

BEADS

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Bead Researchers



2003

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Cover. *Iroquois*: Mohawk eight-pointed star with eagle and American flags; ca. 1890; Height: 28 cm (Photo: K. Karklins).

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KARLIS KARKLINS, editor

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2. All manuscripts must be prepared with the following internal organization and specifications:
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 - b. Abstract: an informative abstract of 150 words or less is to comprise the first paragraph.
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7. Each manuscript will be reviewed by at least one member of the Editorial Advisory Committee. Articles of a specialized nature will also be reviewed by one or more persons who have expertise in the thematic content, cultural or geographical region, or time period dealt with in the manuscript.
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9. Manuscripts will be judged on the accuracy of their content, appropriateness for an international audience, usefulness to other researchers, and consistency with the research and ethical goals of the Society.
10. Each author or set of co-authors will receive 4 complimentary copies of the journal. Book reviewers will receive one copy.

TWO CENTURIES OF IROQUOIS BEADWORK

Dolores N. Elliott

To the 16th-century Iroquois living in what is now central New York state, European glass trade beads were something special; they were believed to have had magical and spiritual meaning. To this day, the Iroquois have a special relationship with glass beads. Iroquois artists began creating three-dimensional beaded items in the late 18th century. The first beaded pincushions and wall pockets were small, but they increased in size and quantity during the 19th century. Two centers of beadwork making arose: one around Niagara Falls in western New York and southern Ontario, and the other around Montreal in southern Quebec and the adjoining parts of eastern Ontario and northern New York. By the end of the 19th century, large brightly colored pincushions, wall hangings, purses, and other items were made for an active tourist market. Recently these art forms have become highly collectable by individuals and museums. Over 60 forms of beadwork were developed. As in the 19th and 20th centuries, many Haudenosaunee artists continue to create colorful beadwork in the 21st century.

INTRODUCTION

For over two hundred years, the *Haudenosaunee* (commonly referred to as the Iroquois, a Confederacy of six nations: the Mohawk, Oneida, Onondaga, Cayuga, Seneca, and Tuscarora) have created beaded items. Beadwork utilizing glass beads is created for several purposes. It is used to decorate traditional clothing that is worn in ceremonies, community social events, pow wow dance competitions, and secular government meetings. It also decorates three-dimensional items made as gifts for family and friends on such occasions as births, weddings, and graduations. They are also made for sale to tourists and visitors at places such as festivals, fairs, and tourist attractions such as Niagara Falls. These beaded pieces, sometimes referred to as whimsies, are the subject of this article.

Iroquois beadwork is often referred to as “raised” (sometimes called “embossed”) beadwork, but not all Iroquois beadwork features multi-layers of beads that define raised beadwork. Although the first three-dimensional pieces of Iroquois beadwork were made in the late 18th century, it wasn’t until the middle of the 19th century that true raised beadwork was developed. From around 1850 to

about 1920, most Iroquois beadwork had raised designs in various forms of birds and flowers. For most of the 20th century, Iroquois beadwork was flat. It wasn’t until its recent revival that Iroquois beadwork has once again featured raised designs. Iroquois beadwork might better be defined by its basic shapes, the materials used in its construction, its floral and faunal motifs, and its beaded mottos, dates, and place names.

Most pieces of Iroquois beadwork were created for sale to tourists and have often been dismissed by art critics and scholars as “souvenir trinkets.” Within the last decade, however, Iroquois beadwork has been the object of serious study and museum exhibition. As researchers and museum curators share more information about the beadwork, more and more people are able to recognize Iroquois beadwork. This has resulted in an increasing appreciation of these artistic creations and the skilled artists who made them. What were often curious tourist souvenirs when they were made are now the object of increasing respect by both Iroquois and non-Iroquois alike (Phillips 1998).

Many beadwork admirers want to collect pieces of the beadwork. Iroquois beadwork appeals to collectors of Victoriana, American Indian material, and beadwork in general. And then there are the collectors who specialize in pincushions, dolls, and purses, and those who collect picture frames, match holders, and other wall hangings. There are also collectors who specialize in collecting items with beaded words or place names on them such as Good Luck or Niagara Falls. Iroquois beadwork appeals to all of these interests.

Many museums—from large museums that specialize in American Indian art and culture to small village historical society museums—have Iroquois beadwork in their collections. Usually they were donated by people who either bought them as souvenirs or who inherited them from those who did. It was the rare museum that intentionally collected Iroquois beadwork because it was not considered “authentic” or “true” Indian work due to its Euro-American influences such as the floral designs, beaded words and dates, and velvet cloth. Usually the provenience has been lost and the beadwork in museums is frequently referred to

as “Victorian.” Sometimes it is recognized as Indian-made and sometimes as Iroquois but rarely is the maker’s name or national affiliation identified. Recently, however, many museums have taken an interest in learning more about their Iroquois beadwork. And many museums, especially in the northeastern part of the United States, are actively acquiring pieces of contemporary Iroquois beadwork for their collections.

The problem of attributing a national identity to a particular new piece is complicated by the extensive trading that has traditionally occurred among artists and sellers. The origin of a piece cannot be assumed to be from the seller. It is common for beadworkers to wholesale their beadwork to sellers who may carry beadwork from several individuals representing several different nations. And frequently the sellers will not divulge the source of the beadwork because they fear that potential buyers will bypass them to buy directly from the beadworker. In other instances, a seller has erroneously claimed to have made a particular piece of beadwork but the true identity of the beadworker was not revealed until later when the actual maker identified his pieces. To be absolutely sure of the identity of the artist who made a particular piece, one has to become familiar with the individual styles of all the contemporary bead artists. This is not difficult because there are fewer than 40 individuals who are actively creating Iroquois beadwork today.

This new appreciation of Iroquois beadwork has been encouraged by the advent of internet auctions which provide a steady supply of antique pieces. The largest of the online auctions, eBay, may have over 80 pieces listed at any one time. By comparison, a collector would have to explore hundreds of antique shops to find that many pieces. Over 12,000 pieces have been listed on eBay in the last six years, and because there are so many pieces, eBay is a unique research source. Only with such a large database as provided by internet auctions, is it possible to define beadwork types and assign an age and tribal affiliation to pieces. In addition, some pieces come with family histories that report where and when a piece was purchased by an ancestor. Of course, some information may not be accurate but it generally provides valuable clues as to where and when a particular piece was made.

The renewed interest in Iroquois beadwork has encouraged beadworkers to create new pieces. On some reservations, beadwork groups have been formed to teach young people who have not beaded before. In addition, experienced beadworkers meet to share their designs. Off reservations, in museums and schools across North America, experienced Iroquois beadworkers conduct workshops for both Indian and non-Indian students. Thousands of people

have created at least one piece of “Iroquois” beadwork in such workshops. Many of these workshops were associated with one of the several Iroquois beadwork exhibits that have been created in the last few years. These exhibits have been featured in a dozen museums in the United States and Canada. As a result, Iroquois beadwork has become better known and popular.

EXHIBITIONS

Although the author mounted several small exhibits of Iroquois beadwork in central New York during the 1980s and 1990s, it was not until the turn of this century that major exhibitions were organized.

Flights of Fancy was an exhibit of several hundred pieces of Iroquois beadwork from the author’s collection which was featured in several museums in central New York state from 2000 through 2004. It was installed at the Yager Museum at Hartwick College in Oneonta, the Chemung Valley History Center in Elmira, and the History Center in Ithaca. Smaller versions were installed in Ste. Marie among the Iroquois in Liverpool and in various venues in Broome County. These exhibits concentrated on the wide variety of Iroquois beadwork forms and functions created over the last two centuries in the two main centers of beadwork creation: around Niagara Falls and near Montreal.

Across Borders was organized by the McCord Museum of Canadian History in Montreal and the Castellani Art Museum of Niagara University in Lewistown, New York. They worked in collaboration with the Kanien’kehaka Raotitiohkwa Cultural Center in Kahnawake, Quebec, the Tuscarora community of western New York, and the Royal Ontario Museum in Toronto, Ontario. The exhibit featured both old and new beadwork and information on what the beadwork meant to the beadworkers and their customers. *Across Borders* traveled to museums in Ontario, Quebec, New York, and Connecticut from 1999 to 2003.

Ska-Ni-Kwat (“we are of one mind”) was a project conceived by Samuel Thomas, contemporary Cayuga beadworker. It involved the creation of two complete traditional beaded Iroquois outfits and exhibits that featured them. The outfits were complemented and explained by about 100 pieces of historic beadwork from the author’s collection. *Ska-Ni-Kwat* traveled to Connecticut, New York, Oklahoma, and Ontario in 2003-2005. It will be featured at the New York State Museum in Albany in 2006 and 2007.

The Canadian *Ska-Ni-Kwat* project was developed into a traveling exhibit by the Royal Ontario Museum in 2005. It is

called *Ohyahohdiwenago'h* (“through the voices of beads”) and is planned to travel in Canada for at least a decade.

Thousands of people have seen the exhibits and marveled over the creative pieces of bead art. People are discovering the beauty and creativity of Iroquois beadwork and they want to know more about it.

IROQUOIS BEADWORK: A DEFINITION

What is Iroquois beadwork and how is it different from other beadwork? Although there are beadwork traditions in many native communities in North America, their beadwork is much different from that produced by Iroquois beadworkers.

The many forms of Iroquois beadwork feature a design in glass beads sewn onto a fabric that is stretched over a cardboard backing or fabric lining (interfacing). The beaded designs are often beaded over a paper pattern that is attached to the surface fabric. Various forms of velvet were and still are the favored fabrics to cover pieces but other fabrics such as velveteen, wool, silk, and cotton are used as well (Gordon 1984). The beads are often raised above the surface of the piece, sometimes as much as an inch and a half. The beads are raised by stringing more beads on the thread than needed to span the intended space; this creates an arch of beads and many arches create a raised beadwork design. The beads often form designs featuring birds and flowers, natural themes that appealed to the Victorians who drove the market of souvenir sales in the 19th century. The backsides of early pieces are usually covered with polished cotton, which is also referred to as chintz, oil cloth, or glazed cotton. Calico has been the preferred fabric for backings for the last fifty years.

Pincushions are stuffed with a variety of materials. The earliest pieces are filled with cotton or wool. During the last half of the 19th century and the first half of the 20th, sawdust or wood chips was the preferred stuffing material. Pine sawdust was often selected because of its nice aroma. For the same reason, Mohawk pincushions were often stuffed with sweet grass. Some 19th-century pieces are stuffed with cattail fluff while others are filled with crumpled newspapers. Some strawberry-shaped pincushions are filled with emery and were used to clean and sharpen needles. Contemporary pincushions are frequently filled with polyester batting but sawdust is used for the very special pieces. Picture frames and other wall hangings are often beaded on a base of cardboard. This is frequently cut out of cereal boxes. Contemporary pieces often use Tagboard or cardboard file folders. Nineteenth-century purses and needlecases are often lined with newspaper. The paper patterns appear to

have been cut out of a heavy paper like grocery bags. Any sort of paper, even copy paper, is used today.

Most pieces are either stuffed pincushions or wall hangings, and purses that have a cardboard base. There are, however, two forms that combine the two techniques: birds and boots. Birds have pincushion bodies with wings and tails lined with cardboard. Some boots are mainly pincushions with a cardboard-based cuff that forms a pocket on the top. Cardboard was also used to reinforce large beaded elements on the face of pincushions, often leaving very little space between the beads and the cardboard to insert pins.

The majority of the glass beads used are seed beads of various sizes. The earliest beads, used around 1800, are very small (sizes 12°-15°) while by 1900, larger sizes (6° and 8°) were preferred. Chalk white beads in size 8° were available in the early 1800s, but they were used very sparingly, only to outline purse flaps and to be placed near the end of floral sprays on early pincushions and purses. Twentieth-century beadwork utilizes mostly sizes 10°-12°. During the last half of the 19th century and the early part of the 20th century, seed beads were often combined with larger “bugle” beads (*Sprengperlen* in German; literally “broken beads”) that are sewn into the center of flowers or birds or form decorative loops at the bottom of hanging pieces (Pl. IA top).

Bugles are tubular glass beads, often with polyhedral bodies, that were manufactured in Gablonz, Bohemia, until 1917. They were made in several colors, some with colored enamel paint on the walls of the hole, others with an outside color coating. They were made by breaking long glass tubes into lengths of less than 6 mm, hence the name *Sprengperlen* (Jargstorf 1995). The broken edges are sharp and tend to cut the thread used to sew them on beadwork. As a result, many Mohawk pieces made before 1918 are missing their beaded loops.

Mohawk beadwork uses bugle beads in much greater quantity than Niagara beadwork. In the latter they and large round glass beads are used mostly for flower centers and bird bodies. In the late 20th and early 21st centuries, some sewers augmented their seed bead designs with fanciful plastic beads, but the incorporation of plastic beads into the designs is very controversial and not acceptable to many beadworkers who prefer to work only with glass beads.

Throughout the two centuries of Iroquois beadwork production, many colors of beads have been used and some are more popular in some decades than in others. It is not known whether this was due to beader preference or to the availability of the various colors. Small white beads were favored from the beginning and are still used extensively in contemporary beadwork. White has special meaning among the Iroquois as representing light, life, and goodness. Black

beads are rarely used; mostly for bird eyes. By the early 19th century in western New York, white was joined by yellow, red, pink, dark blue, light blue, amber, light orange, lavender, and green. Many of these beads are less than 1.0 mm in diameter (size 16°) and too small to get a needle through. They were applied to purses, clothing, pincushions, and tablecloths by laying a string of beads on the pattern and then tacking the string down with a needle and second thread. By the middle of the 19th century in the Niagara area there was a switch to a preference for clear seed beads, often in combination with white beads around 2 mm in diameter. Colored beads were rarely used. Often silver-lined bugle beads were used in the center of beaded elements such as flowers and birds.

By the 1870s, the Mohawks were mass producing boxes, picture frames, and pincushions using clear beads as well but much larger ones, often as large as 3.5 mm (size 6°). In addition to the clear beads, the Mohawks preferred red, green, blue, and yellow on their pieces. The four colors continued to be used in various color shades and sizes into the 20th century after the clear beads were replaced by chalk-white ones.

