIC. *Orang Ulu Beadwork:* Seat mats of beaten bark or woven rattan were worn by men at the back of the loincloth as protection from thorns and damp; beaded ones were "dress wear." The other item is a cylindrical container; 1988.

Plate VIIIA. *Hungary:* Necklace composed mostly of Type 1*-4* and 37 beads; also one each of Types 5, 11, 21, 26 and 30; Grave 841, Phase I, Halimba-Cseres (photo: Krisztina Pálfay).

Plate VIIIB. *Hungary:* Probable garment decoration from Grave 859, Phase I, Halimba-Cseres. Primarily Type 37; the unique Type 29 millefiori bead is in the center (photo: Tibor Kádas).

Plate VIIIC. *Hungary:* Halimba-Cseres strands. **Top:** Type 1*-2*, 4* and 27 beads; Grave 778, Phase I (T. Kádas). **Bottom:** Type 2*-4*, 5, 7 and 37 beads; Grave 425, Phase II (K. Pálfay).

Plate VIIID. *Hungary:* Necklace of various glass and stone beads, as well as bronze pendants, a bronze lunule and cowrie shells; Grave 438, Phase II, Halimba-Cseres (photo: Tibor Kádas).

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SOCIAL STATUS GRADATIONS EXPRESSED IN THE BEADWORK PATTERNS OF SARAWAK'S ORANG ULU

Heidi Munan

The peoples of Central Borneo, known collectively as the Orang Ulu, used to display social stratification by restricting the types of ornaments an individual might use and wear. "High-ranking" motifs were the human figure, the hornbill, and the tiger or leopard. The Orang Ulu are bead connoisseurs who incorporated beadwork in their costume and belongings; a person could only make use of beaded items proper to his or her social stratum. Religious and social changes have democratized these once strictly aristocratic societies and their handicrafts. Today's beadworker produces not only for her own family but for the souvenir market, so she feels free to apply any designs which please the buyer.

"Lawai, the crocodile, wears a tough garment,
a garment made entirely of beads."[1]

THE ORANG ULU

All Borneo natives were formerly known as "Dayak" and, by this definition, the "Orang Ulu" are a Dayak group. The literal meaning of the name is "upriver people." This useful (if not very accurate) collective term describes the peoples settled above the rapids which demarcate the great rivers' fall from the high plateau of Borneo to the coastal lowlands; Orang Ulu are found in the upper reaches of the Baram and Rejang rivers in Sarawak, as well as the Kayan, Mahakam, Barito and Kapuas rivers in Indonesian Borneo. The main groups of Orang Ulu are the fairly homogenous Kayan, the more diversified Kenyah and a large group of loosely related peoples, as well as the Kelabit and Lun Bawang in the areas bordering on Sabah and Brunei. Their cultures and languages differ, but they have a few things in common: the Orang Ulu originally lived in longhouses. Many still do, though today's model may be a modern sawn-timber structure with glass windows and indoor sanitation. Orang Ulu women used to tattoo their arms and legs, and wear ornamental brass weights in their elongated earlobes. Orang Ulu societies were more or less strongly stratified, and many Orang Ulu were (and are) gifted artists. The Dutch traveler Dr. Nieuwenhuis (1907:235) wrote:

> The Dayak's artistic instincts are much more developed than they are among more advanced peoples. The majority of men and women are capable of ornamenting articles in common use, with none but the simplest tools at their command and no instruction other than watching their elders....

The "Borneo artefacts" — known and eagerly desired by the world's collectors—are nearly all (with the notable exception of *ikat* weaving) made by various Orang Ulu craft-workers or, increasingly, by others who imitate their style.

Orang Ulu societies were stratified into a top level of aristocrats, a fairly well-to-do middle class, an economically and socially demarcated lower class and the slave class. The advent of education, Christianity and an upsurge of indigenous religious revival (based on a *commoner's* dream revelations) have changed many of the once-rigid distinctions (White 1956:472), and drastically simplified the complicated system of rituals and taboos that used to shore up the position of the upper class.

The aristocracy had close ties with the spirits; a high-class individual had a tutelary deity which protected him of her and, by extension, the tribe. Disobeying a leader was equivalent to disobeying the spirits; no wonder a chieftain could order the common folk around! Such arrogance is a thing of the past,

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though people may still mutter, "He's got a ghost!" (Henry Luhat 1980s: pers. comm.), when fulfilling—as a courtesy—requests that would have been unceremonious orders 100 years ago.

School has served as a great leveller in this respect. Even the poorest man's child can go to the top of the class. Schoolchildren wear the same uniform. Ambitious young folk move "downriver" if they feel so disposed; gone are the days when the lowest class could neither marry nor leave the longhouse without the chief's permission. A young man of however low birth may join the police or army. Within this framework—in itself quite as stratified as traditional Orang Ulu society—he has scope to rise to a high, universally recognized rank by his own efforts.

ORANG ULU DESIGNS

The following is a summary of what *was once* vitally important to preserve balance and harmony within isolated communities and allowed little leeway to rebellious souls. The observations apply to artistic expression in beadwork, painting on bark, wood and imported textiles—anywhere that a lively and inventive mind might choose to put decoration.

In most Orang Ulu societies, the full-figure human motif was reserved for the aristocracy. The figure might be depicted upright or squatting, displaying genitalia or arrayed in breeches, but it was only to be found on the belongings of the upper class. The beautiful murals that embellish the inside walls of Kenyah and Kayan longhouses diminish in richness from the center of the house outwards, exactly reflecting the gradation of the social order: the aristocrats live in the center of the longhouse; the lowest classes at either end.

Aristocrats built their roof higher, and they had the vital "tree of life" painted on the front walls of their apartments. This tree shows that the "higher" animals (hornbills, humans and leopards) belong to the topmost branches and the main stem; in epics, the hero is often addressed as or compared to the tiger, leopard or hornbill. The respectable middle classes made use of modified half-figures, masks and less ostentatious animals, like the dog/dragon in its many adaptations.

The human figure on Orang Ulu beadwork may be standing or squatting, arms and legs forming part of a zigzag pattern to which others are linked; the technique of threaded beadwork makes straight lines, 90° intersections and 45° angles more practical than close curves. The human motif's eyes are always open, the mouth occasionally shows teeth. The ear lobes are long, often incorporated into the pattern formed by other decorative elements; arms may stretch through them. If only a face is used, stylization compresses some features and expands others to fit the available space.

The human figure used in art may show clearly displayed, exaggerated genitalia. Nudity, except in small children, is not acceptable in Sarawak societies; adults may look "half-naked" to the casual observer but they are most particular about preserving the decencies. Images of human private parts were considered potent protective magic; the spirits, themselves sexless, are puzzled and repelled by such incomprehensible appendages. This type of ornamentation was used on garments partly to frighten evil spirits and, thus, to protect the owner and wearer. A frieze of squatting displayed females on a beaded jacket reinforced not only its wearer's status (they were his or her "slaves"), but had an additional protective function. Nieuwenhuis (1907,II:252-256) described the decorations on top of Kayan sword blades as symbolic female genital *labiae*. He also considered the carved decorations on doorsteps as representations of the external generative organs of both sexes. Their presence at the only entrance to a family room blocked entry to evil spirits.

Traditionally, an Orang Ulu refrained from using symbols inappropriate to his or her social stratum. The tiger was a favorite high-class design, symbolic of power, though Borneo people only know the king of the Malayan jungle from hearsay—there are no tigers on their island. Nieuwenhuis (1907,I:63) had promised to bring one of his Orang Ulu friends, a high-ranking chieftain, a tiger head from Sumatra. No Dayak boatman or bearer would touch the crate containing this tabooed item; it had to be abandoned! A tiger tooth he carried had to be kept secret until it could be handed over to the recipient, a chief "strong-souled" enough to own such a potent charm (Nieuwenhuis 1907,II:388). The use—even the

Figure 1. Two Kenyah mothers watching an older lady doing beadwork, ca. 1950. The ornately beaded baby carrier on the right is hung with at least a dozen teeth and decorated with shell discs down the sides. For everyday use, these women wear ordinary plaited headbands, though the baby in the carrier has a beaded leglet with a brass bell (photo by permission of the late Hedda Morrison).

touch—of a tiger tooth was inappropriate and dangerous for a commoner, though leopard, bear and (rarely) rhinoceros teeth were worn according to a person's rank and "strength of soul."

Inappropriate use of ornaments and symbols brings disaster: illness, bad harvests and unseasonable weather (and resulting famine). The whole community will suffer (Whittier 1978:108); the

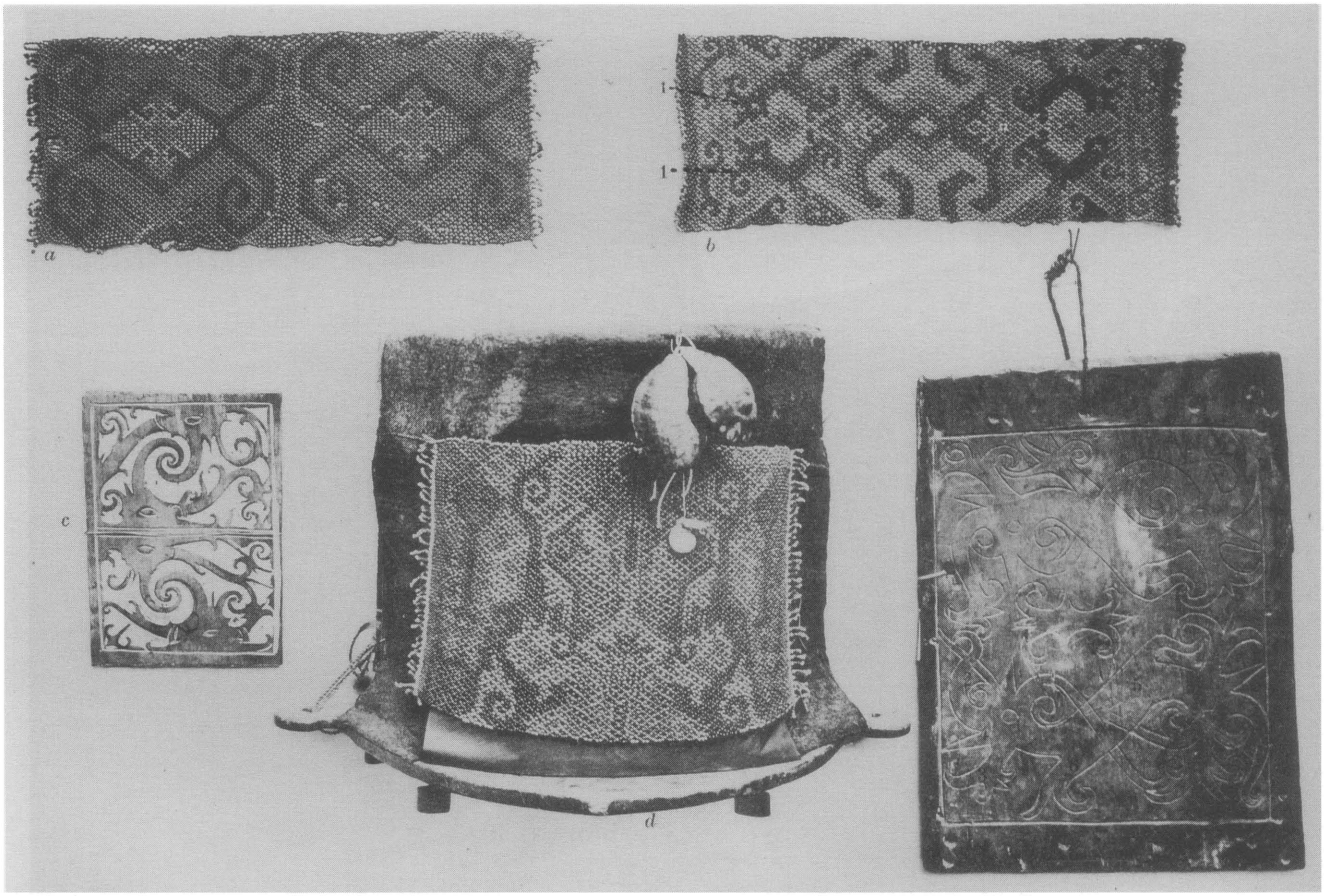

Figure 2. Orang Ulu beadworked panels from baby carriers (top), a baby carrier (center) and wooden beadwork matrices (bottom left and right); Bahau, Apo Kayan (Nieuwenhuis 1907,II:Pl. 69).

rugged individualist who wants to do things *his* way could not have lived in a traditional Orang Ulu society. He would have been regarded as a public menace, and speedily reduced to order!