In addition to glass beads, metallic sequins were used on many 19th-century and early 20th-century pieces. They are often inserted into a design where there isn't room for a beaded motif but the beader needed to fill an empty space. They were sewn on with a bead in the center. Although glass beads on beadwork exhibit little physical change over the years, sequins on old pieces are rarely shiny but have oxidized to a rusty color. Many copper or brass sequins have turned green. Celluloid and plastic sequins came into use sometime after WWI. Somewhat larger than sequins were pressed-paper flower-shaped elements that were sewn on Mohawk beadwork in the 1920s.

White thread is almost always used to sew on the beads as it makes clear beads sparkle more. White is even used on dark colored velvets. Traditional (non-Christian) beadworkers reserve dark thread for burial clothes.

The paper patterns that underlie the beadwork designs are usually made of white paper, which fills in the beadwork designs. Some Mohawk beadwork utilizes paper that is covered with silver- or gold-colored foil that bring out the sparkle in the yellow, amber, and clear beads above them.

Iroquois beadworkers invented raised beadwork and are best known for it but others have made it as well. Fox Indians living in Tama County, Iowa, made pincushions with "Tama" beaded on them. There is no known connection between the Fox and the *Haudenosaunee* so the Fox Indians may have "invented" raised beadwork independently. In the 20th

century, Alaskan beadworkers produced pincushions and wall pockets depicting native wildlife and the name ALASKA. These beadworkers may have had some contact with Mohawk people who joined the gold rush in the late 1890s (Mike Tarbell 2005:pers. comm.). There are pieces of Mohawk beadwork made in 1898 and 1899 with KLONDIKE beaded on them, and Mohawk beadwork was sold in Alaskan shops in the early 1900s (Peter Corey 2002:pers. comm.). The items with wording from Iowa and Alaska appear to be the only non-Iroquois pincushions with beaded words sewn onto cloth. Auctions often list pieces of beadwork as being made by Indians living in Wisconsin, Nova Scotia, Maine, and other places, but without any proof, it is safer to believe they are really Iroquois beadwork that just ended up in those states.

From around 1890 to 1920, many Mohawks traveled extensively in Wild West shows and Indian medicine shows. These entertainers brought baskets and beadwork to sell to the people who came to see their shows. They also sold to tourists at train stations and on the trains themselves (Murray 1856:127). It is reported that during the latter half of the 19th century, Mohawk families and entertainment groups traveled extensively throughout North America, as well as making several incursions into Europe, where they put on shows and sold their baskets and beadwork (Blanchard 1983).

Iroquois beadwork was also widely disseminated by honeymoon couples who visited Niagara Falls, "the honeymoon capital of the world," and took home one or more pieces of beadwork as souvenirs and gifts. For example, it is estimated that in 1850, some 60,000 tourists visited Niagara Falls; the market came to the beadworkers, tens of thousands each year (Adamson 1985; Vidler 1985). If the visitors bought their beadwork from a seller who was set up near the Falls, the beadwork was probably made by the Seneca or Tuscarora who had the exclusive right to sell at the Falls. Iroquois women sold their beadwork on streets near the Falls, at Queen Victoria Park in Canada, at Prospect Point, and on Goat and Luna islands in the United States. If the beadwork was purchased in one of the many souvenir shops that opened in the 19th century, the beadwork could be Mohawk because they wholesaled to the "curiosity shops" that featured Indian souvenirs.

Although it is difficult to estimate the number of pieces of beadwork that were made and sold, there are approximately 20,000 pieces in known collections today, based on a survey of collectors. Perhaps as many as 200,000 pieces were made in the last two hundred years, figuring 20 beadworkers each making an average of 50 pieces a year. And, because they are all made by hand, there are no two pieces exactly alike.



Figure 1. The back of the earliest-known dated beaded pincushion; height: 5.5 cm (photo: D. Elliott).

Although similar designs are repeated, at least the bead colors are varied from piece to piece. A calculation of the proportion of Niagara beadwork to Mohawk beadwork results in an estimate that there are ten times more pieces of Mohawk beadwork than Niagara beadwork.

Based on the author's collection of approximately 1,800 pieces and an examination of many other private and museum collections as well as offerings on eBay, pincushions of various sizes and shapes predominate, comprising about half of the examined Iroquois beadwork. Purses, also called bags and pouches, are the next most common, making up about a quarter of the total. Wall hangings such as picture frames, wall pockets, and match holders that have a cardboard foundation are next in frequency, followed by miscellaneous pieces such as mats, dolls, and clothing. This does not include the large number of souvenir pins, necklaces, barrettes, and earrings made by Iroquois craftspeople or the beaded traditional regalia made for use other than to sell to tourists.

Contemporary beadworkers see beadwork as a significant part of Iroquois culture and see beadworking as an important link to the past. In Iroquois communities, beadworkers are admired as continuing a revered Iroquois tradition. Although there are a few male beadworkers, the majority of the beadworkers are women and, in a matrilineal and matriarchal society, the economic benefit of beadwork sales increases the power of women even more.

HISTORY OF IROQUOIS BEADWORK

Dating beadwork has always been difficult because the makers did not keep records (in fact, many did not read or write) and buyers rarely recorded the purchase of souvenirs. Although some later pieces of beadwork have dates beaded on them, the earliest do not. Fortunately, a few pieces have dates written on the back in pen, usually by the recipient. The earliest such notation reads, "Ann Bollinger 1797 June inst." Although there is a spot on the fabric near the last number, and it could be a 9 instead of a 7, the date places the pincushion in the late 18th century (Fig. 1; Pl. IA bottom), provided the attribution is authentic. This piece is probably from western New York or Pennsylvania where there were Bollingers (Paul Huey 2000:pers. comm.). The name would most likely be the giver or receiver of the piece, not the maker. The maker was probably Seneca. The pincushion exhibits the central flower and multiple outlines, two motifs that are elaborated in later Seneca beadwork.

Molly Brant was a prominent Mohawk woman in the 18th century. She was recognized as a skilled seamstress and known for her beautiful traditional Iroquois sewing which most likely incorporated beads (Lois Feister 2000:pers. comm.). That would then make Molly the earliest recorded Mohawk beader. Unfortunately, none of her beadwork is known to have survived. It is likely that she only decorated clothing with beads and did not make three-dimensional pieces like pincushions (Huey 1997).

The earliest pieces with beaded dates are the Seneca “zigzag” purses made in the 1830s. There are references to Indians selling their beadwork at Niagara Falls as early as the 1830s. They would most likely be either Seneca or Tuscarora sellers.

Pieces from the 1840s are relatively common. They can be identified because Lewis Henry Morgan (1850, 1851, 1852) pictured them in three of his publications. The most common beadwork forms are six- and eight-lobed pincushions about 4 in. (10 cm) in diameter. The central flower made of small clear beads is repeated from pincushion to pincushion while the “sprays” between the clear flower petals are made of colored beads. Often the sprays are the same color or two colors are alternated (Pl. IB top). Velvet and wool, often red or black, are the favored cloth for the beaded side of the pincushions while a tan colored polished cotton most often forms the back. The binding is usually silk. Morgan also pictured purses with flowers beaded on them. Besides the flowers, they can be identified by the many rows of parallel lines of beads outlining the purses (Pl. IB bottom).

In his 1850 Tonawanda field notes, Morgan writes:

They imitate natural objects, like flowers, with great accuracy. The art of flowering as they call it is the most difficult of any part of beadwork, for the reason that in addition to an accurate knowledge of the flower at the stage in which it is to be represented, they must be able to imitate closely. In combining colors they never seek for strong contrasts, but choose those, which most harmoniously blend with each other. White beads are most used, and usually to separate other colors. In making up their combinations the following general rules are observed: light green and pink go well together with white between, dark blue and yellow also with white between, red and light blue with white between, dark purple and light purple with white between. For flowering dark green are used for stems with white glass, pink glass and green glass, and pale yellow glass for the flowers (Tooker 1994:152).

Many people believe that Caroline Parker, a skilled Seneca beadworker and sister of Ely Parker, a friend of Lewis Henry Morgan, made the pincushions and purses. Perhaps members of her family and friends living on the Tonawanda Reservation, located between Rochester and Buffalo, were also beadworkers because there are so many pieces in this style. Morgan bought a fine tablecloth from Caroline in the 1840s. A pair of children’s moccasins in this style in the Milwaukee Public Museum is labeled as being from the Tonawanda Indians, Niagara County, New York, where Caroline lived.

Richard Hill (1997:pers. comm.)—artist, author, and expert on *Haudenosaunee* art—believes the earliest known photograph of Iroquois beadworkers is a stereoscopic picture taken by the English photographer, William England, in 1859. The photograph shows five women sitting on the ground, each working on a piece of beadwork. Finished pieces are laid out in front of them (Pl. IC top). The back of the stereo card reads:

Group of Indian Women at Bead Work. Scene on Goat Island, Niagara. Goat Island during the summer season is much frequented by vendors of souvenirs of the Falls, for few can pay a visit here without carrying away some little article of curiosity as a remembrance thereof; hence those who keep shop ‘under the shade of the greenwood tree,’ drive a considerable and profitable trade. Amongst them the Indian women are conspicuous, as seated on the sward they curiously contrive purses, pincushions, needle-books, slippers, caps, and other numerous articles in elegant bead work, which for beauty of design and neatness of execution is unsurpassed. In the neighbourhood of Niagara in times past, ere the white face set foot upon their territory were the hunting grounds, of the Seneca Indians, and it is the remnant of this scattered tribe that gains a subsistence by the manufacture and sale of fancy articles upon the ground where at one time the tribe held undisputed sway. About four miles from Niagara, is a small Indian village, where the old laws and customs of this people are still observed to a limited extent, the inhabitants electing their chief and looking up to him as the patriarch of the flock.

The women may be Seneca or they may be Tuscarora who lived much closer to Niagara Falls. The beadwork in clear beads with dark velvet centers is indeed elegant (Pl. IC bottom).

Many pincushions were made in western New York in the 19th century. They featured white and clear beads and rarely used colored beads. Small wall pockets also called wall slippers were made using the same beads and designs. Elegant trifold needlecases with clear beads on dark velvet were created mid century. Elaborate mats were beaded in intricate designs around the circumference leaving the fabric center clear (Pl. ID top). Perhaps the fabric center was meant for a place to set a glass or ceramic vase or a beaded tree. Few 19th-century trees survive, but the technique of making them has been revived in the 21st century.

By the late 19th century, there were several Tuscarora beadworkers producing beautiful pieces. Several stereo cards by George Barker show Tuscarora beadworkers at

the Falls in the 1860s and 1870s. Delia Patterson and her half-sister Elizabeth (Rihsakwad) posed with beadwork in 1894. They are the earliest known named and pictured Tuscarora beadworkers (Richard Hill 2005:pers. comm.). The censuses list several “fancy beadworkers” in that period (Evans 1910). Sophronia Thompson, identified as a maker of a beaded tree, was also working at the same time. One talented sewer created star-shaped pincushions with a “snowflake” design in the center. Another, whom I call “Mrs B,” created pincushions with birds circling the center (Pl. ID bottom). Both of these styles of beadwork often carry the message FROM NIAGARA FALLS. We have yet to match any beadwork to the talented beadworkers listed in the censuses.

In 1905, Matilda Hill returned from boarding school and started sewing and beading which she continued until her death in 1985, eighty years later. She organized “beading bees” on the Tuscarora reservation and formed assembly lines to produce hundreds of pieces. She was most known for the beautiful birds that she made. Her daughter, Dorothy Printup, and granddaughter, Dolly Printup Winden, carry on her tradition.

During the latter half of the 20th century, much of the Niagara beadwork has simple motifs featuring one bird and one flower or a pair of leaves. Heart-shaped pincushions were the most common. At the end of the century, less than a dozen women were producing beadwork to sell at Niagara Falls and the New York State Fair.

With the increasing appreciation of Iroquois beadwork in the 21st century, many of the sewers have begun to produce very elaborate and beautiful pieces of beadwork (Pl. IIA top and bottom).

Little is known of historic Cayuga, Onondaga, and Oneida beadwork. Having less contact with tourists and tourist sites, perhaps members of these three nations never developed a large beadwork industry. Or perhaps Onondaga and Oneida beadwork resembles Mohawk beadwork and is included with that. Older Cayuga beadwork would most likely be in the Niagara tradition.

It was not until the 1850s that the Mohawks began to produce beadwork for sale. It appears that the very earliest types of items they made were picture frames, watch holders, purses, and caps. The picture frames were made with purple velvet and featured large clear beads. Often they were highlighted with blue, green, yellow, and red beads. Box purses, heart and trilobe pincushions, and eight-lobed rectangular pincushions were made with the same beads on purple velvet.

By the 1890s, Mohawk beaders from Kahnawake (then called Caughnawaga) were prolific producers of elaborately

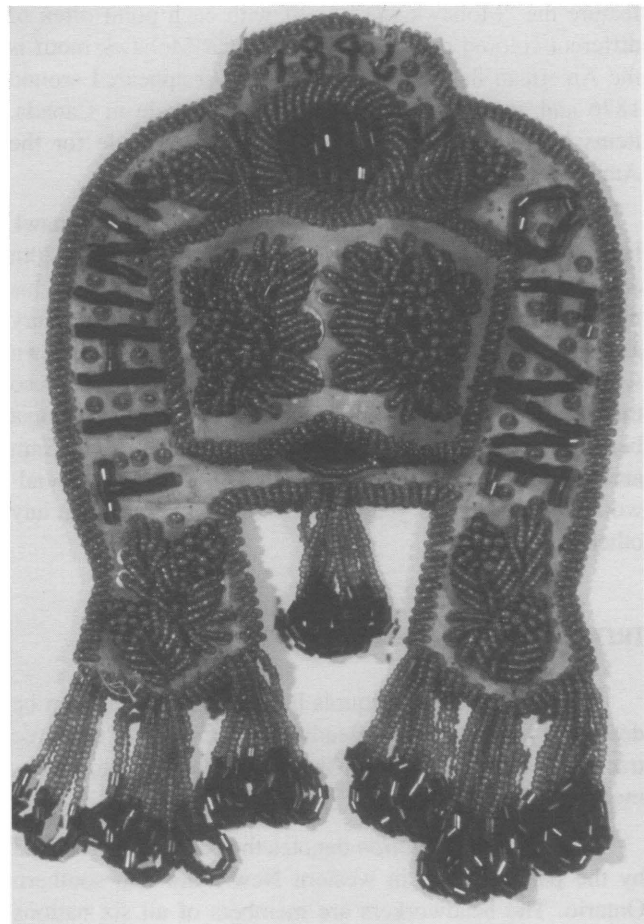


Figure 2. Mohawk combination horseshoe/whiskbroom holder with 1896 date and misspelling; H: 24 cm (photo: D. Elliott).

beaded boots, trilobe pincushions, purses, and needlecases. Beads were predominately large clear seed beads. Beads were piled high in Victorian excess. They also made horseshoes, match holders, and whiskbroom holders. Clear, yellow, and green beads were favored on yellow and green cloth. Around 1897, they started using a hot-pink material for pincushion tops and started to bead dates in with the design. Fantastic pincushions featuring exotic animals in colorful beads appeared. Mottos, often misspelled, appeared on the pincushions and wall hangings. The Mohawk beadworkers could speak Mohawk, French, and English but were illiterate, so in their haste to copy words written down for them, they often made mistakes (Fig. 2).

Loops of bugle beads hung in large clumps from the bottom of hanging pieces and sometimes were laid down on pincushions. When the bugles became unavailable around 1917, beadworkers subsequently continued to make pincushions with animals and dates but the hanging loops were now formed of seed beads. The large clear beads were replaced with chalk white beads. Many pieces

feature the “Mohawk star” motif with each point often of different colored beads. Another popular Mohawk motif is the American flag. It seems to have first appeared around 1876 and continued through the 1930s. Made in Canada, items bearing the US flag were obviously made for the American market.

Along with the evolution of the Niagara and Mohawk beadwork traditions, a third was developed in the late 20th century by Cayuga beadworkers Sam Thomas and his mother, Lorna Hill. Unlike other beadworkers, contemporary and ancestral, they bead full time. In addition to their own work, they teach beading classes to thousands of students so their techniques are spread widely. Credited with inspiring a beadwork movement among the Oneidas in Wisconsin, Sam and Lorna have probably created 20,000 pieces of beadwork in their first 25 years, unquestionably more than any other beadworkers.

IROQUOIS BEADWORK TRADITIONS

Each of the three Iroquois beadwork traditions can be described in broad terms. Beadwork from each of the three traditions carries similar attributes of shape, cloth, beads, motifs, and sizes.

The *Niagara Tradition* denotes the beadwork produced by the people living in western New York and southern Ontario. The beadworkers are members of all six nations although the majority are Tuscarora and Seneca. The beadwork started in the late 18th century with small pincushions with multi-beaded outlines. The majority of the mid- to late 19th-century beadwork was done in clear beads. Much was done on red or blue fabric. In the 20th century, multicolored beads were sewn on colorful velvet. The designs feature flowers and birds. Words are beaded in small uppercase letters with FROM NIAGARA FALLS being the most popular wording. Bindings are popular and edging beads are looser.

The *Mohawk Tradition* is made in the St. Lawrence River valley, primarily at Akwesasne, Kahnawake, and Kahnasatake. Most of the beadworkers identify themselves as Mohawk. Mohawk beadwork started in the middle of the 19th century and featured clear beads which were highlighted with green, blue, amber, and red beads. Purple velvet was popular as the face cloth. In the late 19th century, Mohawk beadwork featured extremely raised beadwork and hanging loops weighted down with bugle beads. This beadwork, which features an extravagance of beads on such items as trilobes, boots, wall hangings, and needlecases, illustrates the pinnacle of “raised” beadwork. Yellow, green, and hot pink cloth is preferred. Early 20th-century beadwork

features colorful animals, dates, and words beaded in large uppercase letters. Over 140 different mottos and place names have been recorded on Mohawk beadwork. The most common dates represent the first decade of the 20th century. A technique of alternating clear and colored beads in a checkerboard fashion was popular in the late 19th century. This was replaced by alternating chalk white and colored beads during the first half of the 20th century.

By researching in museum collections and learning from established beadworkers, Sam Thomas and his mother, Lorna Hill, developed a third tradition. Although they are Cayuga, they combine motifs and techniques from both the Niagara and Mohawk beadwork traditions. In addition to creating pieces in most of the sixty established beadwork forms, they introduced new forms such as address books, checkbook covers, and photo albums. Produced since about 1980, *Thomas-Hill* beadwork features birds and flowers made in a rainbow of colors or pieces that feature all clear crystal beads. Their beadwork designs incorporate Niagara



Figure 3. Contemporary fancy boot by Sam Thomas; H: 29 cm (photo: D. Elliott).

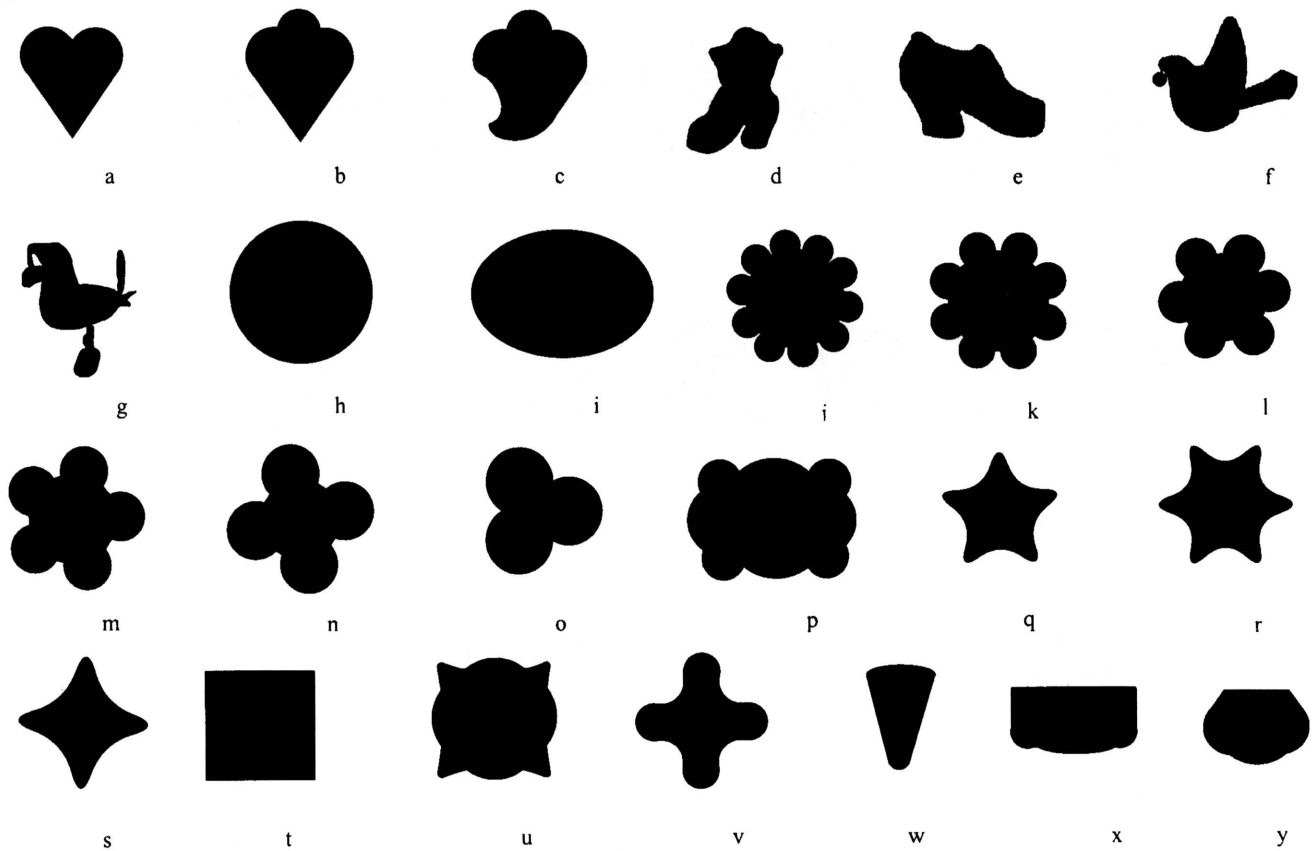


Figure 4. Pincushion shapes: a, heart; b, trilobe heart; c, asymmetrical heart; d, boot; e, shoe; f, Tuscarora bird; g, Mohawk bird; h, round; i, oblong; j, ten-lobed; k, eight-lobed; l, six-lobed; m, five-lobed; n, four-lobed; o, three-lobed; p, eight-lobed rectangle; q, five-pointed star; r, six-pointed star; s, diamond; t, square; u, lobed square; v, cross; w, strawberry; x, trifold needlecase; y, clamshell needlecase (drawing: T. Elliott).

and Mohawk motifs that are elaborated to form the new tradition. Strawberries and hummingbirds are common motifs. Fine velvet is the favored face cloth. Many pieces are large and flamboyant (Fig. 3).

IROQUOIS BEADWORK CATEGORIES

Iroquois beadwork is very varied in function, form, and size but can be separated into five main categories: pincushions, wall hangings, containers and purses, clothing, and miscellaneous. The latter incorporates pieces that do not fit into the other four categories, such as dolls and mats. The items in these four categories come in a wide variety of shapes. Over 60 different shapes have been identified (Figs. 4-6). Many of these shapes, such as the heart, have several forms (Elliott 2002).

Pincushions

Pincushions comprise the most common category of Iroquois beadwork. While many of these have beaded

suspension cords, they are included here and not in the Wall Hangings category as they principally served as pincushions. Of the 25 forms of pincushions, some are more common in one tradition than another and some are made in one tradition only.

Heart. The Valentine-style heart (Fig. 4,a) is the most common pincushion shape. It has been made for over two hundred years. The earliest hearts are very small and were most likely made in the Niagara area, probably by Seneca beadworkers. Thousands of Mohawk hearts with purple velvet centers beaded in mostly clear beads were made during the second half of the 19th century. They feature two leaves on the top of each pincushion (Fig. 7). The early 20th century features hot pink Mohawk hearts, a continuation of the hearts previously made with purple velvet. By the middle of the 20th century, Mohawk hearts are done on many different colored fabrics and feature floral designs and words. 20th-century Niagara hearts often picture a flower on one top lobe of the heart and a bird in flight facing it on the other side. MONTREAL, MT CLEMENS, OTTAWA, BROCKTON FAIR, and CAUGHNAWAGA are common

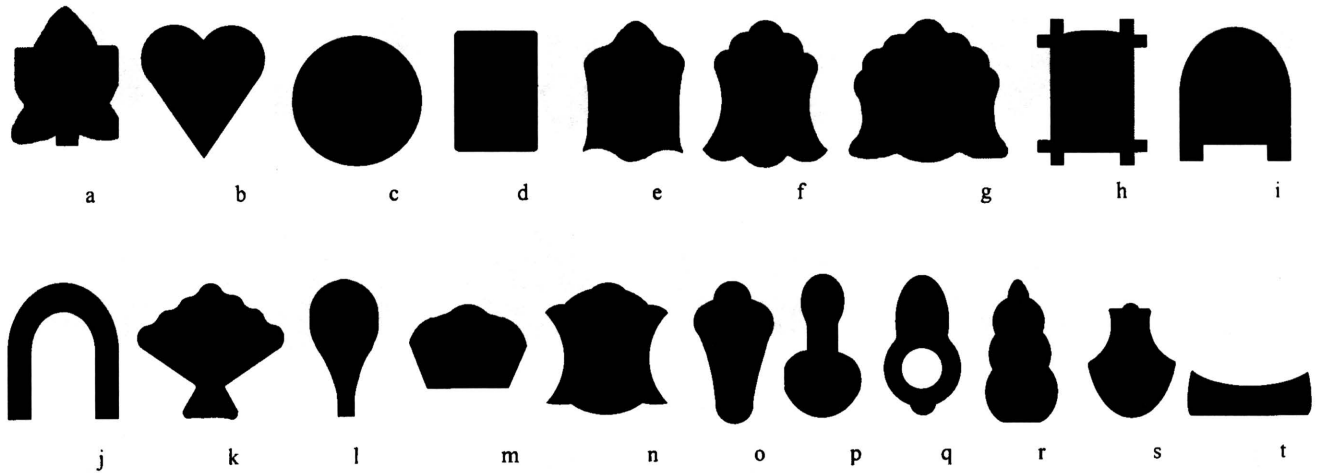


Figure 5. Shapes of wall hangings: a-i, picture frames; j, horseshoe; k-l, whiskbroom holders; m, tie rack; n, match holder; o, scissors holder; p, s, wall pockets; q, watch holder; r, letter holder; t, canoe (drawing: T. Elliott).

names written in large upper case letters on Mohawk hearts. NIAGARA FALLS and NY STATE FAIR in small upper case letters predominate on Niagara hearts.

Trilobe Heart. Another form is the trilobe heart (Fig. 4,b) which was made in both areas. There are some very early ones in the Niagara area. Trilobe making peaked among the Mohawk in the 1890s and the first two decades of the 20th century. These were often profusely decorated with highly raised flowers featuring multiple loops hanging from them. Trilobes with hot pink cloth often feature animals such as cows, lions, deer, and unidentifiable animals and birds. Mohawk trilobes measure up to 13 x 12 in. (32 x 30 cm) in size and are the largest of all the pincushions (Pl. IA top).

Asymmetrical Trilobe. A variation of the trilobe is the asymmetrical trilobe (Fig. 4,c). This shape is very similar to an Iroquois silver brooch design.

Shoe and Boot. These two forms (Fig. 4,d-e) show an obvious Victorian influence. The earliest boots were made in the 1860s in the Niagara area. They feature clear beads on dark fabric which was often red or blue and sometimes green. They stood 4-6 in. (10-15 cm) high.