An Orang Ulu baby carrier embellished with a curly haired, curly handed and curly toed human figure sheltered a tiny sprig of the aristocracy (Fig. 1; Pl. VIIA). Larger beads, hawk bells and animal teeth were attached to the upper rim of the carrier, partly to soothe the baby with their tinkling, and partly to document his or her status—the use of leopard teeth was restricted, too.

A middle-class baby peeped out at the world from a basket decorated with a human face, stylized animals and beautifully involuted scroll designs (Figs. 2-4). The family might have been wealthy enough to cover the whole object edge-to-edge in beadwork, but they still would not have been able to use "reserved" designs. Down the social scale came the baby carrier of fine basketry with just a panel of bead embroidery along the center, or simply a softly lined basket of split rattan or bark.

Ornaments, particularly ornamented personal belongings, were associated with their owner and user. They declared and protected a person's rank. At the same time, some of his or her vitality was lodged in them. This applied to children particularly: neither children's clothing, nor the ornamented back-baskets they were carried around in, could be carelessly disposed of. Part of the child's still-tender soul might adhere to the discarded article, resulting in sickness or death. After a child no longer needed to be carried, the basket was carefully stored away for the next baby in the family. When the basket was worn out, the beadwork panel and other decorations were detached and kept for future use, possibly to be passed on to a close relative. Nieuwenhuis (1907,II:102) found that he could not buy baby carriers, "except a couple which

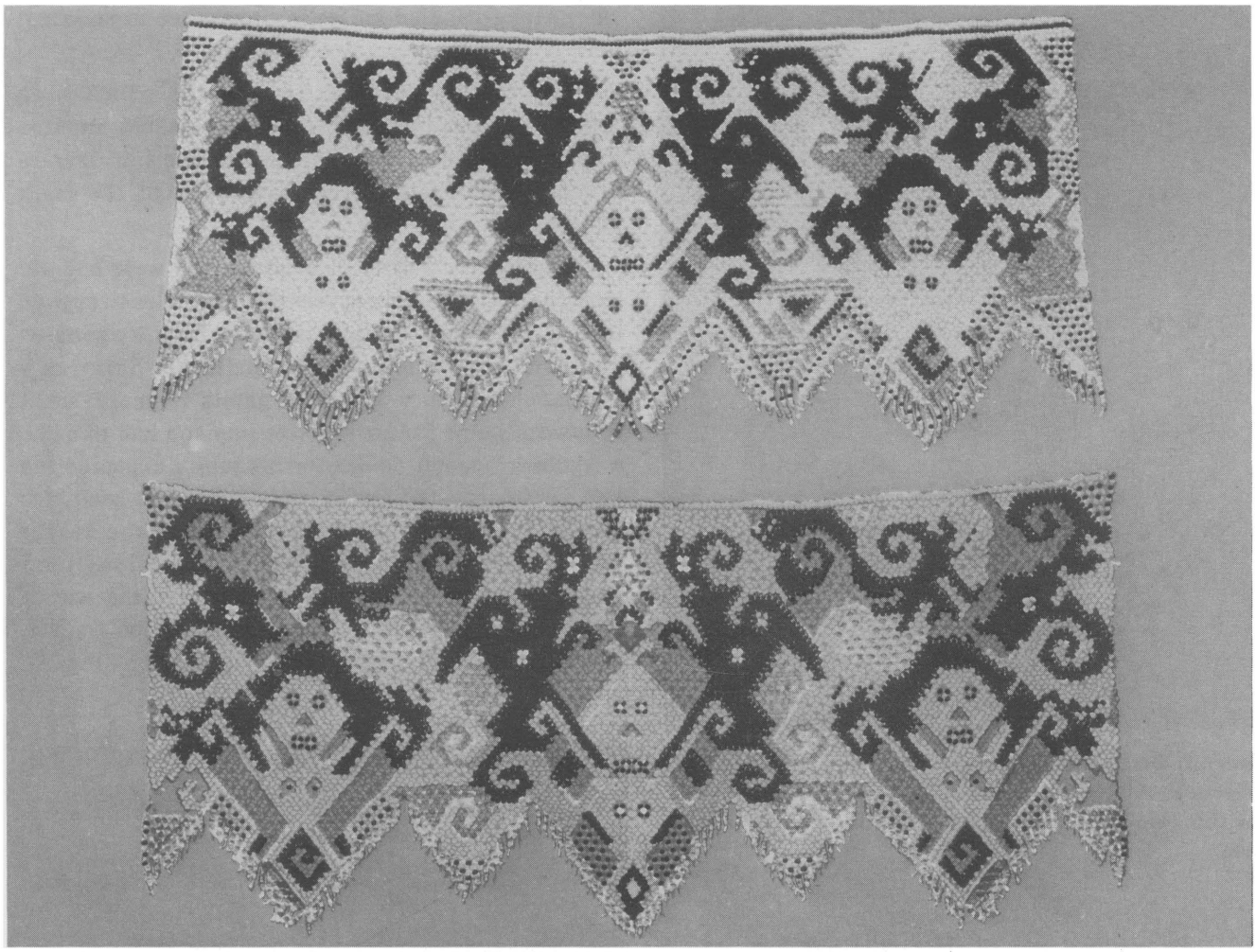

Figure 3. Beadworked panels from Kayan baby carriers featuring human figures and dragon heads; upper Mahakam River, Sarawak. The upper "old" one may have served as a pattern for the "new" lower one (Nieuwenhuis 1907,II:Pl. 71).

had been the property of persons long dead", and that some tribes would not sell any bead-ornamented baskets, "or only at very high prices." The bulk of the very pretty beaded baby carriers now available in the bazaars of Sarawak are brand new, made for the tourist market. No infant nestled in them, and the "leopard teeth" dangling from the rim are carved from deer horn!

Class followed a man from the cradle to the tomb. Literally and visibly so: to build a repository or an ossuary (burial customs varied) befitting the deceased's status, a bereaved aristocratic family could spare no expense. Apart from the huge feasts they were obliged to give as part of mourning ritual (for the provisioning of which they could tax the lower orders), they had to call in the best artists in the region to build the tomb. Feasting and paying them royally ensured that the monument would be a work of art, guarded on the rooftop by leopard or dragon figures and at all four corner posts by the characteristic Borneo interior "dog" with wide open jaws, the teeth and ears curling into and around each other.

Stint at such a time would be unthinkable. Beside a vague feeling that an insulted ghost might make trouble, public opinion in the form of censorious neighbors was always alert, appeased only by outstanding effort. Even a low-ranking craftsman could be engaged on an aristocrat's monument if he was really good; the bereaved family had to present him with special gifts of iron to strengthen his soul, and beads to preserve his eyes from so much class!

Figure 4. Orang Ulu baby carrier in the Sarawak Museum's collection, 1960s. The pocket mirrors are a popular innovation that take the place of shell discs (photo: Sarawak Museum).

GENDER-RESTRICTED BEADWORK

There is a curious distinction between the Orang Ulu and the Iban, a "downriver" people who are equally at home in river craft and at sea. Iban weavers learn from their mothers, and acquire the final touch of mastery from dreams which authorize the execution of a new design; i.e., from within themselves. Not only are men not encouraged to help, they are kept away from the whole "women's business" quite firmly. Among conservative Ibans, even the symbolic significance of sleeping-mat patterns can only be discussed in all-female company. A man is expected to make weaving implements for his wife, and then go off hunting or fishing while she wields them.

Orang Ulu ladies, on the other hand, rely on men to provide them with design patterns for beadwork, tattoo and other art motifs. Such patterns used to be carved wooden matrices (Fig. 2). However, since the general availability of paper, stencils cut with a very sharp, long-handled knife (in preference to scissors) have become the norm for beadwork.

The craftswoman carries out the painstaking process of threading the beads. Her creative input is limited to the choice of color, and the addition of extra ornamentation within the framework of the main pattern.

While the majority of beadworkers were and are women, it is becoming acceptable for males to engage in this craft, just as in a modern, "non-longhouse" context, women may design patterns. Sarawak's teachers sometimes get their pupils to make small beadwork items for art projects (my son had to make a beadwork pencil holder for his junior exams in the late 1970s, and the family walked on tiny beads for weeks!). Occupational therapists at the larger hospitals teach reed- and beadwork to long-term patients, especially those who have lost the use of their legs. A number of invalids, male and female, produce craftwork for their financial support (Fig. 5).

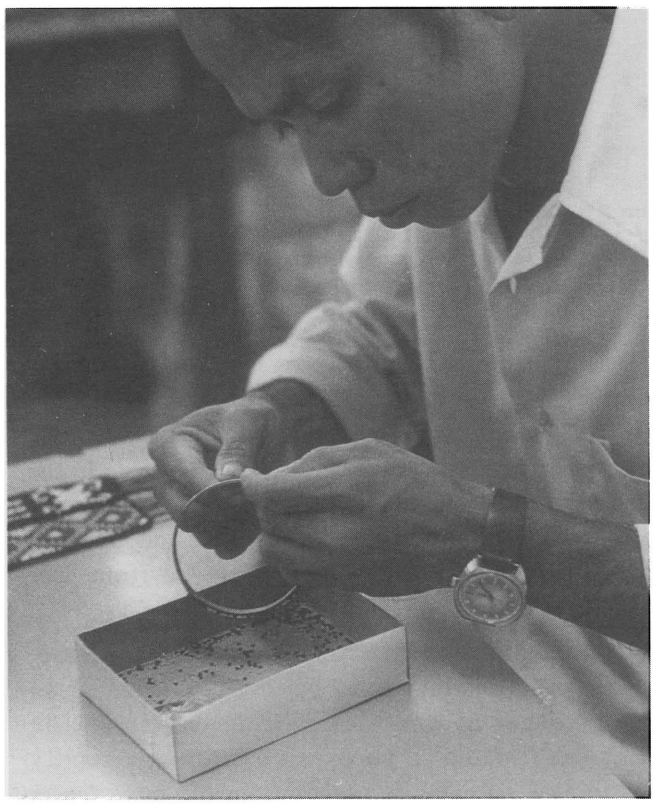

Figure 5. While recovering from an accident, this man is quite happy to earn some money by doing beadwork, a formerly feminine occupation; 1974 (photo: M. Oettli).