In the 1890s, beadworkers in the Mohawk area created boots as large as 10 in. (25 cm) tall with another 2 in. (5 cm) of beads hanging from the bottom. Beaded suspension cords reveal that the boots were intended to be hung. Many of these boots have pockets at the top formed by a beaded,

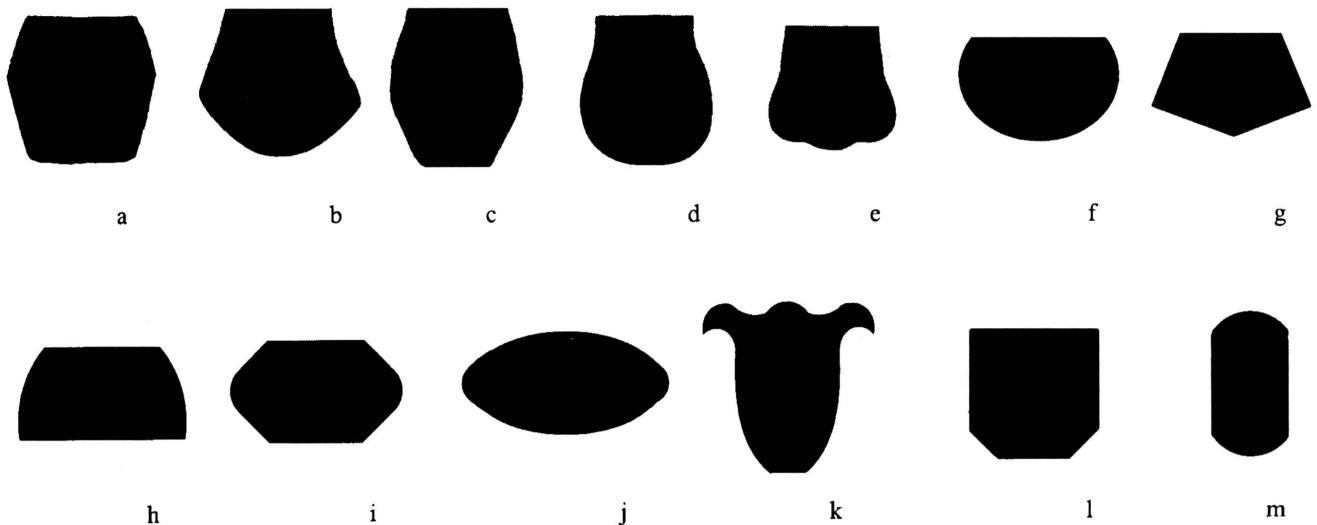


Figure 6. Purse and container shapes: a, hexagonal flat bag; b, rocker-shaped flat black bag; c, urn-shaped flat black bag; d, classic flat black bag; e, lobed flat black bag; f, small flat purse; g, pentagonal bag; h, fist purse; i, box purse; j, pinch purse; k, urn; l, collection box; m, small container (drawing: T. Elliott).

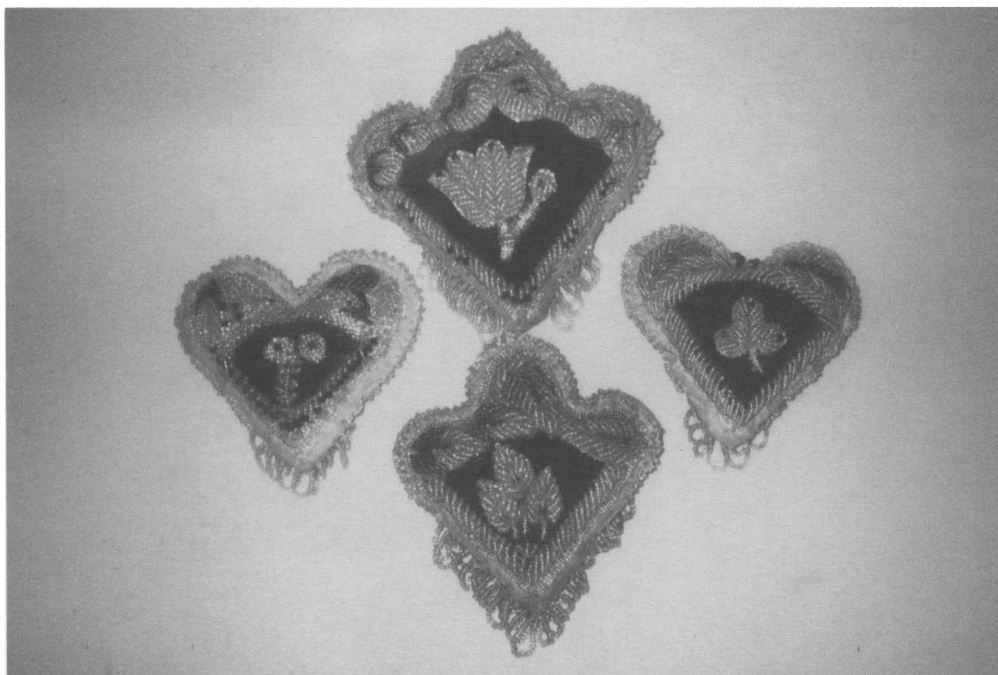


Figure 7. Nineteenth-century Mohawk hearts (H: 14 cm) and trilobes (photo: D. Elliott).

cloth-covered cardboard cuff. Perhaps this pocket was meant to hold scissors, thread, or the like. The velvet cloth is almost smothered with large stylized floral medallions of raised beadwork with bunches of beaded loops spilling out of them. Beaded birds often fill the spaces in between (Fig. 8).

Ankle-high shoe forms seem to appear in the 1920s (Pl. IIB top). They are made in both areas.

Bird. These (Fig. 4,f-g) may be the most popular Iroquois pincushion form among collectors. Birds were introduced in the 1890s in both areas (birds made to sit atop beaded trees may be a separate development). Each area has a distinct bird form although both are always covered with widely spaced beads. The Niagara bird has uplifted wings and carries two balls, sometimes referred to as cherries or strawberries, in its beak. The Mohawk bird also carries two balls (or an envelope, cone, or plaque with a date on it [Fig. 9]) and also usually has two or more balls hanging from a perch to which the bird's legs are attached. Mohawk birds have down-swept wings and often have their date of creation beaded under the tail. Some have the word BIRD beaded there. A third type, which is from the Niagara area, is a bird with wings at its sides.

Round and Oblong. Pincushions of these forms (Fig. 4,h-i) are scarce. The most common round type is one that is about an inch (2.5 cm) thick with beadwork designs on both sides. It is early and probably comes from the Niagara area.

Multi-lobed. There are three-lobed, four-lobed, five-lobed, six-lobed, eight-lobed, and ten-lobed cushions that are basically round pincushions with scallops or lobes around the circumference. The ten-, eight-, and six-lobed pincushions were made in the Niagara area in the middle of the 19th century (Fig. 4,j-l). Five-lobed pincushions were popular in the 20th century (Fig. 4,m). Four-lobed pincushions seem to have been made from the 18th century through the 20th century (Fig. 4,n). Three-lobed pincushions are very rare (Fig. 4,o).

Eight-lobed Rectangle. The eight-lobed rectangle (Fig. 4,p) is the most common type of Iroquois pincushion and one of the largest. These Mohawk pincushions average about 8 x 10 in. (20 x 25 cm). Although some have red, blue, brown, or green fabrics, the great majority have purple or magenta velvet. Purple pillow pincushions were made by the thousands, probably at Kahnawake. Most feature one or more birds with floral ornamentation that sometimes grows out of a basket or urn. All four sides of these pincushions are framed with leaves. The beads used in the leaves are clear, red, blue, green, and amber. If there is more than one of each color, they are usually symmetrically placed across from the other. Round designs composed of bugle beads were sometimes placed in the four corners. These pincushions were probably used to store fancy hatpins. Although they are so similar to each other, identical eight-lobed rectangles have never been reported. Because there are so many of

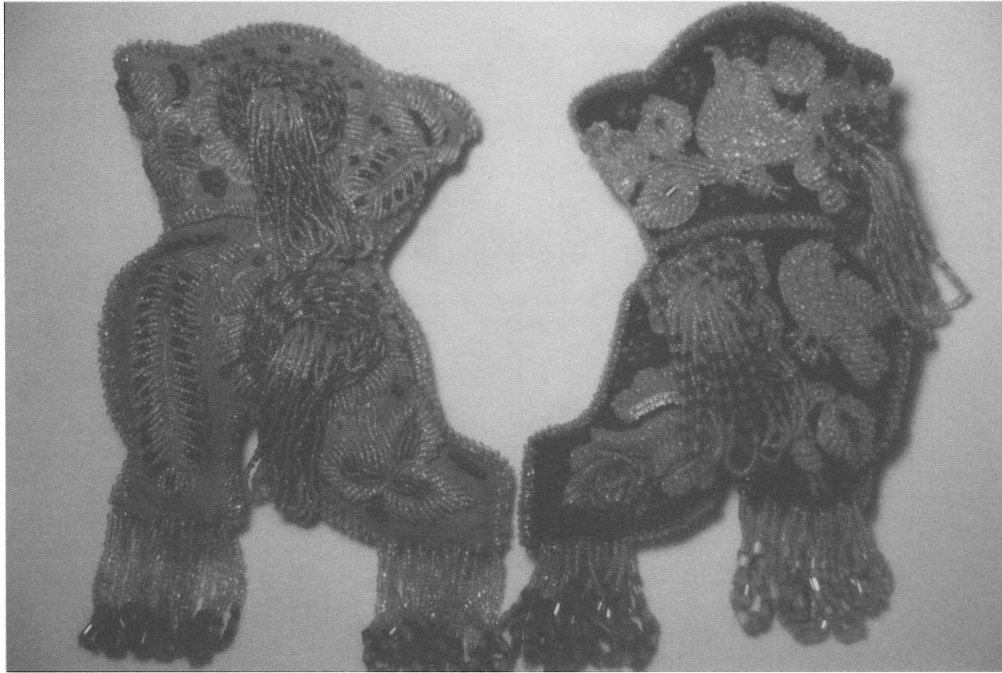


Figure 8. Late 19th-century Mohawk boots; H: 25 cm (photo: D. Elliott).

them, they had to have been made by more than one person. They were probably made between 1860 and 1910. The common motif of crossed American flags above a bird with outstretched wings may have begun in 1876, the year of the United States centennial (Pl. IIB bottom).

Star. Star-shaped pincushions can be distinguished from the lobed ones because the projections are more angular. There are eight-pointed (*see cover*), five-pointed (Fig. 4,q) and six-pointed stars (Fig. 4,r). Almost all the star-shaped pincushions were made in the 20th century by Mohawk beadworkers.

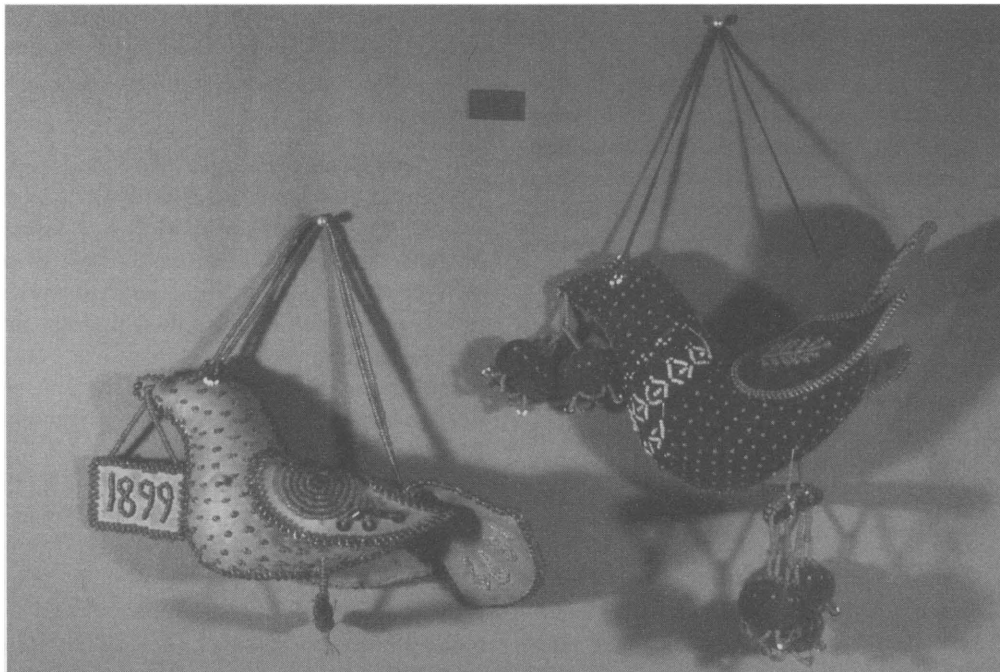


Figure 9. Mohawk birds: The one dated 1899 is 19 cm long; the other is from the mid or late 20th century (photo: K. Karklins).

Diamond. The diamond-shaped (Fig. 4,s) pincushion could be considered a four pointed star but is usually referred to as diamond shaped though they are also referred to as rhombs (Pl. IIC top). Some have incurved, not parallel sides. Diamonds often have dates from the first half of the 20th century beaded in the center and many read CANADIAN NATIONAL EXHIBITION or NIAGARA FALLS.

Square. Pincushions with a square outline (Fig. 4,t) are relatively scarce and almost all of them are very fancy. Each may have been made for a special occasion (Pl. IIC bottom).

Lobed Square. These (Fig. 4,u) pincushions were probably made by the same person, probably a Tuscarora. She made other pincushion shapes as well and substituted butterflies for the birds. Many of the lobed squares have FROM NIAGARA FALLS beaded in the center which is circled by birds. Some have beaded dates centering on 1900.

Cross-shaped. Pincushions in the form of a cross (Fig. 4,v) are rare. Very well made, the old ones date to the late 19th century. This form has been recently revived by Sam Thomas.

Strawberry. Representations of strawberries (Fig. 4,w) are made in both areas and share similar characteristics. Like the birds, they have beads spaced over them to resemble strawberry seeds (Fig. 10). Red velvet usually forms the covering. They have a loop at the top and three or four loops at the bottom. Many of the older ones are filled with emery instead of cotton or sawdust and were used to clean and polish needles. Those of the 21st century are stuffed with polyester batting.