BEADWORKING METHODS

Beads are worked on a rectangular board on which the pattern is incised (Figs. 2, 6) or, more recently, over which a paper containing the pattern is pinned. A string of beads destined to be the upper edge is stretched across the top of the pattern board. The warp threads are attached to this string with half-hitch knots, between regular numbers of beads. The fabric is then worked downwards by threading beads on the vertical threads, and crossing them at intervals by feeding two strands through one bead. The pattern is produced by color selection.

Not all beadwork is rectangular. Round pieces—the very elaborate hat-tops (Figs. 7-8), for instance—are started with a central ring. Extra threads are hitched on as the circle grows. Beadwork is shaped by increasing and decreasing the width, on the same principle as macramé.

Some types of beadwork are shaped like a tube: covers for long round-sectioned objects like bamboo *sireh* boxes, walking sticks and sword sheaths. These are worked cylindrically around a solid center which is eventually removed. Some old bead necklaces consist of a piece of stout rope covered in beadwork, the ends linked at the front with a larger bead as button.

A necklace commonly sold as a souvenir of Sarawak is a beadworked tube necklace with a beaded "bobble" at the front. This is modelled on an older style: a necklace of antique value beads decorated with a bead bobble (Pl. VIIB). The bobble is the centerpiece of a necklace and traditionally consisted of 30-60 small loops of very tiny, red and black seed beads. The loops, each formed of a strand about

Figure 6. Kayan beadworkers on the upper Mahakam River, ca. 1900. The woman on the left is decorating the tail of a loincloth; the one on the right works beads after a prepared pattern (Nieuwenhuis 1907,II:Pl. 41).

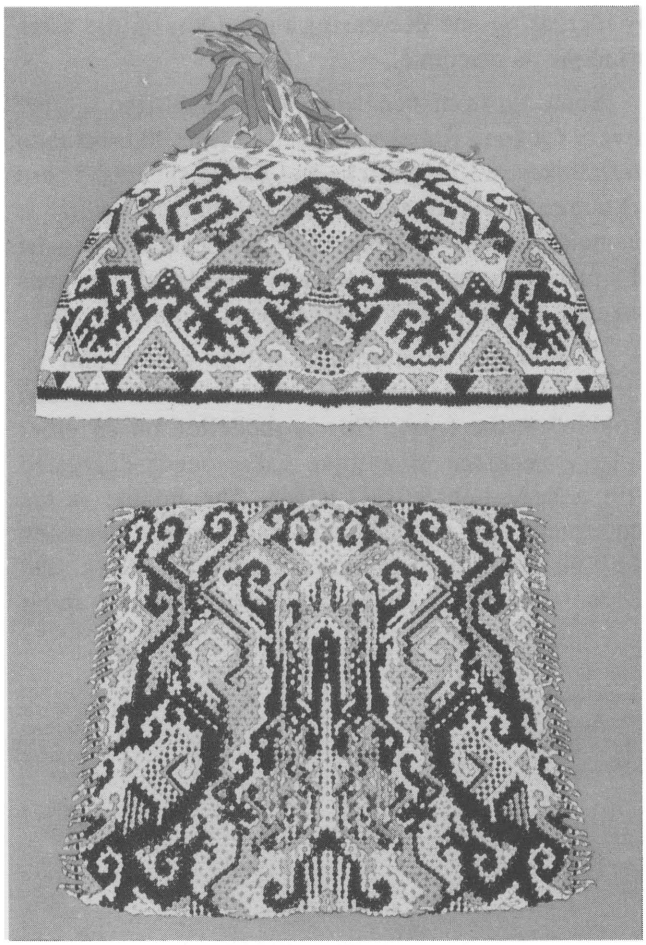

Figure 7. A Kayan man's beaded cap (above), and a woman's beaded headgear panel (below) (Nieuwenhuis 1907,II:Pl. 75).

7.5 cm long, were made uniform by looping them around a piece of wood which served as a gauge.

SEED BEADS

Beadwork as a craft is done with seed beads from the size of a mustard seed to a peppercorn which are available in increasingly greater and brighter colors. Archaeological excavations indicate that beads have been imported into Borneo since ancient times; the "Indo-Pacific beads" described by Francis (1989) are commonly found here. These fall within the modern definition of seed beads: small monochrome rings of opaque or translucent glass. Within the last two centuries, seed beads sold in the trading radius of Singapore originated mostly from Italy, Bohemia and

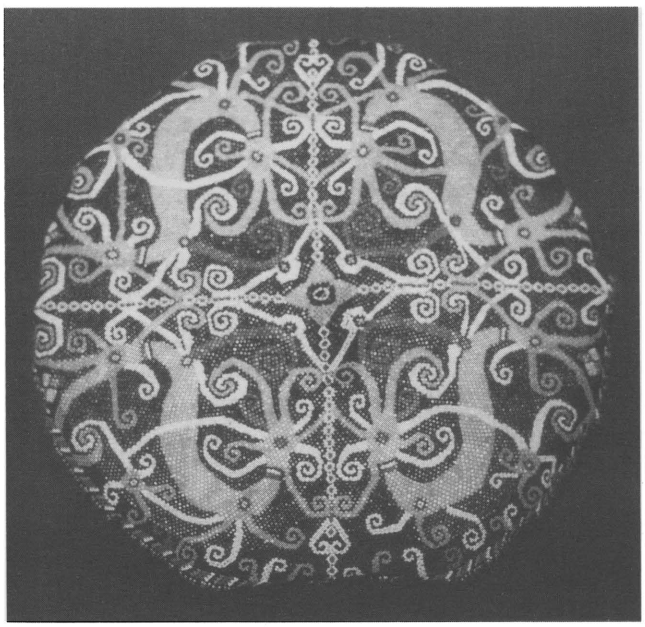

Figure 8. A "middle class" Orang Ulu sun-hat center decorated with dragons and scrolls, 1960s (photo: Sarawak Museum).

England; Japan and Korea have joined the ranks of seed-bead exporters since World War II.

The most common colors on old beadworked artifacts are red/russet, white, yellow and black—the

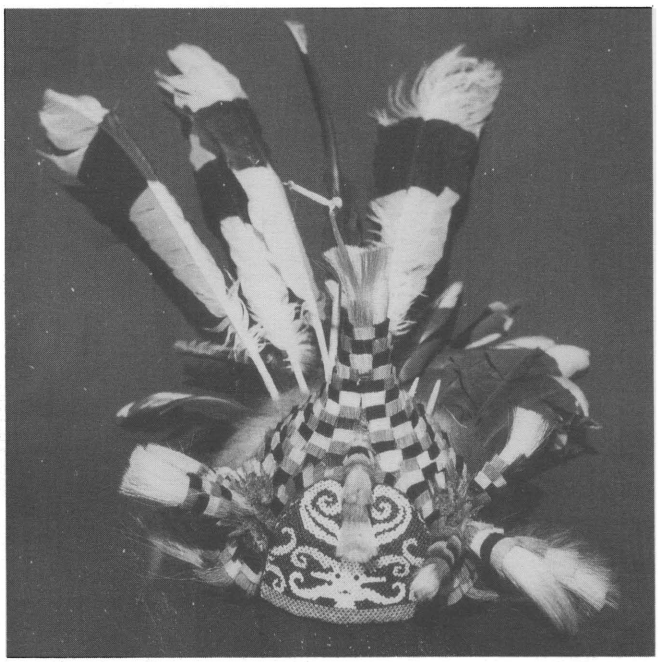

Figure 9. Kayan war cap with frontal beaded blaze, 1960s (photo: Sarawak Museum).

Figure 10. New Orang Ulu beaded sun hat made for sale, 1988 (photo: H. Munan).

hues of the majestic hornbill's huge beak. Muted blues and greens were added to the palette in the late 19th century. Whether this choice of colors reflects the craftswomen's preference or the availability of materials, it is now impossible to say.

Given sufficient beads and leisure, there is nothing Sarawak's Orang Ulu ladies cannot decorate with beads. Jackets and skirts are lavishly decorated with beadwork, as are war caps (Fig. 9), seat mats (Pl. VIIC) and the ends of loin cloths. Armbands, necklaces, ear hangings and belts may be embellished with beads or entirely composed of them. Sun hats with beautifully worked bead tops are much sought after by local and foreign buyers alike (Fig. 10).

Beaded headbands are still worn by some people, especially for semi-formal festive occasions (Fig. 11). Originally, they were designed to hold the wearer's long hair in place. A now-vanished fashion among Kayan ladies was a tall, slightly tapering bead hat worked in the standard fashion and mounted on a framework of rattan and padded with bark cloth. These bead hats were worn to show the owner's status and wealth. A simple plaited headband would hold the hair in place as effectively as a beaded band does—but any commoner or slave can weave a few strips of creeper fiber!

COMMERCIAL BEADCRAFT

Today, many beadworkers produce souvenir items for the tourist trade. Besides the more obvious items (like bracelets and necklaces, headbands, loin cloth tails, baby carriers and baskets), there are purses, handbags, fashion accessories and a number of truly startling innovations. The latter include pencil covers which make pencils very pretty—and quite unusable. I have even seen a beadwork necktie, but not around anyone's neck, however.

Beatrice Kedoh, general manager of Kraftangan (a handicraft promotion agency supported by the Sarawak government), does not find beadwork a top-selling item. Some of this she commissions from cottage workers; other items she buys from producers who bring their wares to her shop. But the supply is never steady. Rural women may fill an idle moment with beadwork or other handicrafts, but to earn a proper income, town-supply farming is more lucrative. The rural-urban drift has brought a number of competent craftsworkers to town. Of these, the young prefer working regular hours in the companionable environment of factories or service industries. Older women are likely to live with a son or daughter who has settled in town; their time is taken up with baby-minding and housekeeping. There are few full-time career craftswomen in Sarawak today.

CONCLUSION

The old problem of status-linked motifs is no longer an issue. None of the beadworkers I interviewed in the Kuching area had any scruples on this point. The *production* of artwork was never restricted, they agree, only the use and wearing of it was. Even in the past, a low-class artist could carve, paint or bead designs on commission, for instance, for an aristocratic wedding or tomb, without personal risk. The unauthorized *wearer* or *owner* of the article endangered himself and his community. One informant told me:

> For one thing, we don't really care about these taboo things any more. That was in the old days! Now we produce the designs local or foreign people like to buy. They themselves know whether they are strong enough to wear them. We really don't think anybody will get hurt.

Figure 11. Orang Ulu ladies participating in a bead workshop at the Sarawak Museum in 1988. Some sport beaded headbands and handbags. Note the elongated ears and tattooed hands, marks of status and beauty in the old days (photo: H. Munan).

In any case, the bad harvests or epidemics would not hit the producer, but the buyer and wearer. *Caveat emptor!*

ENDNOTE

1. Kenyah; from "Trance Song of Spirit Medium," sung by Balu Asong Gau of Long San, Upper Baram, 4th Division (Rubenstein 1973:1308).

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THE BEADS OF TENTH- TO TWELFTH-CENTURY HUNGARY

Katalin Szilágyi
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.