Needlecase. These are pincushions with covers. They were made in two basic styles: trifold and clamshell. *Trifold needlecases* (Fig. 4,x) are divided into three segments, the central one being stuffed. The end segments fold over the pincushion. Niagara needlecases were made as early as the 1860s. Most feature clear beads on dark colored velvet. Many say FROM NIAGARA FALLS. Late-19th-century Mohawk examples have highly raised floral medallions on one side, often with beaded loops cascading from their centers (Pl. IID top).

Clamshell needlecases (Fig. 5,y) have only one fold so they are shaped something like a clam (Fig. 11). The pincushion occupies one flap. These seem to all come from the Niagara area.

Related to the needlecases are small *two-fold* and *trifold* pieces that sometimes have a padded pincushion but in others there are only pockets. Perhaps some are needle or pin holders while others are personal cardholders. They

are elaborately beaded in the style of the early to mid 19th century (Pl. IID bottom).

Wall Hangings

Wall hangings comprise items constructed of beads sewn on cloth that is stretched over a cardboard foundation and have suspension cords at the top so that they may be hung up. Although some pincushions also have suspension loops, they do not have a cardboard foundation. Just about all wall hangings are beaded on just one face with the exception of canoes which are beaded on both sides. About one in four wall hangings features a beaded word (such as MATCHES, FAST BOAT, GOOD LUCK, MONTREAL, or SCISSORS) that indicates the piece's intended function or a tourist destination. Beaded dates are also common.

Picture Frames. The most common wall hangings are picture frames. They were introduced very soon after photography became popular. Mohawk beadworkers were making picture frames by the 1860s; the Prince of Wales was given these when Mohawks visited London that year. A pair of Seneca picture frames are dated 1867. Picture frames are made with cloth stretched over two pieces of cardboard with one or more openings in the larger front piece. The two pieces are sewn together leaving an opening at the top where pictures can be slipped in. Picture frames are made in about ten basic shapes with many variations (Fig. 5,a-i). Their heights range from 5 in. to 12 in. (12-30 cm). Most are made for one picture although double picture frames are common (Fig. 12). Picture frames with three or four openings are rare. Mohawk picture frames usually have clusters of loops hanging from the bottom while Niagara frames have a lesser fringe (Pl. IIIA top).

Plaques are similar items. They are shaped like picture frames but consist of only one piece of cardboard and have no window for a picture. They usually carry names or beaded symbols. Plaques were made in both areas during the 20th century.

Horseshoe. Beadwork in the form of a horseshoe (Fig. 5,j) has been made in both areas since the 1890s. It seems to be the only form that does not have a physical function. Horseshoes are basically good luck tokens with GOOD LUCK being beaded on most of them. Almost all horseshoes have a beaded message. In addition to GOOD LUCK, there is such wording as I LOVE YOU, CALL AGAIN, REMEMBER ME, THINK OF ME, or SOUVENIR. Ranging from 3 in. to 8 in. (8-20 cm) in height, they are meant to hang with the open end down, a position opposite to what most Euro-Americans use. Variations of the horseshoe have a space for a picture while others are fitted to hold a whiskbroom (Fig. 2).

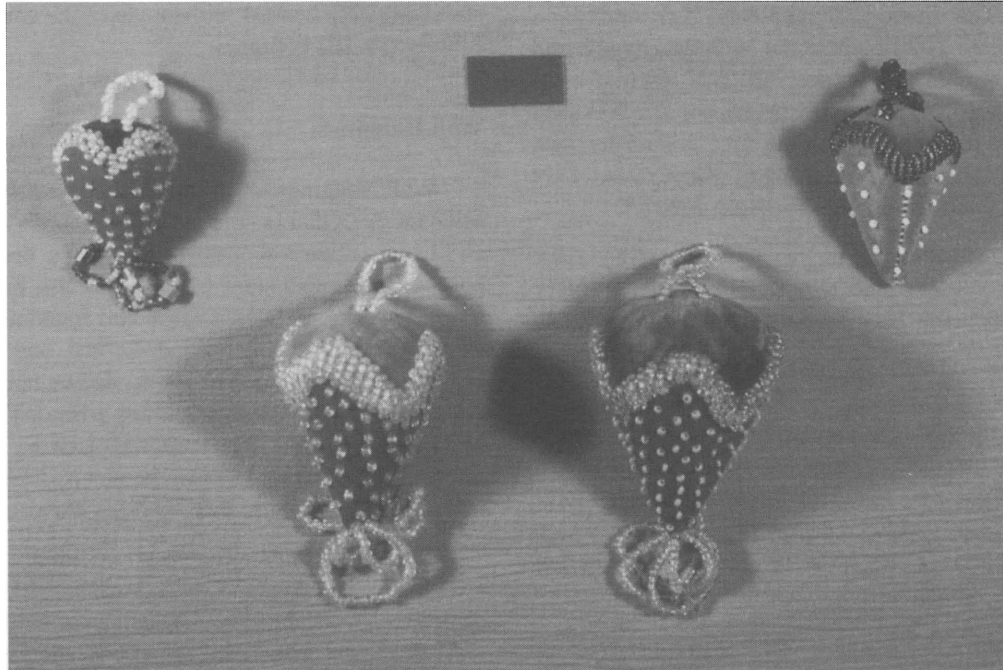


Figure 10. Strawberries; the largest is 7 cm high (photo: K. Karklins).

Whiskbroom Holder. This form (Fig. 5,k-l) was introduced in the 1890s in the Mohawk area. They have a cardboard back with a cardboard strap across the front forming a loop into which a whiskbroom may be slipped handle down. Sometimes they have the word WHISK beaded on the front and many feature a beaded date or

MONTREAL. Many were made during the first quarter of the 20th century. They come in a variety of shapes such as a snowshoe or banjo, but most are the same basic shape as the match holders described below but with a narrower base and wider top.



Figure 11. Clamshell needlecases; 19th century; the largest is 12 cm wide (photo: K. Karklins).

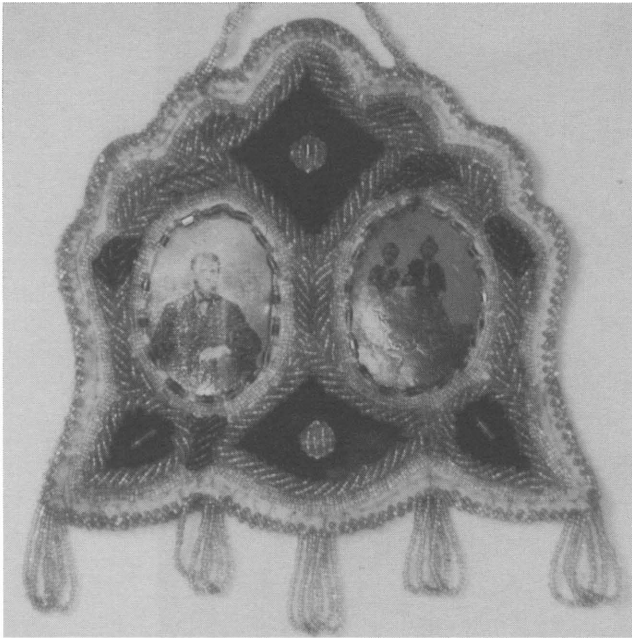


Figure 12. Double Mohawk picture frame; late 19th century; H: 23 cm (photo: D. Elliott).

Tie Rack. Related to whiskbroom holders are tie racks (Fig. 5,m). Often depicting Indian heads, these items appear to have been made only in the 1930s (Karlis Karklins 2006: pers. comm.).

Match Holder. Also called match safes, match holders (Fig. 5,n) were made in the same area and during the same period as whiskbroom holders. Most of the classic match holders have two pockets, purportedly one for unused stick matches and the other for used ones. Match holders frequently bear beaded dates and words, and average about 7 in. (18 cm) in height. They often feature a wealth of bugle beads sewn flat against the fabric (Pl. IIIA bottom). A single-pocket variant was made in the 20th century.

Scissors Holder. Long single-pocket wall hangings were made to store scissors (Fig. 5,o). Made in the 20th century, they are Mohawk forms and sometimes have the word SCISSORS beaded on them (Fig. 13).

Wall Pocket. Also called wall slippers, the first wall pockets (Fig. 5,p,s) were made in the mid 1800s in the Niagara area. They were usually made of all clear beads but sometimes had highlights of silver-colored bugles. Red and green beads were also used to highlight the clear beads. Most are 5-9 in. (12-23 cm) high. The only beaded words seen on them are NIAGARA FALLS or FROM NIAGARA FALLS.

Watch Holder. A specialized wall pocket is the watch holder (Fig. 5,q) which has a circular window in the pocket

allowing the dial of the pocket watch in it to be seen (Pl. IIIB top). These small wall pockets may be one of the very first forms of Iroquois beadwork.

Letter Holder. Another form of wall hanging is the multi-tiered letter holder (Fig. 5,q) with three or more slanted pockets on the front. These forms are rare.

Canoe. One of the more recognizable Indian forms is the beaded canoe (Fig. 5,t). They range from 2 in. to 8 in. (5-20 cm) in length. The most common beaded wording is FAST BOAT, with one word on each side. Wording commemorating Admiral Perry dates them to the time of the Spanish-American War. The small early canoes are from the Niagara area while the largest are Mohawk. They continue to be made. The largest may have been hair comb holders or match stick holders. The very early miniature ones may have had a spiritual meaning associated with heavenly canoes and may not have been made for sale.

Purses and Containers

Most purses and containers consist of cloth sewn onto a cardboard or stiff-paper foundation. They come in a wide variety of sizes and shapes (Fig. 6).

Flat Purses. After jewelry, and beaded garments and accessories such as leggings, sashes, belts, and moccasins, the earliest beaded items were probably purses, also referred to as pockets, pouches, and bags. The earliest beaded purses date to the first half of the 19th century and are of three distinct types. The first is a flat bag that features beads in a zigzag pattern. Although some bags have a rounded form, most are hexagonal in outline (Fig. 6,a). The zigzags may be a beadwork interpretation of like designs in quillwork on earlier bags. On some of these bags, the zigzag beading is interrupted to accommodate a beaded date in the 1830s. Some purses have zigzags only outlining each side while the faces of the purse picture abstract “finger-like” designs. Red, white, and yellow beads are favored. Double curve motifs are also included. One bag features the outline of a stone giant, a figure in Iroquois stories. Both sides are different and only one side has a flap (Pl. IIIB bottom). These are Seneca purses. Lewis Henry Morgan (1850) depicts one in his Third Regents Report. He calls it “a work bag.”

The second type of purse—with different designs on both sides—is the kind pictured by Morgan (1852) in his *Fifth Annual Report*. It features *multiple bead outlines* in light blue and white beads. Floral motifs are often featured. Like the zigzag type, it has only one flap and both sides are different. Many of these bags are hexagonal although other shapes are also used. Morgan (1852:Pl. 18) calls this type a



Figure 13. Scissors holders from the 1930s; the larger one is 20 cm high (photo: K. Karklins).

“satchel.” This type is similar to the beadwork executed by Caroline Parker and may be her work.

The third type—the *flat black bag*—is the most common and the most recognizable type of Iroquois beadwork (Pl. IIIC top). These purses feature almost identical designs on both sides. The floral designs are beaded in two shades of five colors: red, blue, green, yellow, and white. The fabric is black or dark brown velvet with a binding, often in red. A few have a beaded fringe. There is a flap on either side but the opening is in the top. Some bags have a small pocket on one side; it may have held a comb. The pouches range from 3 x 3 in. (8 x 8 cm) to 9 x 7 in. (22 x 18 cm) with an average of around 6.5 x 6.5 in. (16 x 16 cm). They appear to have been made throughout most of the 19th century. Thousands were made but there seems to have been an effort to make all the designs different for no two identical purses have been observed. They come in a variety of shapes with four being the most prevalent (Fig. 6,b-e). Although the flat black bags are common, little is known about where or when they were made. It is probable that they were produced in Canada by Mohawk beadworkers. This is based on the fact that the newspaper used to line one such pouch bears the date April 1845 and mentions Montreal (K. Karklins 2005:pers. comm.). It is also suggested by the use of five colors like in the purple pillow pincushions made by the Mohawk and the lack of evidence that they were made in central or western New York. They are often attributed to one or another of the six nations but there is no proof as yet to substantiate these claims.

Small flat purses (Fig. 6,f), usually with clear or chalk white beads, were made in the Niagara area during the second half of the 19th century. They have one flap and different floral motifs on each side.

Pentagonal purses (Fig. 6,g) were made in the Mohawk area from the late 19th century throughout the 20th. They often feature elaborate flowers or animals. One by Louise Deer, a Mohawk beadworker from Kahnawake, pictures Mickey Mouse.

Three-dimensional Purses. There are three forms of purses that are not flat but decidedly three-dimensional.

Niagara fist purses (Fig. 6,h) are commonly made with a floral motif in clear beads on red or blue twill. They have been made since the 1860s. Later Niagara fist purses are larger and more ornate with birds and flowers and sometimes FROM NIAGARA FALLS beaded on them (Pl. IIIC bottom). Mohawk fist purses often feature flowers and leaves like those found on 19th-century pincushions.

Box purses (Fig. 6,i), mostly made by the Mohawk, are bulkier and vary from 2 x 2 in. (5 x 5 cm) to 6 x 8 in. (15 x 20 cm). In the 19th century they were covered with purple velvet but hot pink fabric was preferred in the early 20th century. The beads are clear with highlights of red, blue, green, and yellow beads along the outside. Mohawk boxes of the 20th century often show interesting animals such as foxes, elephants, and ducks. Many have BOX beaded on the lid.

Another form is the *pinch purse* (Fig. 6,j), made by sewing three football shaped fabric-covered cardboard pieces together along two sides. The purse is opened by squeezing inward from the ends. These are usually beaded on only two sides with the bottom left bare. They are a Niagara form and have been made since the mid-19th century. At least one contemporary Tuscarora beadworker, Dolly Printup Winden, makes nice Christmas tree ornaments by sewing all three sides together and sewing a hanger at one end and beaded loops at the other.