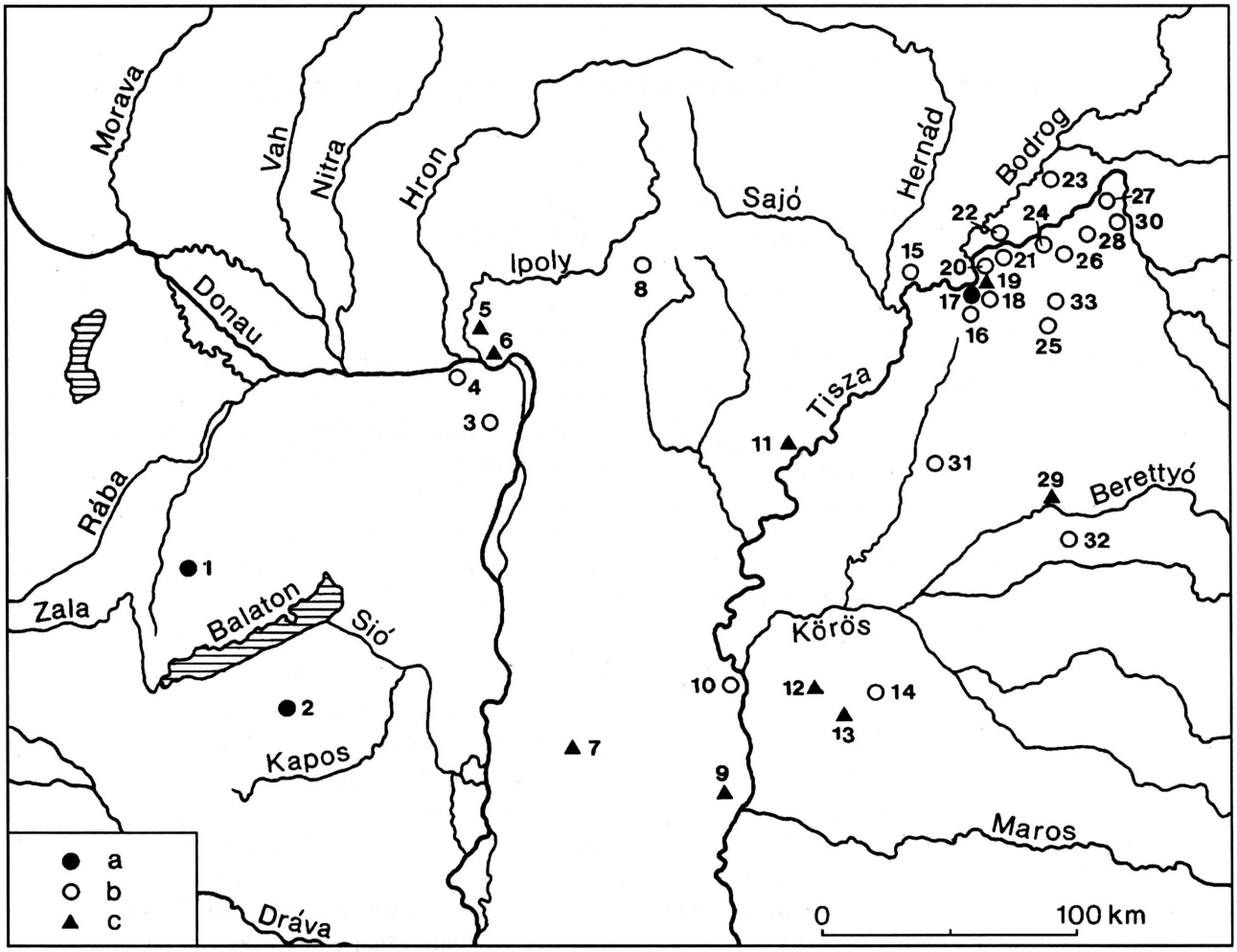


Figure 1. The distribution of 10th- to 12th-century archaeological sites in Hungary: a) completely excavated cemetery; b) partial cemetery; c) cemetery or partial cemetery known only from the literature. Not all the sites found in one locality are listed. The name of the site is followed by the name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

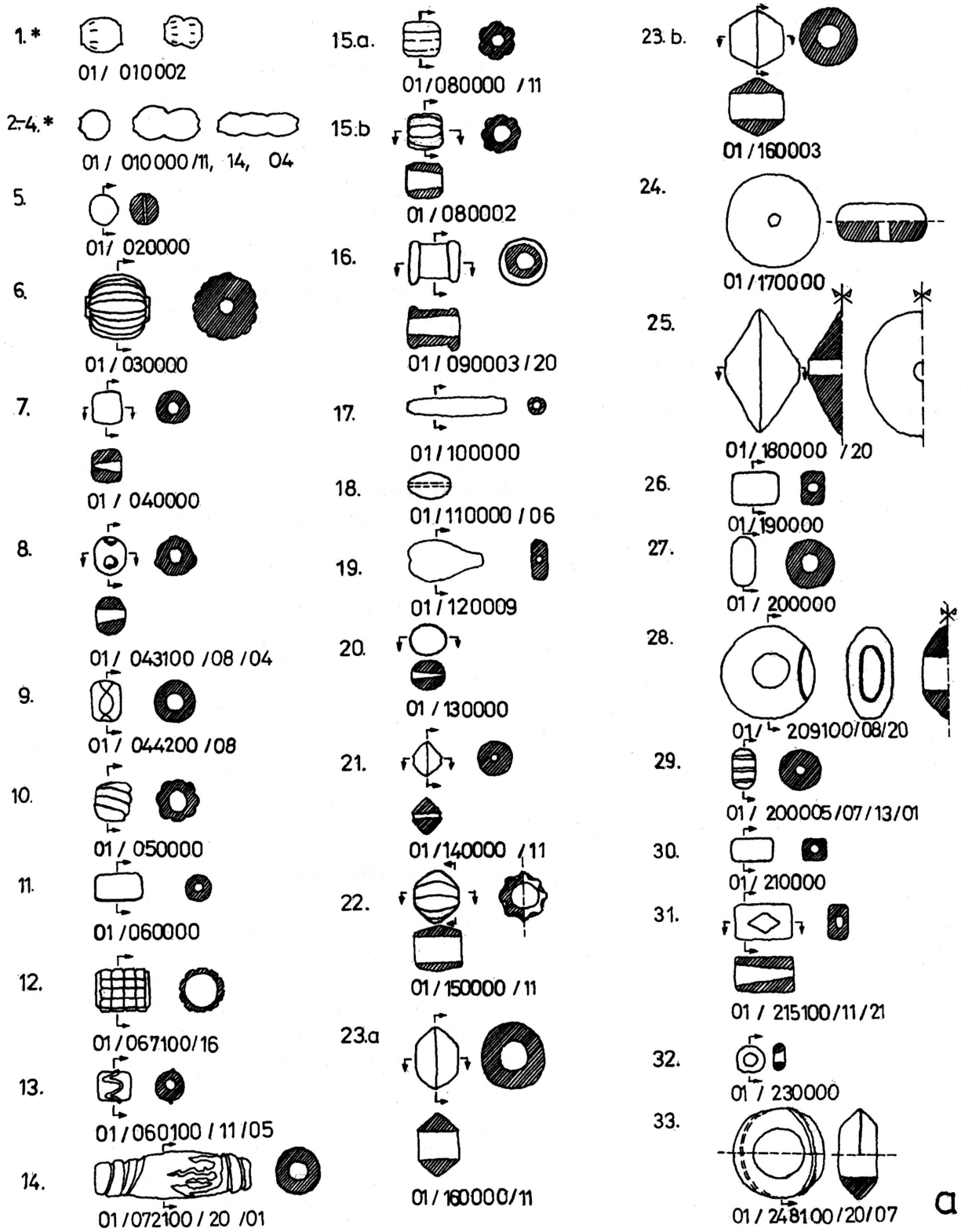
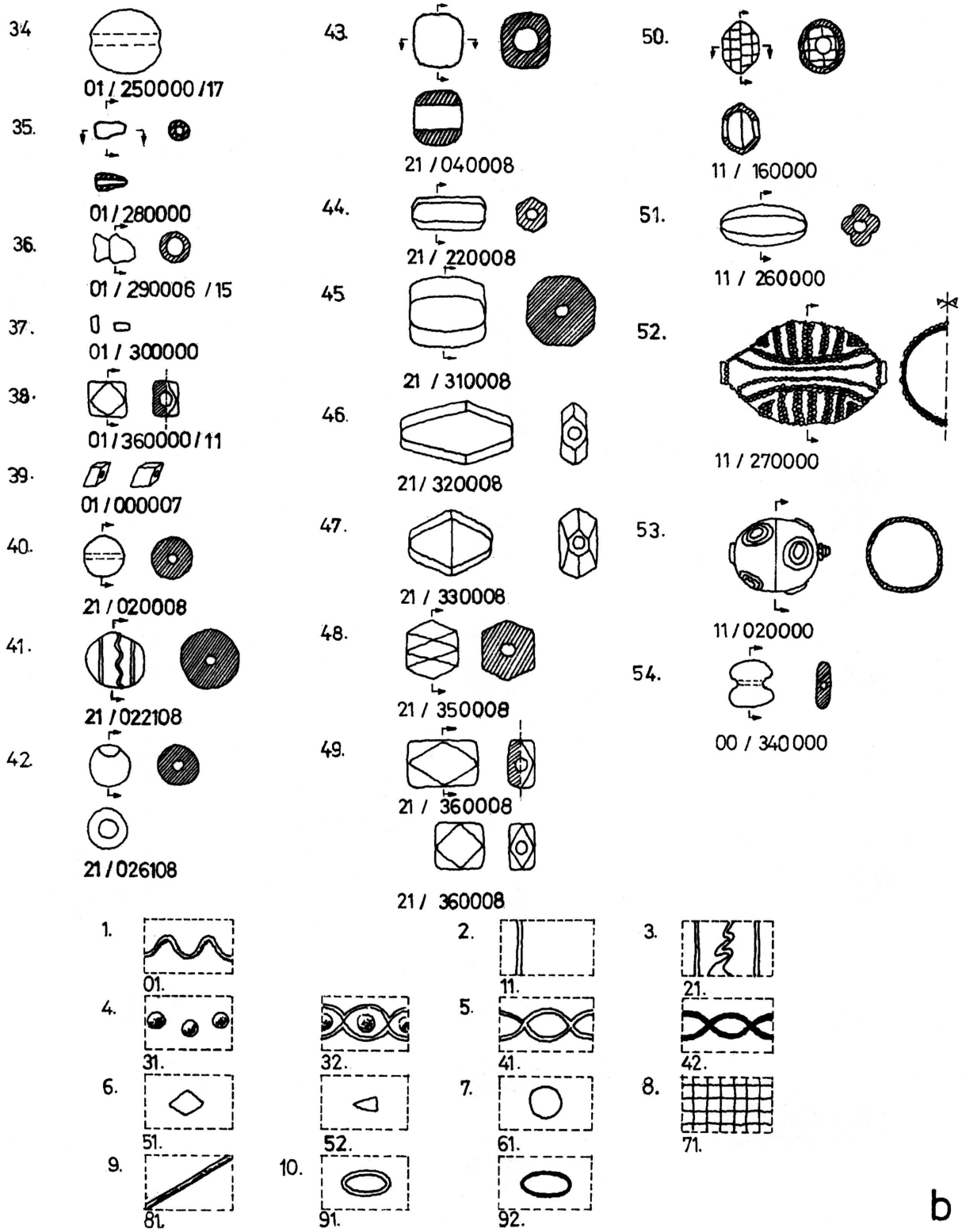


Figure 2. Bead types from the Halimba-Cseres cemetery, and the types of ornamentation found on the glass beads. Type numbers are to the left of the individual drawings; computer codes are below the drawings (1:1).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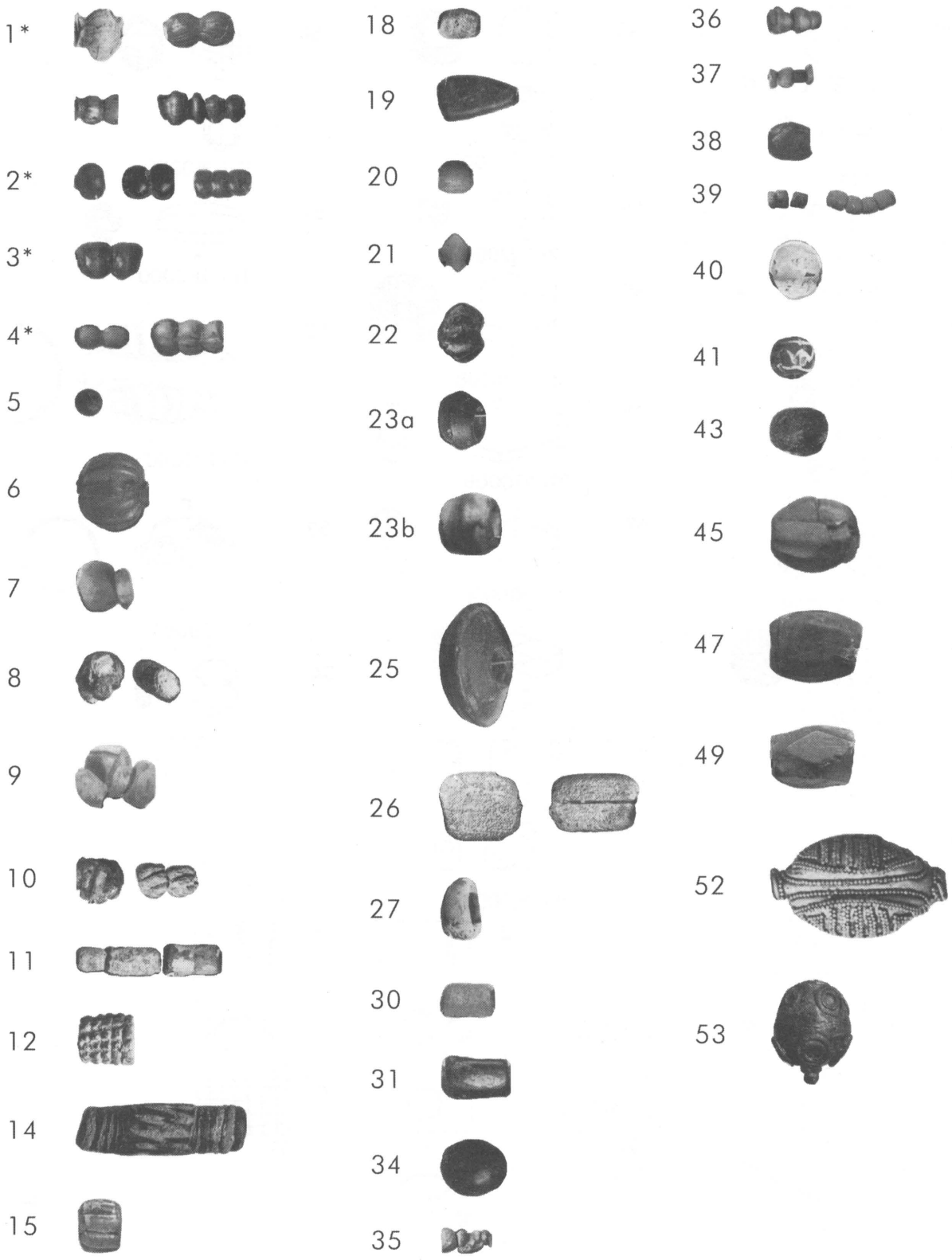

Figure 3. Actual specimens of the Halimba-Cseres bead types (1:1).

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

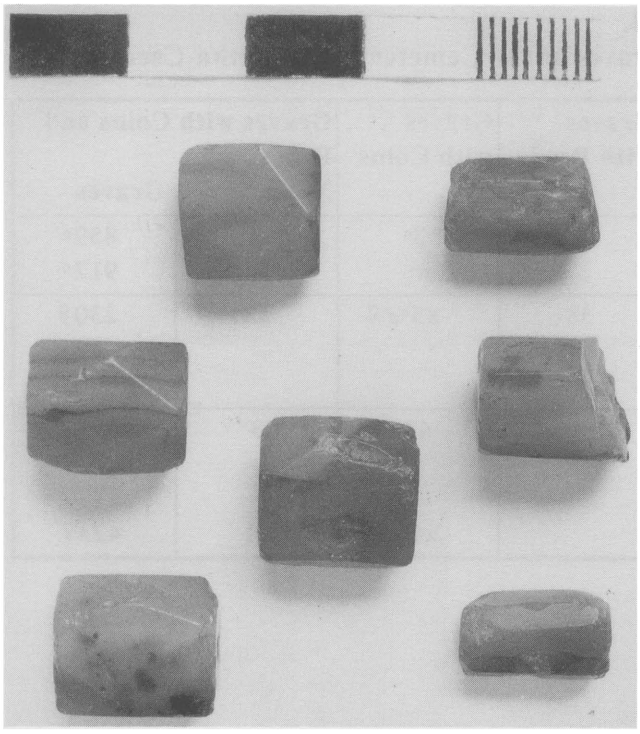

Figure 4. Stone bead Types 45 (bottom row) and 49 (top) from a grave at Esztergom-Kovácsi, dating to A.D. 1046-1060 (Hungarian National Museum, Budapest). The material is carnelian.

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

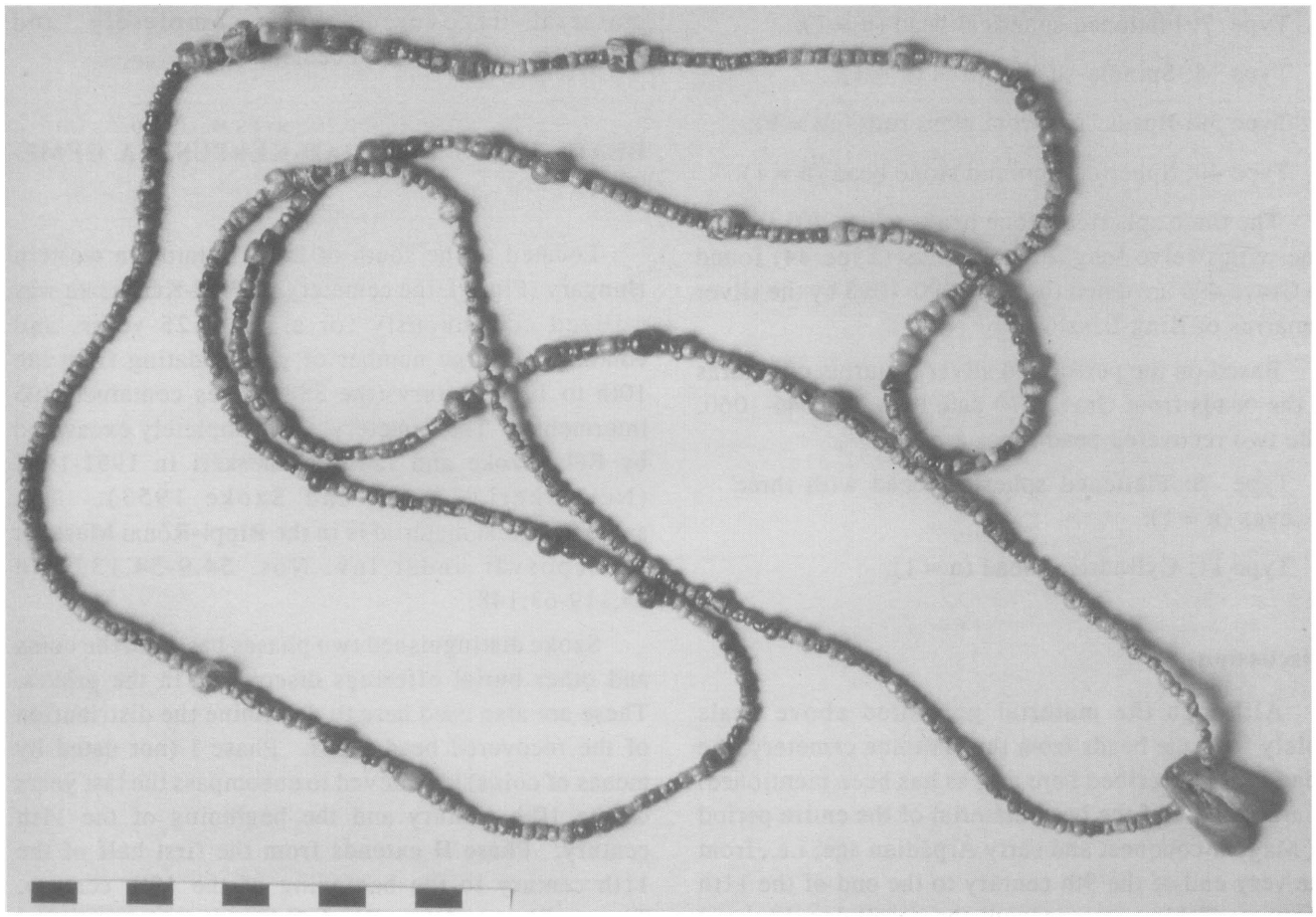

Figure 5. Beads that apparently adorned the neckline of a garment worn by the child in Grave 859, Phase I, Halimba-Cseres cemetery (Hungarian National Museum, Budapest). Primarily Type 37, as well as one Type 29 (the unique millefiori bead) and two perforated deer teeth (Photo: Tibor Kádas). *See* Pl.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

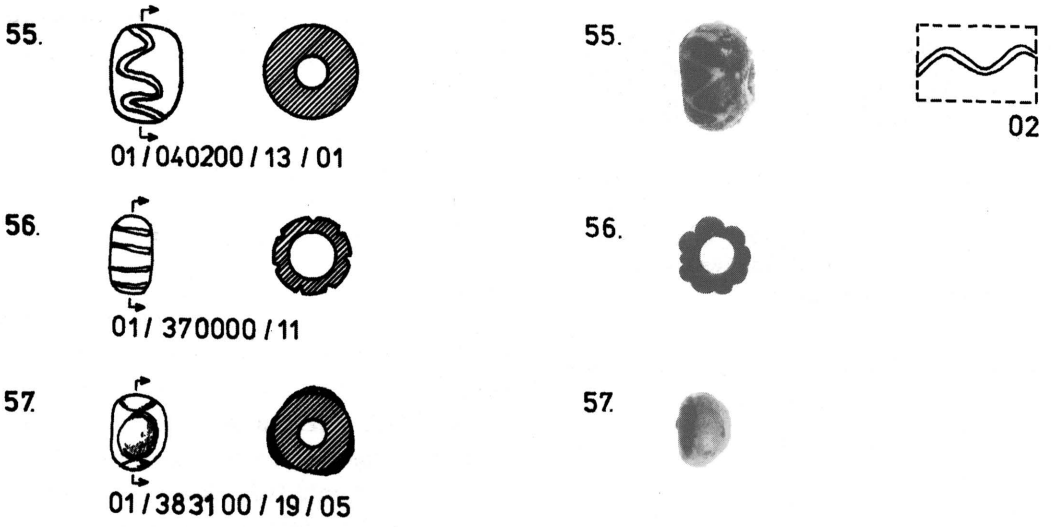

Figure 6. New bead types from the cemetery of Fiad-Kérpuszta (1:1): 55, flattened spherical, inlaid wavy line (01/040200/13/01); 56, finger-ring-shaped, ribbed (01/370000/11); and 57, spherical, flattened at one end, with three eyes (01/383100/19/05). Ornamentation 02: wavy line, inlaid.