The *bandolier bag* is a rare form that is more common among native people from the northern Great Lakes region. They are large square bags with a broad beaded shoulder strap. A few bandolier bags with Iroquois motifs were made in the 20th century.

Containers. There are three basic container forms: urn, collection box, and small container or cup.

The most common container is the *urn* (Fig. 6,k) which has four, five, or six panels. Although some were made in the 19th century (Fig. 14), most date to the 1920s and are so dated. The 20th-century urns have beaded balls (like those that the beaded birds carry) hanging from the upper junctions of the panels. A stunning six-sided urn from Akwesasne has alternating tiny heart pincushions and miniature canoes instead of the balls. The panels feature beaded birds, flowers, the Mohawk star, and US flags. The urns usually have beaded suspension cords that emanate from the upper panel junctions. The relative fragility of the cords suggests the urns were meant to hold something lightweight such as dried or silk flowers.

Shorter and wider containers similar to urns may have been used for calling cards. One dated 1899 with the name WATONKEE is a mystery. A similar piece has KLONDIKE beaded on it, while another reads CROCHET, indicating it was meant to hold crocheting materials.

Containers shaped something like an urn often have Christian symbols indicating that they may have been used in churches as *collection boxes* (Fig. 6,l). Some have beaded angels with wings just like on the birds of Mohawk pincushions.

There are *smaller containers* shaped like short drinking glasses, some cylindrical (Fig. 6,m) and some with flaring rims (Fig. 15). Their function is unknown. They usually have elaborate fringe on the bottom and probably were meant to be hung.

Clothing

Beadworked clothing is divided into three categories: outfits, caps or headdresses, and moccasins.

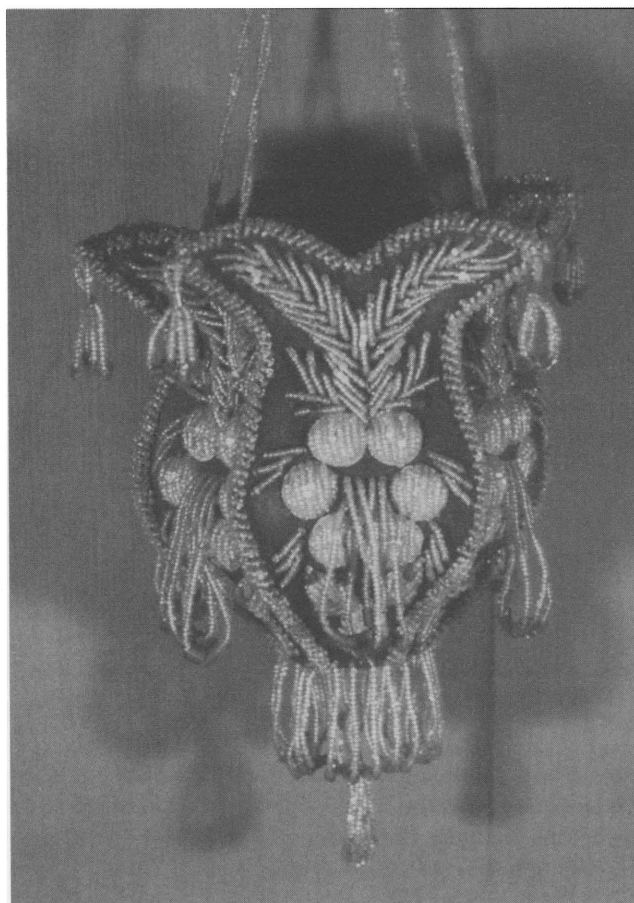


Figure 14. Urn from the late 19th century; H: 18 cm (photo: K. Karklins).

Outfits. There are three categories of outfits. The first encompasses historic traditional 19th-century garments which include cotton skirts and shirts made in the 18th-century style by such people as Caroline Parker.

The second category includes the outfits worn by entertainers in pageants and medicine and Wild West shows. These were usually made of leather, velvet, or canvas. Many were made by East-coast regalia and costume companies that provided them to members of the Improved Order of Red Men as well as Indian entertainers. Beadwork panels and strips obtained from the Mohawk were applied to the various components at the factory.

The final category comprises contemporary outfits made by the Iroquois people for their personal use. They are made in the 18th-century style and worn for such occasions as family celebrations, ceremonies, and pow wow dancing.

Caps or headdresses. There are several forms of Iroquois caps or headdresses. The earliest known is what is called a *Glengarry* because it is shaped like a Scottish wedge cap (Fig. 16). These are usually beaded in the same



Figure 15. Small containers; late 19th century; the largest is 14 cm wide (photo: K. Karklins).

five-color floral motif as the flat black bags, which may be modeled after sporrans. It is thought that they were women's hats. They span the 19th century or at least the first three quarters of it.

Smoking caps are round velvet caps with a beaded band along the lower edge. This band is often decorated with the same type of five-color beadwork as the Glengarry. The bands of some examples exhibit the beaded wording SMOKING CAP and a date. This form appears to have about the same time range as the Glengarry, but extends into the early 20th century as well.

A similar form is the *round cap* (Pl. IIID top) that was popular on the Six Nations Reserve in Ontario as well as elsewhere. It differs in that there is a beaded panel at the front. These were men's hats and appear to date to the 19th century.

Formed on a light wooden frame and adorned with feathers and sometimes beadwork as well, *gustowehs* are headdresses worn today by Iroquois men in longhouse ceremonies. The main beadwork is around the headband and depicts *Haudenosaunee* symbols. *Gustowehs* differ in feather arrangement from nation to nation and often small models of the six configurations are made to sell. Few full-size *gustowehs* are sold to tourists today.

Moccasins. Iroquois moccasins are very distinctive (Pl. IIID bottom). They have brown leather bodies with beaded vamps and cuffs. Early moccasins exhibit the zigzag

motif seen on early 19th-century purses. Mid-19th-century moccasins feature small clear beads sewn on red or blue satin. Later moccasins are decorated with the five-color floral motif. Mohawk moccasins of the early 1900s exhibit the leaf designs seen on pincushions.

Miscellaneous

Beadwork types that do not fall into the previous categories are included here.

Mats. These items resemble the top panel of a large pincushion. They come in round, square, star-shaped, truncated-square, and eight-lobed forms (Pl. ID top). The majority appear to be from the Niagara area. They are elaborately beaded except in the center. Perhaps they served as bases for vases. Some served as the bases of beaded trees as there are at least two examples of sets of a tree and its beaded mat. There are also examples of sets that include a mat and a matching pincushion. In recent times some mats have been produced which have raised beadwork in the center and are purely decorative.

Tablecloths. Early 19th-century *tablecloths* have beadwork along the edges and in the middle. Morgan collected one that was probably made by Caroline Parker in the 1840s (Rochester Museum and Science Center collections).

Dolls. These are made by members of all of the six nations. Traditional Iroquois dolls have a cornhusk body

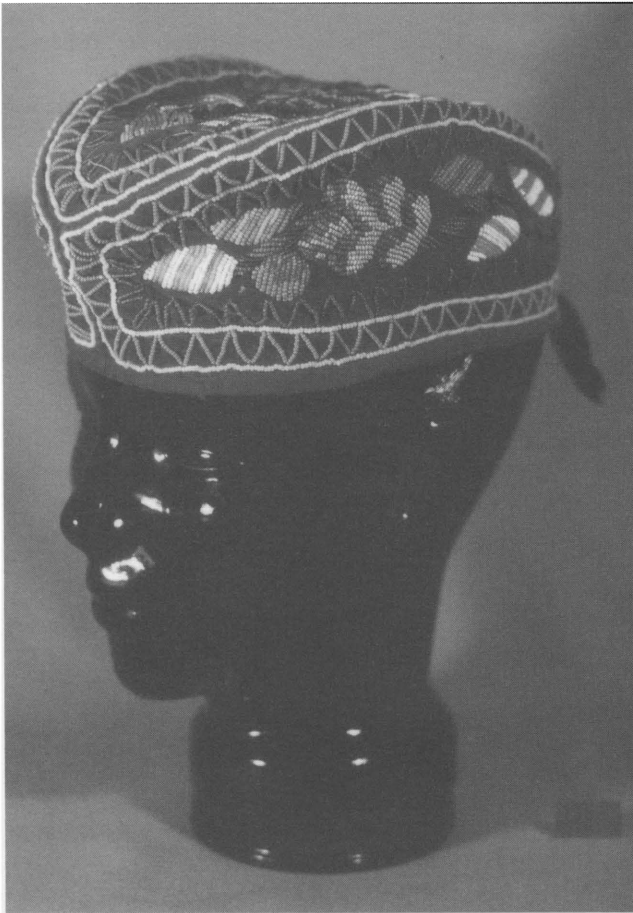


Figure 16. Glengarry hat; late 19th century; length is 28 cm (photo: K. Karklins).

while some dolls have cloth or leather bodies. Most are dressed in what is called traditional Iroquois clothing. Male dolls have beaded leggings, an apron, and shirt. Females have beaded leggings, a skirt, and shirt. The moccasins are often beaded. Many cornhusk dolls come from the Seneca reservations while the dolls from the Tuscarora reservation usually have leather faces and hands. Stuffed cloth dolls are also made at Tuscarora.

Miniature Furniture. Another form of Iroquois beadwork that is still being made is miniature furniture. This is made of beads strung on wire and is probably a craft borrowed from the Victorians.

Pins. Small pins comprise the least expensive group of Iroquois beadwork. Some include tiny moccasins while others have little dolls on cradleboards. Another form is the little flat Kateri doll. It is said to represent Kateri Tekakwitha, the beatified Algonquin girl who lived in the Mohawk Valley until her conversion to Christianity in 1676. These little dolls can be worn as pins or hung on necklaces.

CONCLUSION

For more than two centuries, talented Iroquois beadworkers have created works of art using glass beads. They combine traditional designs into forms familiar and attractive to the eyes of Euro-Americans. Long dismissed as unimportant, beadwork made by the Six Nations Iroquois (the *Haudenosaunee*) has recently become a popular field for both researchers and collectors, so much so that several museum exhibitions have been mounted and are currently on display. Always creative and experimenting with new forms, Iroquois beadworkers promise to continue to innovate and create beaded artwork in the 21st century.

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BEADS IN THE STRAITS SETTLEMENTS: TRADE AND DOMESTIC DEMAND, 1827-1937

Hwei-Fe'n Cheah

Beads have long been a part of the exchange of goods in Southeast Asia. Indo-Pacific beads were traded in Southeast Asia and colored beads from China were exchanged for spices and forest products from the Indonesian archipelago. The Straits Settlements, comprising the ports of Singapore, Malacca, and Penang, was formed in 1826, to consolidate the trading position of the British in Southeast Asia. Singapore, in particular, developed into a major entrepot of the 19th and early 20th centuries. Research by the late Peter Francis, Jr., drew attention to its role as a channel for a part of the Southeast Asian bead trade. This article extends his research by plumbing the rich statistical records of the Straits Settlements to examine the changing role of the Straits Settlements from a bead emporium to a consumer of beads, with Singapore acting as a distribution center for a growing domestic demand for beads.

INTRODUCTION

Beaded objects and ornaments have played a historically important part in rituals and ceremonies in Southeast Asia. Beads were strung into necklaces, crafted into items such as dance aprons and baby carriers, woven into fabrics, and embroidered onto textiles as decorative ornamentation (Maxwell 2002:58-66; Hector 1995). In parts of Southeast Asia, beads were passed through generations of a family as heirlooms and valued for their supposed magical properties (Sarawak Museum 1984:1).

Even though glass beads were made locally, the Southeast Asian region was also a consumer of imported beads (Adhyatman and Arifin 1996:27, 74-76; Francis 1989a:6-7, 29, 2002:169-172). Francis examined the bead trade in Southeast Asia and found that Singapore in the early 20th century was a major mart for imported beads destined ultimately for Sarawak and the Netherlands Indies as the main markets, with Brunei, Sabah, Indo-China, China, and Thailand as minor customers (Francis 1989b:21-24, 2002:172).

Francis' investigation covered selected years between 1909 and 1934, during which time the percentage of European beads imported to Singapore increased, as did the volume of European beads traded with Indonesia (Francis

2002:172). The pattern of bead trade was obviously not static and hints at the possibility of dynamic developments in bead trade throughout the 19th and 20th centuries. This article draws on various statistical sources on bead trade to examine the role of Singapore and the other Straits Settlements ports in regional bead trade from 1827 to 1937, and how it changed. It considers the factors that may have contributed to the continuation of the bead trade through the Straits even while developments in regional trade and shipping eroded the position of Singapore as an emporium. At the same time, domestic demand for beads within the Straits Settlements itself formed an increasingly important element in the bead trade through Singapore.

The establishment of the Straits Settlements as a bead trading post from 1827 to 1839 continues through the 1840s to 1860s with at least some of the bead trade taking place via India. Detailed statistics available from 1870 to 1937 provide a clear picture of the expansion and decline of regional bead trade in the Straits Settlements. The rise in domestic demand from the end of World War I supplanted regional demand, changing the nature of the Straits Settlements bead trade. Beginning with what Francis (2002:167-180) argued was the end of the Asian maritime bead trade as Europeans began to dominate it, European supremacy in the 19th-century bead trade augured a phase of development in *local* beadwork in the Straits Settlements.

THE STRAITS SETTLEMENTS BEAD TRADE

Located at the crossroads of a burgeoning east-west trade, the Straits Settlements developed into an important entrepot in the 19th century, servicing the rich hinterland of the Malay Peninsula, Thailand, and the Netherlands Indies (*see* Huff 1994:1-68).¹ Singapore, founded in 1819 as the lynchpin of a strategy for British trade in the region, seems a logical mart for beads, building on its geographical location and its trading activities (Fig. 1). Penang, taken under British control in 1786, and Malacca, ceded by the Dutch to the British in 1824, acted as secondary players in the bead trade.