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

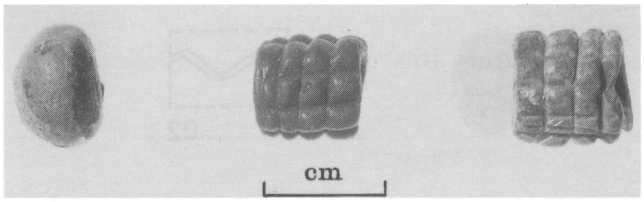

Figure 7. Three glass necklace beads: Type 12 (center and right) and Type 57 (left); Grave 340, Fiad-Kérpuszta cemetery (Rippl-Rónai Museum, Kaposvár).

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".

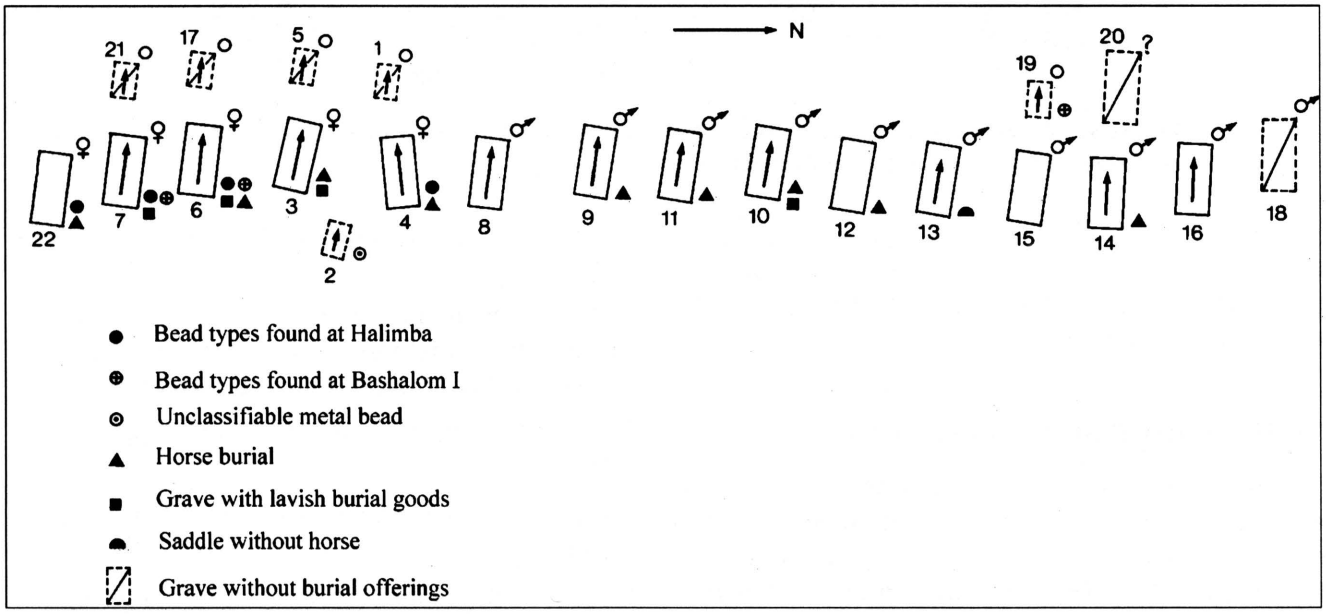

Figure 8. Burial distribution at the cemetery of Tiszaeszlar-Bashálom I.

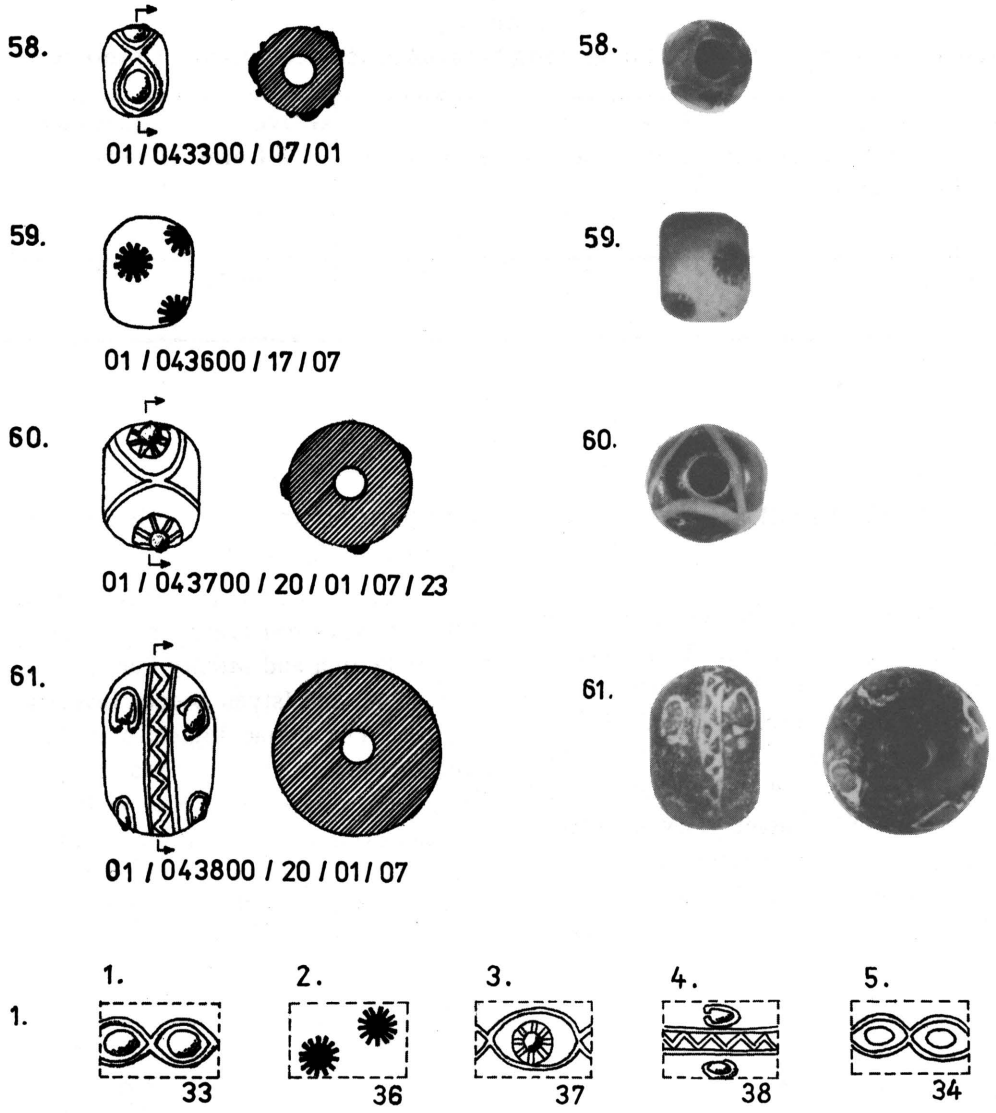

Figure 9. New bead types and decorative elements encountered at the cemetery of Tiszaeszlár-Bashalom I (1:1); *see* Table 7 for descriptions.

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 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	58			
7. Halimba-Cseres Fiad-Kérpuszta Tiszaeszlár-Bashalom I Szob Highway on the Eipel Rakamaz Tiszalök-Kisvajasdomb Eperjeske Piliny-Leshegy Kenézlo-Fazekaszug	60			

*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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BOOK REVIEWS

Trade Beads and the Conquest of Mexico.

Isabel Kelly. Rolston-Bain, Sandwich P.O. Box 7092, Windsor, Ontario, Canada. 1992. i-vi + 292 pp., 13 b&w figs., 1 color fig. $64.95 U.S. (paper cover).

I was glad to hear that this book had been published. In the 1980s, when I first began cultivating an interest in beads from Spanish-colonial sites, I came across a letter written to Charles Fairbanks by Isabel Kelly in 1976. Dr. Fairbanks, one of the pioneers of Spanish-colonial archaeology and a professor at the University of Florida, had died in 1985, and the letter was contained in some of his files archived at the Florida Museum of Natural History. In the letter, Kelly described an interesting collection of glass beads from Xochipala, Guerrero, Mexico, that she had been loaned for study by a collector. Due to the presence of several Nueva Cadiz and faceted chevron beads, she believed that the collection probably dated to the 16th century, and had written Fairbanks to inform him of them and to ask questions about some other beads in the collection. There was no reply in the file, but I was intrigued by her description of the assemblage.

The color plate in this book depicts the three necklaces that were the subject of her letter, and she describes the entire assemblage. Unfortunately, the beads are from more than one time period, evidently mixed by the people who dug them up or by the collector. But this book is much more than just a description of this modest collection.

Part I is an exhaustive chronological overview of Spanish and Native American documentary and secondary sources dealing with expeditions to Mexico and the Caribbean in the 15th and 16th centuries. From published accounts and primary documents, Kelly cites every instance where beads are mentioned as exchange or cargo carried to the New World, and puts each of these instances into context. She then examines the documentary descriptions with a critical eye, pointing out which sources appear to be the most reliable and which are inconsistent or unreliable.

This text is followed by 10 tables which summarize the sources and pertinent page numbers where beads are mentioned or discussed. Each table refers to a different expedition, from Columbus through Cortés. A diagram reveals which documentary sources drew on earlier sources for information. The amount of information in Part I is truly impressive, and Kelly's critical treatment of the sources helps the reader separate the wheat from the chaff in terms of reliable accounts.

Part II goes into greater detail about specific bead types, and provides a chronological list of bead shipments to the New World and archaeological data from Mexico. Much of the information on bead shipments was gleaned from documents in the *Archivo General de Indias*, originally compiled by John Goggin and Charles Fairbanks, but never before published. These data are presented in both text and tabular form, describing the beads and other trade items, their value at the time of purchase and their destination in the New World. In most cases, the descriptions are provided in both English and the original Spanish wording so that the reader can judge what the shipping lists describe. By combining information on shipping with the documentary accounts, Kelly also provides insight regarding the sources of some of the beads and other objects. She also makes a strong case for the identification of two specific beads mentioned in Spanish documents—*margaritas* and *diamantes*—as chevron and Nueva Cadiz beads, respectively.

The archaeological descriptions include Kelly's study of the Xochipala collection, coupled with the rather meager data available from other archaeological sites in Mexico, listed by state. In

addition to the color plate of the Xochipala beads, there are close-up black-and-white photographs as well, but these are, unfortunately, of a poor quality.

This book is truly a tour de force of scholarship, and will be an essential reference for anyone interested in beads from Spanish-colonial sites in Mesoamerica or South America. Its thorough and critical examination of documentary sources and shipping lists also makes it a valuable reference tool for archaeologists studying Spanish-colonial sites in North America and the Caribbean.

I only have three complaints. First, the photographs are of poor quality, failing to depict crucial details that are necessary for proper identification. Second, the book is perfect bound, and the binding cracked within the first few minutes of use. Considering the high cost, the publishers could have done a better job of binding so that it would last. And third, there is no information about Isabel Kelly herself (other than a studio photograph of her circa 1964, and an undated shot of her in the field). She died a number of years ago, and it would have been interesting to know how the book came to be published and whether it was complete at the time of her death.

But these minor factors aside, this book is an exemplary piece of scholarship, and the reader interested in learning about the Spanish-colonial bead trade in the New World will be well-rewarded by perusing it.

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The PANTONE Book of Color.

Leatrice Eiseman and Lawrence Herbert. Harry N. Abrams, 100 Fifth Avenue, New York, NY 10011. 1990. 160 pp., 1,024 color swatches, index. $29.95 (hard bound).

PANTONE Textile Color Guide - Paper Edition.

Pantone, Inc. 590 Commerce Boulevard, Carlstadt, NJ 07072-3098. 1992. 1,701 color swatches, index. $99.00 (paper fan deck).

Color is a bead's most significant cultural attribute. Consequently, it is also one of the principal physical attributes used by researchers to classify these objects. While some individuals have espoused the use of general color names with simple modifiers (e.g., "light green" and "deep blue") without reference to a particular color scheme, the fact that 30 shades have been recorded for blue and purplish blue beads alone so far (Karklins 1989:10-11) make this unpractical. As the reason for describing beads in the first place is to pass information on to other researchers, we must ensure that color (and other) data are recorded as accurately as possible so that there will be no misunderstandings regarding what is being described. This is especially important to those preparing and refining chronological sequences for specific bead varieties and tracing their distribution around the world.

Several color systems have been used by bead researchers over the years in an attempt to standardize color identification and allow for accurate inter-site comparisons of bead assemblages. The *Munsell Book of Color* (Munsell Color 1976) is the accepted scientific standard but its high cost (currently $525.00) keeps it out of the hands of all but the most dedicated bead researchers. Kenneth Kidd employed the *Color Harmony Manual* (Container Corporation of America 1958) in his widely accepted classification scheme but the *Manual* is rather obscure and has been out of print for at least a decade. The Centroid Color Charts published by the Inter-Society Color Council - National Bureau of Standards seemed like a likely candidate but, despite their usefulness, they were discontinued several years ago.

Casting about for an inexpensive and generally available color scheme that might suit the needs of the growing number of bead researchers around the world, I stumbled across a copy of *The PANTONE Book of Color* at The Bead Museum in Prescott, Arizona. This rather slim volume contains 25 pages of text and 128 pages of color swatches. The introduction explains the Pantone system and points out that the book "was developed in response to requests for a standard color

reference—a permanent record of the most basic and widely used colors in the PANTONE Professional Color System." A company representative further informed me that it was designed "as an educational piece to help consumers understand some color theory and color uses" (H. Bednarz 1992: pers. comm.).

The section on "The Phenomena of Color" provides an interesting overview of concepts regarding color from the time of the Greek philosophers to the present, while that on "The Language of Color" provides an informative discussion of color perception and naming in primitive to sophisticated societies around the world. There is also a useful "Glossary of Color Terms," followed by a section devoted to "The Color Wheel" which explains how colors relate to each other. Other sections deal with "Color Mixing Principles" (for those interested in using light and color for theatrical purposes or weaving), "Special Areas for Color Use" (information on such topics as lighting, visibility, texture and pattern) and "Word Association" (how people react to specific colors and how they create moods).

The remaining 128 pages of the book reproduce 1,024 color swatches from the Pantone Professional Color System. Measuring 6.6 cm x 1.6 cm (2-5/8 in. x 5/8 in.), the horizontal swatches are grouped eight per page. Each is accompanied by its name in six languages (English, French, German, Spanish, Italian and Japanese), as well as the Pantone color number. Although the authors state that "In naming the colors, close attention was paid to ensure that the terms used can be easily visualized" (p. 7), many names (such as "arctic," " bayou" and "liberty") will leave one wondering. This is a definite drawback to the system, though the use of the color codes will allow others to identify the exact color. All the colors are listed in an index.

Another drawback to the book is the fact that the swatches appear on both sides of a page. This makes it difficult to compare swatches so situated. However, the major problem with the book—from a researcher's point of view—is that the swatches are reproduced using the standard four-color process and may vary slightly from book to book. Realizing this, the publisher placed the following caveat on the back of the title page: "This book is not intended for use in professional technical color specification. For such use, please refer to the PANTONE Professional Color System Selector and Specifier or the PANTONE Textile Color Selector."

Pantone, Inc., produces a number of color guides and selectors in various formats but the one with the greatest potential for the bead researcher is the *PANTONE Textile Color Guide - Paper Edition*. This is in the form of a paper fan deck which displays 1,701 color swatches, seven per page and each with its name in six languages plus the Pantone reference number. While the reference numbers are quite clear, the names are on the borderline of readability. There is no introductory text to speak of (unlike *The PANTONE Book of Color*), and the index is arranged by color reference number and not the color name (as in the book). The color swatches are arranged in three groups: 1) Clean and Bright Colors; 2) Muted and Dull Colors; and 3) Earth Tones, Gray Tones, Off-Whites and Specialty Colors. Consequently, one has to check all three sections to make sure all the possibilities have been covered.

How does the coverage of the Pantone color fan compare with the other color charts? A quick tally reveals that my copy of the *Munsell Book of Color, Glossy Finish Collection* contains 1,553 enamelled plastic color chips, the *Color Harmony Manual* contains around 947 larger chips, while the Centroid Color Charts contain less than 500 swatches. Thus, with 1,701 swatches, the Pantone fan exceeds even the Munsell book's coverage. At one-fifth the price, the *PANTONE Textile Color Guide - Paper Edition* is what might be termed a "best buy." *The PANTONE Book of Color* is recommended for its introductory text which will allow researchers to better understand color concepts and how colors are perceived by different cultures.

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Glass Beads: Cultural History, Technology, Experiment and Analogy.

Marianne Rasmussen, Ulla Lund Hansen and Ulf Näsman (eds.). Studies in Technology and Culture 2. Historisk-Arkaeologisk Forsøgscenter, Slangealleen 2, DK-4320 Lejre, Denmark. 1995. 128 pp., 92 b&w figs., 22 color figs. 198 Dkr. (paper cover) + 150 Dkr. for postage and bank charges.

For a long time, beads in European archaeology were a neglected group of artifacts even though, owing to their frequency, variety and material persistence, they are perfectly suited for many kinds of analysis. A reevaluation of the research potential of beads by many European scholars led to a boom in various publications on beads from the mid-1980s onwards, one which continues to the present day. In October of 1992, the Historical-Archaeological Experimental Centre in Lejre, Denmark, organized the Nordic Glass Bead Seminar with the aim of presenting an overview of research results in Scandinavia and of improving contacts amongst the participants (*see Ulf Näsman*, pp. 9-10). The volume under review presents the proceedings of this symposium.

Several papers deal with special assemblages or beads of a particular region or period. For instance, using the collections of the British Museum, *Veronica Tatton-Brown* (pp. 37-43) gives an overview of the more unusual Mediterranean beads, worn mainly as pendants. Her examination begins around 600 B.C. and ends in late antiquity. A comprehensive picture of the beads of the Roman Imperial period in Denmark (ca. A.D. 50-400) is provided by *Inge Elisabeth Olldag* (pp. 25-31). She presents her own system of classification and discusses the chronologically and regionally varying distribution of the individual bead types. They occur as grave goods and reflect variances in costume and cultural contact among the Danish islands of Jutland, Sjaelland, Fyn and Bornholm. Within this area, *Per Ethelberg* presents a special finds complex, the beads from the cemetery at Skovgårde on Sjaelland (pp. 91-94). Whereas cremation graves predominate elsewhere during the Roman Imperial period, the Skovgårde beads come from richly furnished inhumation graves. Consequently, the good condition and frequency of the beads permit a worthwhile analysis. A further regional overview is provided by *Helena Ranta* who deals with Finnish material from the Roman Imperial period through the Viking age (ca. A.D. 50-1050; pp. 45-48). As a result, periods of completely different fashions in beads become evident. Thus, during the Migration period (ca. A.D. 400-600), monochrome wound beads composed mainly of blue and green translucent glass are common. In the Merovingian period (ca. A.D. 600-800) beads of opaque glass predominate and new colors (e.g., orange) appear. During the Viking period (ca. A.D. 800-1050), drawn glass beads predominate, while the color blue becomes much more common again. Chronologically there follows the paper of *Ēvalds Mugurēvich* (pp. 33-36) which provides an overview of beads in Latvia from the 10th to 13th century. Whereas the Latvian beads, as well as the older Scandinavian ones mentioned previously, come from bead strands, the paper by *Keld Hansen* on beads in the Arctic refers also to other contexts of dress (pp. 59-63). In Greenland, beads of organic material are known from the first occupation. Glass beads, however, only appear with the Europeans in the 17th century. In the modern period at least, they were used less for bead strands, but rather for the creation of shawls and embroidery. *Barbara Sasse* and *Claudia Theune* (pp. 75-82) deal with the problem of classifying the various European beads, also a subliminal theme in the papers mentioned previously. They present the thoughts of a larger working group which is trying to develop an overall system for describing and classifying Merovingian beads of Central Europe (ca. A.D. 450-750).

A further group of papers is dedicated to the subject of glass analysis. *Julian Henderson* (pp. 67-73) gives a useful introduction to the whole question of glass analysis and to the various analytical techniques available. A specific application is demonstrated using Bronze Age beads (10th century B.C.) from northern Italy, the results showing them to be of local production. *Katalin Szilágyi, Judit Nagy-Balogh* and *Kamilla G. Sólymos* (pp. 83-87) provide analyses of three archaeologically similar beads. Two of the beads represent a very common type from the 10th century in what is now Hungary. The third comes from the cemetery of Bolshije Tigani in the Tatar Republic on the Upper Volga, some 2,300 km further east. Chemical analysis indicates the probability that the beads originated in the same workshop, demonstrating far-reaching trading contacts. *Valentin A. Galibin* (pp. 89-90) discusses an unusually extensive program of glass analysis in which some 12,000 specimens—mainly stemming from Russia—were investigated. Galibin especially emphasizes the problems involved in the analysis of such masses of data.

A substantial number of papers deal with bead production from several different viewpoints. A possible starting point is the recent observation of craftsmen still producing beads today outside Europe. *Önder Küçükerman* (pp. 97-102) describes techniques and workshops in present-day Anatolia, whereas *Torben Sode* (pp. 103-107) gives an account of bead production in northern India. Time and again it is surprising to learn what modest means (in the way of materials, tools and heating techniques) an experienced craftsman has at his disposal and what large amounts of products a single workshop can turn out.