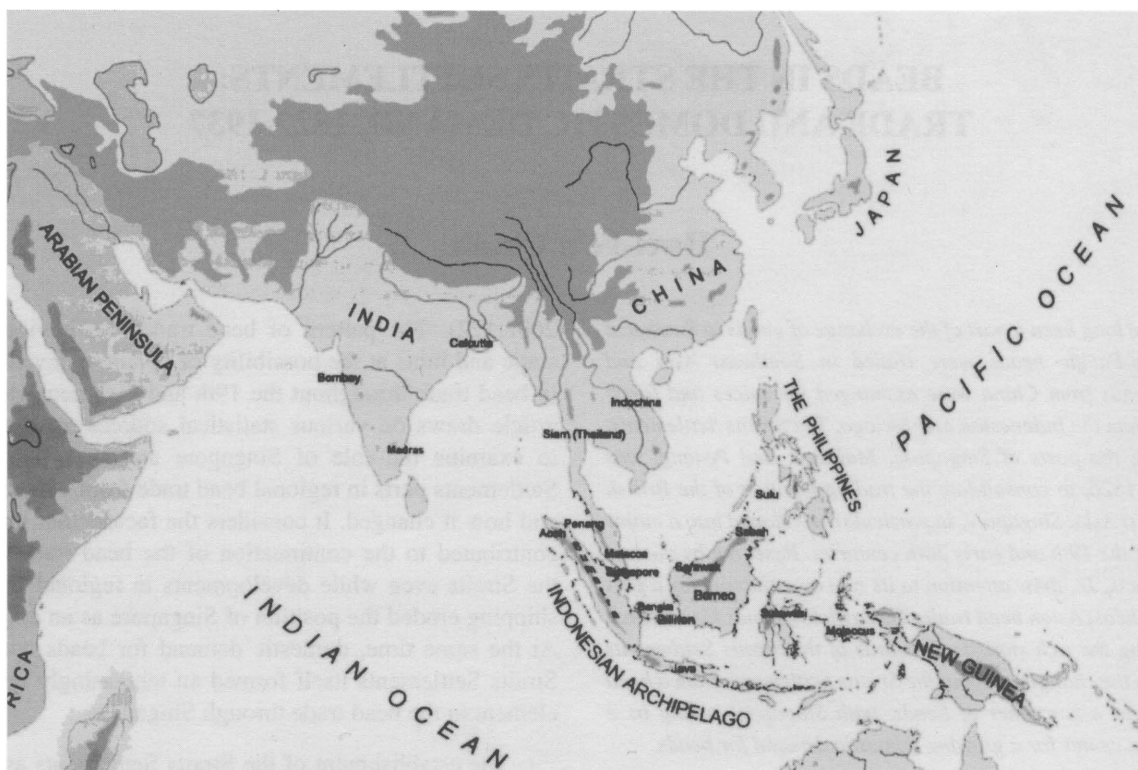


Figure 1. Map of Asia showing key places mentioned in the text (after Cribb 2000:map 0.3).

Singapore, Malacca, and Penang were consolidated into a single administrative unit known as the Straits Settlements in 1826, but the bead trade predates its formation as an administrative entity. Beads were imported to Southeast Asia from India and the Muslim West until the 12th century but appear to have been replaced thereafter by Chinese beads, particularly of the coiled variety (Francis 1989a). Islands such as Sulu, Billiton, Sumatra, Java, and the Moluccas bought colored beads from China (Adhyatman and Arifin 1996:76). Imported beads were used as currency in barter in the Indonesian archipelago and in Indo-China. Chinese beads were exchanged for birds' nests, turtle eggs, cane, rhinoceros horn, and hornbills in Sarawak (Sarawak Museum 1984:5). Bead trade also passed through Malacca, a major Southeast Asian trading post of the 15th century where traders bought colored-glass and carnelian beads from India to exchange for gold dust in Borneo (Meilink-Roelofs 1962:85, 100). Intriguingly, a 15th-century Chinese traveler's account lists *melted* beads amongst the items traded in Malacca by the Chinese (Fei 1436:55).

Venetian-made beads, destined ultimately for the Indonesian archipelago, were introduced to the Malacca trade by the 16th century indirectly via the east-west trade route through Egypt and India and by European penetration into Southeast Asia as direct trade was developed (Adhyatman and Arifin 1996:88; Francis 1989b:21, 2002:171). Finds of

17th- and 18th-century Venetian and Bohemian glass beads in Java and Borneo tend to support this, even though Francis has argued that the penetration of European beads into parts of the archipelago was slow (Adhyatman and Arifin 1996:93-98; Francis 2002:171)

The Dutch also exported beads, including Dutch and German ones, to their colonies (Kidd 1979:34). The import of Dutch glass beads to the Netherlands Indies would make particular sense since the owner of one of the Amsterdam glassworks was among the founders of the Dutch East India Company (Adhyatman and Arifin 1996:89; Dubin 1987:112). Brass beads, as well as globular and faceted wound glass beads which were probably made in Europe, were found on the wreck of *De Liefde*, a Dutch ship that sank on its way from Amsterdam to Java in 1711 (Karklins 1988; Karklins and Schrire 1991:64).

Other Europeans, notably the English, were active in Southeast Asian trade as well. John Scattergood, an English private trader operating between 1697 and 1723, traded between India, Persia, China, Java, and Sumatra. His items may have included beads as his correspondence shows that he sent to Aceh in northern Sumatra some "gold thread of China, the beads being wrapped in paper, called *chioquinsinsoan*...."; it is, however, unclear if the term "beads" refers to a means of wrapping the thread (Temple et

al. 1935:82, 109). By the mid-19th century, European beads were exported to the English and Dutch colonies through London, Liverpool, Hamburg, and Amsterdam (Karklins and Adams 1990:75).

Evidence from cargo lists published in the *Singapore Chronicle and Commercial Register* (1827-1835) suggests that Singapore is likely to have started trading beads at a fairly early stage in its development, continuing in the role previously played by Malacca as a regional distribution center for beads.

DOCUMENTATION ON THE BEAD TRADE

Detailed historical information on the bead trade in Southeast Asia is limited, perhaps because the value of the bead trade was, in itself, relatively small. In absolute terms, the value of bead trade was insignificant relative to that of other imports of intermediate goods such as cotton thread. For instance, the value of beads imported to the Straits Settlements was \$25,186 compared to \$1,151,411 for cotton twist in 1870 (Straits Settlements 1870:227, 235).² Compared to the bead trade in other parts of the world, the value of the beads imported to the Straits Settlements was also small. In 1896, German East Africa imported 264,815 pounds in weight of beads from Germany, Bohemia, Venice, India, China, and Japan (Jargstorf 1995:110). Between 1924 and 1937, when volume data are available, the average annual bead imports to British Malaya came to only 43,850 pounds (Malaya 1924-1937).³

A number of sources do exist, however, which can illuminate our understanding of the Straits Settlements bead trade from 1827. The *Singapore Chronicle and Commercial Register*, published weekly between 1827 and 1835, for an expatriate mercantile population, carried detailed shipping lists which included bead imports and exports. The *Pinang Gazette and Straits Chronicle* (1838-1839) was a similar paper published in the early 19th century and contained shipping lists for Penang. Some statistical information on beads is also available from the *Statistical Tables Relating to British Self-Governing Dominions, Crown Colonies, Possessions, and Protectorates* for 1853 to 1866 (Great Britain 1855-1866), and the *Statistical Abstract Relating to British India 1840-1865* (Great Britain 1867).

Authority over the Straits Settlements was transferred from the India Office to the Colonial Office in 1867. Subsequently, detailed data on bead trade are available from the *Blue Books*, the official government publication of statistics for the region (Straits Settlements 1870-1937). Additional data are given in the *Return of Foreign Imports*

and Exports for British Malaya (Malaya 1924-1937) and provide a useful comparison.

Major department stores in the Straits Settlements (e.g., John Little's and Robinsons) which may have retailed beads in their haberdashery departments in the 19th century were contacted but were unable to provide any information on bead sales. Held in the School of Oriental and African Studies at the University of London, the records of the English trading company Guthrie Corporation, which was established in the Straits Settlements in 1824 as Messrs. Guthrie & Clark, did not yield any information on beads. Other potential sources of information that could not be investigated because of time and resource constraints are company records of bead manufacturers such as the Società Veneziana Conterie and the Bohemian-based bead merchant Albert Sachse & Company which may contain specific information on prices and the types of beads involved.

Data Variance and Interpretation

The Straits Settlements *Blue Books* for 1870-1937 and the *Return of Foreign Imports and Exports* for British Malaya 1924-1937 provide a detailed breakdown by country of the value of bead imports and exports for all years from 1870 to 1937, except 1884, 1886, and 1887. Changes in political boundaries during this period are reflected in the changes of the definitions of a region. For comparability across time, the statistics have therefore been restated to follow either geographical or political boundaries. For instance, because there is no breakdown in the data for Bombay, Calcutta, and Madras between 1872 and 1890, the figures have been aggregated for British India for the entire period 1870 to 1937. Where political boundaries cut across a geographical or ethnographic region, data have been aggregated on the basis of geography, for example, in the case of Dutch and British Borneo.

The country of origin listed for merchandise does not necessarily indicate it was made there. For instance, Swiss-made goods would not have been listed under Switzerland which has no port, but under the port from which the goods were exported, e.g., the Netherlands. Based on trade routes, it is reasonable to assume that the beads exported from Europe would have been produced either in France, Germany, Bohemia (part of Austria until 1918), or Italy, the major bead-producing countries in Europe. Beads imported from Hong Kong and China would most likely have been produced in China. Beads imported from India and the Middle East may have been manufactured elsewhere, however. The Società Anonima Fabbriche Unite di Canna, Vetri e Smalti per Conterie apparently had trading posts in Bombay, Calcutta, Alexandria, and Cairo in the mid-

19th century, and it is possible that the Società Veneziana Conterie e Cristallerie, formed in 1898, had sales agents in similar places (Jargstorf 1995:60-61). Albert Sachse, the bead trader and a co-founder of the Società, had representatives in Africa, and possibly India, who bartered their products for items such as animal skins, ivory, and local art while they assessed local demand for beads (Nový 2002:214). Transshipment trade where goods were imported into Straits Settlements ports and remained in the custody of shipping agents while awaiting export were not included in the returns. This means that the beads that were re-exported resulted from transactions undertaken after they reached the Straits Settlements.

Although some countries both imported beads from and exported beads to the Straits Settlements, most were either net importers or exporters of beads. For instance, in 1890, Italy exported \$8,780-worth of beads to Singapore but imported only \$880-worth of beads from there (Straits Settlements 1890). It is possible that the latter beads represent unsold consignments rather than beads produced in other countries and exported to Italy via Singapore. The case is less clear for China which produced glass beads south of Beijing but also imported beads from Singapore (*see* Francis 1986:17, 2002:59-60). Interestingly, no imports of European glass beads to China (through Canton) were recorded as of the first half of 1863 (Francis 2002:173).

There is some discrepancy between the figures for bead exports from Singapore to Penang under the entry for Singapore and those for imports to Penang from Singapore under the entry for Penang. For example, in 1890, the statistics for Singapore reveal that \$270-worth of beads were exported to Penang, but those for Penang indicate only \$120-worth of bead imports (Straits Settlements 1890). One reason for the discrepancy may be that some exports from Singapore to Penang were not recorded while they were in transit. The cumulative totals of imports and exports, however, show a higher value of beads imported to Penang than exported from Singapore between 1881 and 1920 (Straits Settlements 1881-1920) suggesting that some caution needs to be taken when interpreting these figures.

Starting in 1930, the designation for beads changed to "beads and bead trimmings." This does not appear to have affected the pattern of the bead trade. In the analysis, the aggregate figures for bead imports and exports are, therefore, taken to represent the trade in beads only.

Dollar Values, Weights, and Quantities of Trade

It is necessary to understand if the change in the value of the bead trade also indicates a change in the volume (i.e.,

quantity) of beads traded. Currency fluctuations could affect the aggregate value of beads traded without affecting the quantity of trade. Import and export values have, therefore, been restated in terms of sterling values in the tables to eliminate one element of currency fluctuation. Sterling was selected as the base currency because of the availability of annual exchange rates, its relative stability against other European currencies in the late 19th and early 20th centuries and because of the dominance of bead imports from Europe (Schneider et al. 1992).

In addition, a rise in aggregate bead values could be due to an increase in price rather than quantity. It is difficult to ascertain the actual *quantities* of beads traded since historical data on the prices of different types of beads are not easily obtainable. Furthermore, the data do not provide a breakdown of the types of beads traded. Nevertheless, we can obtain an indication of general bead price movements from prices prevailing in other parts of the world. For instance, the price of glass seed beads in Bohemia declined throughout the late 19th century due to technological improvements and fell tenfold between 1892 and 1900 (Neuwirth 1994:108). Such extreme price declines may be expected to have affected export prices due to competition between manufacturers and distributors. Technological improvements in the production of other types of glass beads may have maintained or even reduced bead prices in general. Since 78% of the beads imported to the Straits Settlements between 1870 and 1902 were imported from Europe, the percentage increase in the bead trade based on monetary values is likely to understate the percentage increase in the quantity of beads traded.