Other investigators attempt to reconstruct possible production methods of old beads by means of their own experiments. *Maibritt Jönsson* and *Pete Hunner* concern themselves with the widely distributed gold-foil beads (pp. 113-116). *Rosemarie Lierke, Frederick Birkhill* and *Pavel Molnar* describe trials to duplicate a particular type of very ornate La Tène beads (ca. 200-50 B.C.; pp. 117-119). Several of their basic considerations are contradicted by *Julian Henderson* in a brief reply (p. 121). *Tine Gam Aschenbrenner* presents her attempts to recreate beads from the Ribe excavations in Denmark (pp. 123-127) in order to facilitate the interpretation of the beads and workshop residue found at the site. She stresses the theoretical problems involved in such experiments which should form the basis for analogies with material recovered from archaeological sites.

A further approach to the study of ancient bead production is provided by the analysis of the archaeological remains of workshops. *Per O. Thomsen* describes features of the Roman Imperial period from the trading center of Lundeborg on Fyn in Denmark (pp. 19-24). It is clear that sherds of broken Roman glass were collected here in order to produce new beads in a bead workshop. The reuse of broken antique glass in a much more direct way is demonstrated in the paper of *Lars G. Henricson* (pp. 13-17). He offers examples (mostly from Scandinavia) of sherds from the hollow rims of glass vessels being smoothed and then strung as beads. *Evgenij A. Rjabinin* and *Valentin A. Galibin* describe the situation in the trading center of Old Ladoga, some 130 km east of St. Petersburg, which has produced a large number of 8th- to 10th-century beads (pp. 109-112). Only during a relatively short period from about A.D. 780 to 830 can local bead production be proven. Chemical analyses of the workshop residue show that this production was based upon raw materials imported from the Orient and that the production technique itself had its origins there.

Only a few papers deal explicitly with the further meaning of bead finds. In the light of recent observations, especially in the modern-day Islamic world, *Torben Sode* points to the magical significance of beads (pp. 55-57). At the center of his paper are eye beads which, as evil-eye beads, are apotropaic and as such are worn by both humans and animals. *Johan Callmer's* paper (pp. 49-54) provides an extensive overview of beads as an important source for the history of trade, especially long-distance trade. He sketches its development over the whole of Europe west of the Urals from the 6th to 9th century and works out different trade routes and different trading periods.

All in all, the present volume is a typical congress report. Whoever is expecting extensive amounts of data or comprehensive analyses will be disappointed. However, each paper contains detailed references to further and, especially, new literature so that the reader may learn more about a particular point of

interest. The chronological, regional and thematical scope of the volume is considerable and covers all of the most important subjects presently being studied by investigators of pre-modern beads in Europe.

[Translated by C. Bridger, Xanten, Germany.]

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Glass Beads from Europe.

Sibylle Jargstorf. Schiffer Publishing Ltd., 77 Lower Valley Road, Atglen, Pennsylvania 19310. 1995. 192 pp., 397 color figs., 87 b&w figs., value guide, index. $29.95 (paper cover) + $2.95 postage (North America).

Jargstorf's third book devoted to the study of glass beads is remarkably ambitious. The book is divided into six major sections, the first of which attempts to describe the ancient beginnings of glass-bead production and trade as a parallel circumstance with what was to come later. Although this is a valid approach in many regards, it is also a very different subject from the main body of the work. It could have been either a separate volume or more brief in presentation so as not to take away from the real topic. In the subsequent sections, the author attempts to present a well-rounded view of the history of glass-bead manufacture and trade in Europe from its early development before and during the Renaissance through the present period. She discusses such topics as The Use of Beads, Bead Technology and Bead Art, and The Future of Bead Art and Craft. There is much food for thought.

The grand number of color and black-and-white illustrations is countered by their variable quality and usefulness, by the fact that none are numbered for easy reference in text and, unfortunately, by some of the likely misinterpretations or presumptions applied them. Nevertheless, Jargstorf has an amazing ability to succinctly evoke the *Zeitgeist* of past times in rather few words, and broadly opens what are probably unknown pages for those unfamiliar with European history. This context giving is remarkably useful and broadening and, for me, is the most important or impressive aspect of the whole book.

The volume's short foreword ends with a request for criticism from Italian glass historians, but asks nothing from her peers. It is remarkable, considering the literature that has developed in North America over the past 25 years regarding glass beads, that virtually none of these respected works are cited by her. Of the papers referenced in the text and listed in the two-page bibliography, the only work by a North American writer is one that was published in Europe! From details in the text, it is clear that Jargstorf is somewhat familiar with our literature, vis-à-vis information, topics and terms that have been published, but these items are not referenced.

In discussing Europe, Jargstorf has the advantage of being European and multilingual and, thus, having access to information not readily available to North American researchers. However valid and evocative some of this may be, a great deal of the scholarship and beliefs proposed must be frankly regarded as being out of date, speculative and countered by the very literature the author ignores. I will cite a few examples.

Several passages deal with the history and manufacture of *rosetta* beads and are incorrect in stating or implying an ancient origin for them. Though this is an issue that has appeared in the literature time and again for well over a century, *current research* demonstrates that the idea is anachronistic (Allen 1982, 1983, 1983-84). The caption for the upper figure on p. 15 states: "Similar overlay cane design is known from Alexandrian workshops during the Roman Empire and apparently they made similar beads around the first to third century AD as well." The passage does not inform us that the similarity mentioned is a visual determination and that technologically there is virtually no similarity. Therefore, no real relationship exists between Alexandrian mosaic-glass products and Venetian *rosetta* beads. Although the caption continues with, "Yet... most of the rosetta-type beads which were attributed to antiquity even by experts up to the 20th century, are in fact the products of Muranese craftsmen," even this is an understatement. It is not that "most" *rosetta* beads are Muranese, but rather that

none have been demonstrated to be ancient, and the implication that some *may be* is the continuation of an outmoded idea. On p. 19, the author further misinforms the reader by showing a 19th-century book illustration that also depicts a *rosetta* bead. Although this image was composed by a European author a century ago (and is, thus, part and parcel of the problem), it is captioned as being "Egyptian paintings and some glass fragments... and one Rosetta-type bead." The implication is that *rosetta* beads derive from ancient-Egyptian times. This was the intent of the illustrator some 100 years ago, but such beads were certainly not illustrated by ancient Egyptians. The false argument is continued on p. 49.

In numerous passages throughout the book (pp. 7, 9, 17, 19, 20, 36, 40 and 131-132), the author attempts to make a connection between ancient Egypt and modern West Africa in terms of bead preferences. While there may, in fact, be some connections, they are indirect, tenuous and circumstantial; certainly not the simplistic and vague connections proposed. This is pop history at its worst. It can be demonstrated that ancient Egyptian mosaic-glass beads have a stylistic and technological relationship to somewhat later, Islamic, Near Eastern glass beads, and these, in turn, bear upon early (and late) Venetian products. That these Venetian beads went to Africa and became popular there is best related to similar Islamic Period beads that may still be acquired from the antiquities markets of West Africa (not Egyptian beads, with very, very few known exceptions). Therefore, to connect Venice to Egypt via "African tastes" and to ignore the intermediate Islamic beads presents a false perspective.

Further, the author often draws conclusions presenting little or no substantiation, or makes interpretations of historical documents that are the opposite of what seems logical. For instance, on pp. 10-11, much speculation is presented regarding the nature of Bronze Age glass manufacture in Europe. Merely two references are cited, and the second (though provocative and interesting) is not substantial. Also, this section is illustrated with modern beads, and no ancient examples are shown to reveal what beads are being discussed. On pp. 57-58, the author describes how Tyrolian craftsmen immigrated to Italy to learn Venetian methods of production. However, she states that by their being in Italy, "The entire [Venetian] industry was actually invigorated by such an afflux of foreign talent...." Clearly, the author wants readers to know that Central European glassmakers and glassworkers had an independent and thriving concern that was different from that of Venice (and other parts of Italy), and which has long been underestimated and undervalued. However, a slanted interpretation of history should not be used to substantiate this.

The value guide at the end of the book consists of two pages in which the beads illustrated throughout the volume are given a monetary value in British pounds sterling, which will be of little use to most American readers. Although the worth of proposing set values for a commodity that fluctuates as widely in time and place as do beads is already problematical, it happens that the most interesting and desirable beads are merely evaluated as being "rare" and no price is given. As such, the value guide is not particularly useful.

Jargstorf's book suffers considerably in readability from the presentation of glassworking and bead terms that are incorrectly applied or that will be foreign to Anglophones, as well as frequently poor English grammar and punctuation. On p. 108, the caption remarks that a statue is "A bronze plastic," whatever that may be. On p. 123, the lower caption states that a beadwork pattern is "equilibrated." This is a real word, but it just means "balanced." On p. 125, the lower caption says that certain beads "were highly estimated," where "esteemed" is intended. The book often reads like a bad translation, with constructions that reflect German syntax. I do not fault the author as much as the publisher. This book should have been proofread for presentation and accuracy before it was published, and would have benefited from the evaluation of a bead researcher familiar with the current literature and the needs of potential readers. In instances where I am familiar with the topic at hand, I know that the information presented is often slanted, biased or misinterpreted, or an anachronism, or an unwarranted speculation presented as fact or theory. While I would like to believe in the veracity of passages that are beyond my personal knowledge, what I do know about the rest makes this an uncomfortable proposition. How can we believe the author when so many mistakes are apparent and so much past and recent work has been ignored? This

book had the potential to shed much light on the glass-bead industry of Europe, particularly Central Europe. This is largely negated by the faults of the rest of the text. A detailed critique of the book is available to readers who request it from the address below.

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Plate IXA. *Hungary:* Necklace (?) composed primarily of Type 9 and 25 beads, as well as a cowrie shell; Grave 878, Phase II, Halimba-Cseres (photo: Tibor Kádas).

Plate IXB. *Hungary:* Probable necklace, mostly Type 40 and 42 beads (carnelian and rock crystal); Grave 364, Phase II, Halimba-Cseres (photo: Tibor Kádas).

Plate IXC. *Hungary:* Probable necklaces. **Top:** Mostly Type 37, also some Type 46-47; Grave 258, Phase III, Halimba-Cseres (A. Kolozs). **Bottom:** Type 16; Grave 293, Phase I, Fiad-Kérpuszta (T. Kádas).

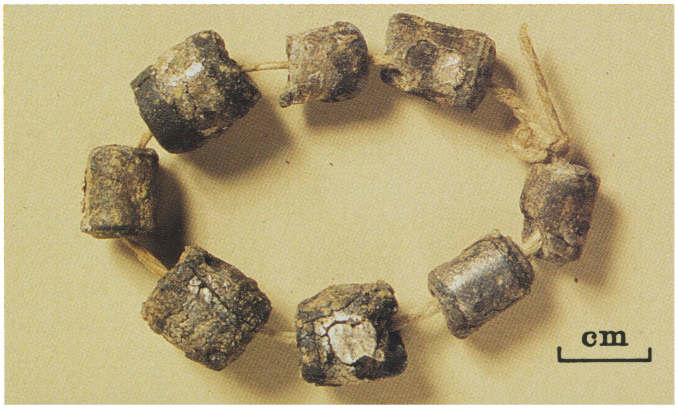

Plate IXD. *Hungary:* Probable necklace composed of Type 1* beads, and a Type 56 bead (center); Grave 83, Phase I, Fiad-Kérpuszta (photo: Tibor Kádas).

Beaded Loincloth, Laos