From 1924 onwards, the Straits Settlements *Blue Books and Return of Foreign Imports and Exports* for British Malaya provide the weight (in pounds) of the beads traded. Figure 2 shows that, apart from 1925-1926, the changes in traded values correspond closely to changes in traded volumes (by weight). Bead imports in 1925-1926 were characterized by an increase in European (mainly German) products which was accompanied by a higher average value per pound of beads.⁴

Prior to 1886, merchandise values were supplied by ship captains rather than shippers and may not have been complete (Chiang 1978:214-217). Official values of trade for the period after 1886 are thought to be fairly accurate, however, because Singapore was a free port so there was little incentive to misstate values in an attempt to avoid duties (Huff 1994:xv). In general, the values for imports represent the cost, insurance, and freight or the latest sale values of the goods. The values for exports represent the cost and charges for delivering goods on board ship. Regarding re-exports, there is generally some difference between import and export values for the same goods,

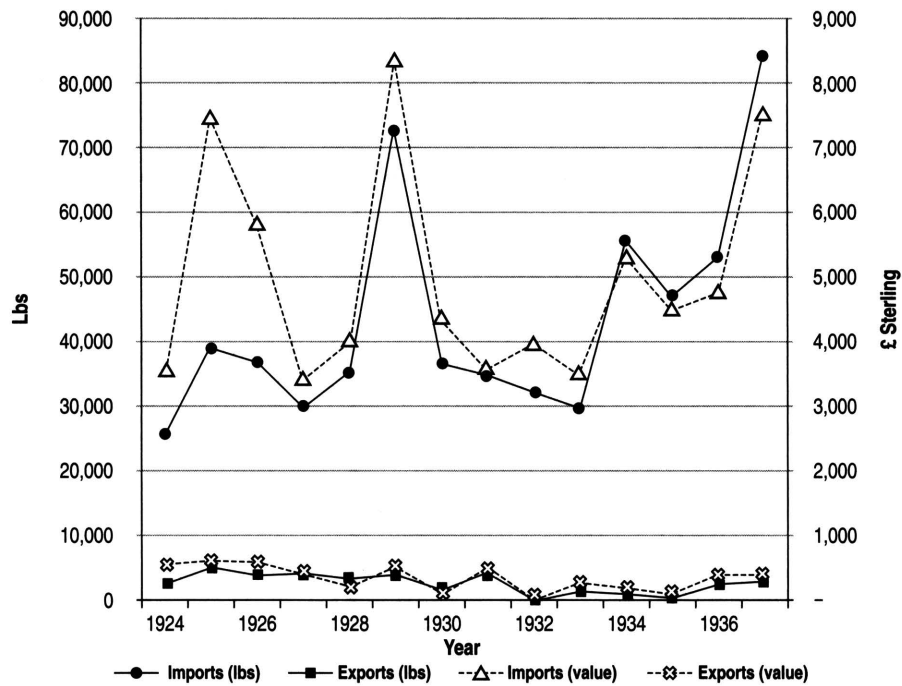


Figure 2. Bead imports and exports by value (in pounds sterling) and weight (lbs.), 1924-1937 (Straits Settlements 1924-1937; Malaya 1924-1937).

which represents traders' profit margins and transport and transaction charges. The statistics have not been adjusted to eliminate these differences, however, as there is no reliable estimate of such costs. Data extracted from the *Return of Foreign Imports and Exports* for British Malaya do not include imports meant for transshipment within Malaya.

EARLY BEAD TRADE, 1827-1839: STRAITS SETTLEMENTS AS A DISTRIBUTION CENTER

Information on the early bead trade extracted from the shipping lists of the *Singapore Chronicle and Commercial Register* and *Pinang Gazette and Straits Chronicle* is presented in Table 1. The *Singapore Chronicle and Commercial Register* also provided weekly prices of major tradeable goods and had begun to include gold thread prices by 1835. The sporadic entries of beads and the absence of price data indicate that they may have been a peripheral trade commodity. Although entries for beads are not likely to be comprehensive and bead imports and exports may have been classified as "sundries," the lists do provide a picture of bead trade in the early 19th century.

Turning first to imports, Table 1 reveals that, apart from five piculs (equivalent to 133.3 lbs.) of beads imported from Penang, all bead imports to Singapore were from the west.

In contrast, both entries for imports to Penang were from the east (Madras and Macau). Only eight inward shipments of beads were noted and, of these, four shipments were from Europe. This suggests that a significant part of the bead trade in the early 19th century may have consisted of European beads, most likely glass.

The main manufacturing centers for glass beads were Venice, Bohemia, and Germany. Lists of European glass exporters show that at least a few of them did export glass manufactures, possibly including glass beads, to Singapore and the region (Neuwirth 1994:494-506). Although companies such as J. Zeisler also exported directly to places like Java and Sumatra, Singapore maintained a role as a trading center for beads.

As for exports, European beads formed part of the goods re-exported from Singapore to other Straits Settlements ports and the hinterland. Sheppard (1978:89) has estimated that glass seed beads have been used in Sarawak since the 1820s, and it is not inconceivable that some of the beads exported from Singapore could well have been among the first shipments of glass seed beads to Sarawak.

Two shipments of beads from Singapore to India are indicated. It is unclear whether these were of Chinese origin. While it is possible that not all bead imports or exports were recorded, there is an interesting absence of the import of

Table 1. Imports and Exports of Beads for Singapore and Penang, 1827-1839.

Date	Exports			Imports		
	Quantity	Carrier	Destination	Quantity	Carrier	Origin
	From Singapore:			To Singapore:		
6/1/31*	2 piculs	British	Madras			
13/1/31*	4 piculs European beads	Native vessels	Presumably the surrounding islands			
28/07/31*	4 boxes	British	Manila	2 boxes	British	Liverpool
15/9/31*				1500 lbs (11-1/4 piculs)	Danish	Altona
22/9/31*	1 cask blue beads	British	Malacca and Penang			
17/11/31*				3 cases glass beads	British	Calcutta
8/12/31*	6 tubs	Native craft	Presumably the surrounding islands			
25/1/32*	5-1/4 piculs German beads	Dutch	Penang and W.C. Sumatra			
22/2/32*	10 casks	unspecified	Tranquebar (India)			
12/4/32*				5 piculs	British	Penang
17/10/35*				1 cask and 1 case	British	London
21/11/35*				8 catties (10- 2/3 lbs.) Arabian beads	British	Juddah (Jeddah)
				1 case	British	Liverpool
	From Penang:			To Penang:		
1/09/38**				2 boxes China beads	unspecified	Madras
22/09/38**	200 dr. weight (Spanish \$750) coral beads	unspecified	Malacca and Singapore			
9/02/39**				18 dozen China beads	unspecified	Macau

Sources: (*) *Singapore Chronicle and Commercial Register* (1827-1835), and (**) *Pinang Gazette and Straits Chronicle* (1838-1839).

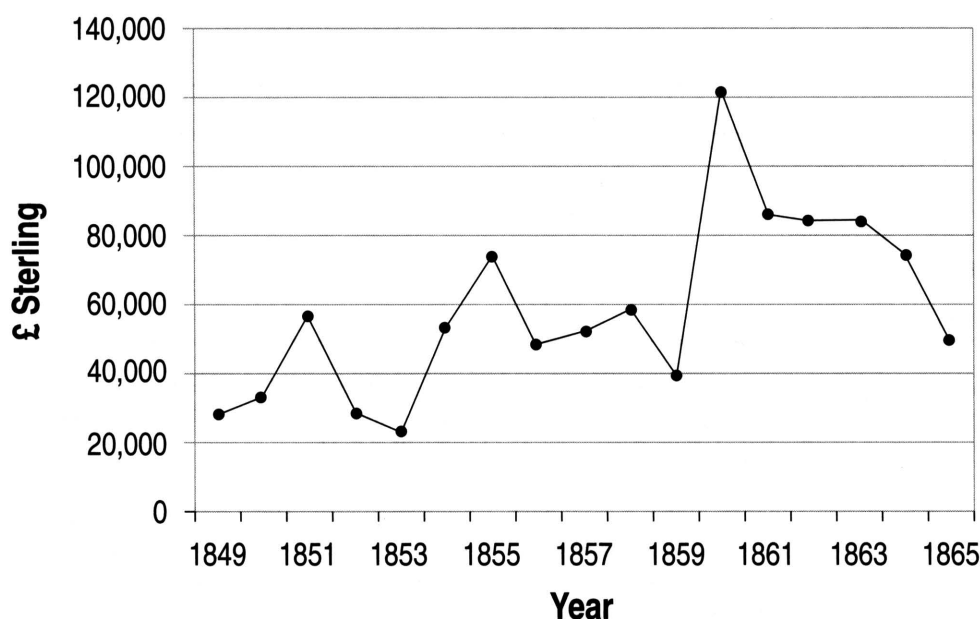


Figure 3. Bead imports into British India by value (in pounds sterling), 1849-1865 (Great Britain 1867: Table 29).

Chinese beads into Singapore. Such beads may have come through Penang, which received a shipment of beads from Macau. One shipment of “China beads” to Penang from Madras opens to question whether “China beads” refers to Chinese-made beads or beads made of porcelain.⁵ The “blue beads” exported to Malacca and Penang from Singapore may have been Chinese or European. Blue-glass beads made in Indonesia appear to have been popular in parts of the Indonesian archipelago in the 17th century, and Chinese and Dutch beads of blue glass have also been found in Indonesia (Adhyatman and Arifin 1996:34, 86-87; Munan 2005:30-31, 132).

While import and export data are sporadic, they do present a picture of the Straits Settlements acting as a distribution center for the bead trade originating from Europe and possibly from China and India as well during the 1827-1839 period. The ultimate destinations of the beads were the hinterland regions where they were bartered for native products, continuing a pattern of trade established by the 15th century.

BEAD TRADE WITH INDIA, 1840-1869

Very little statistical data is available for the 1840-1869 period. Some information relevant to the Straits Settlements can, however, be gleaned from the *Statistical Abstract Relating to British India 1840-65* [Statistical Abstract](Great Britain 1867) and the *Statistical Tables Relating to British*

Self-governing Dominions, Crown Colonies, Possessions, and Protectorates [Statistical Tables](Great Britain 1855-1866).

Figure 3 shows the value of bead imports into British India for the 1849-1865 period based on aggregate data from Table 29 of the *Statistical Abstract*. An increasing trend in bead import values can be seen. Data for the value of total imports from the *Statistical Abstract* and the *Statistical Tables* do vary slightly, however, casting some doubt on their accuracy and should, therefore, be viewed as indicators of the direction of changes in bead trade rather than as representing absolute values.

Between 1853 and 1866, over 90% of the bead imports into British India were from Britain (Great Britain 1855-1866). These may have been of English manufacture or, more likely, obtained from Holland, Germany, and/or Venice (see Hughes 1961:181). A part of the European beads shipped to India were used in the beadwork of Rajasthan, Gujarat, and the Deccan Plateau (Morrell 1995:106-108). The 19th-century Venetian bead sample book in the Slade Collection, believed to have belonged to a bead trader, provides an idea of the types of beads exported to India at this time (Karklins 1985:41-82). Interestingly, the sample book does not contain any glass seed beads which were widely used in Gujarati beadwork (see Dhaky 1966).

As for bead exports, a detailed breakdown by destination is only available from the *Statistical Tables* for the period 1854-1856 (Great Britain 1855-1866). Over

Table 2. Bead Trade Between British India and the Straits Settlements (in Pounds Sterling), 1854-1871.

Year	1854	1855	1856	1870	1871
Imports from the Straits Settlements to British India	314	88	404	0	320
Exports to the Straits Settlements from British India	274	918	48	343	160
Net export to the Straits Settlements	-40	830	-356	343	-159

Sources: *Statistical Tables Relating to British Self-Governing Dominions, Crown Colonies, Possessions, and Protectorates*, 1854-1856 (Great Britain 1855-1866), and Straits Settlements *Blue Book*, 1870 and 1871 (Straits Settlements 1870-1871). For the years 1870 and 1871, the values are converted into Sterling at the exchange rates used in the *Blue Books*.

85% of the value of beads imported by India during this period were consumed domestically. The main destination for bead exports was Africa (receiving 71% in 1854-1856) with only 6% by value of beads being exported to the Straits Settlements. The Straits Settlements also exported beads to British India as shown in Table 2. Unfortunately, the limited data preclude the formulation of any clear patterns.

BEAD TRADE, 1870-1937: EXPANSION AND DECLINE

Detailed statistical information is available for the period from 1870 to 1937, and the data reveal the overall pattern of the bead trade at this time. The time frame has been subdivided into four segments for closer investigation: 1) 1870-1899, a time when the bead trade shows an increasing trend; 2) 1900-1903, a period of highly volatile trade; 3) 1904-1914, when the regional bead trade declines; and 4) 1918-1937, the postwar period where there is a rise in bead imports which reflects the growth of domestic demand.

Increased Trade: 1870-1899

The Straits Settlements imported nearly 80% of its beads from Europe between 1870 and 1899. These were mainly from Germany, Italy, and Austria (Bohemia), traditional producers of cut, molded, and blown glass beads, as well as Britain. The remainder of the imports came from India, predominantly between 1895 and 1898 (varying from 16% to 29%), and China and Hong Kong. Table 3 shows the countries of origin of bead imports.

Italy was by far the largest supplier of beads to Singapore, accounting for 40% of the total imports by value. Austria, Germany, and Britain accounted for another 36% in aggregate. Data for Penang and Singapore are provided

separately from 1881 until 1920. For Penang, the value of beads imported was small compared to Singapore until the 1890s. From 1890 to 1899, the highest percentage of imports to Penang was from Germany (40%) and British India (36%). The dominance of imports from Germany rather than Italy may have been the result of stronger ties between German firms and the Penang merchants; for example, the trading firms with strong German connections—such as Katz Brothers and Huttenbach Brothers—both carried on activities in Penang (Chiang 1970:253; Huff 1994:258) and regularly advertised in the *Pinang Gazette and Straits Chronicle* (1886-1887).

Based on data in the Straits Settlements *Blue Books*, export markets can be said to have gradually built up between 1870 and 1899, averaging an annual rate of increase in export values of 5%, with an increasing share exported to Southeast Asia. From 1870 to 1879, only 68% of total bead value was exported to Southeast Asia. In the following two decades, however, this percentage rose to 83% in 1880-1889 and 90% in 1890-1899. For most of these years, the bulk of the remaining exports went to India, China, and Hong Kong.

The pattern of export demand suggests that, despite its small size, the Straits Settlements was increasingly active as a regional distribution center for beads in the late 19th century. Between 1877 and 1899, exports increased at a faster annual rate than imports (6% compared to 9%), leading to an excess of exports over imports from 1896 to 1899. This excess may have been met by depleting stocks of beads. Alternatively, the increase in the value of exports may reflect a rise in bead prices (rather than quantities) caused by strong export demand. Beads were also imported to satisfy domestic demand, evidenced by the consistently positive net import values until 1895. The market for beads in the Straits Settlements itself could have come from various sources.

Table 3. Percentage of Beads Imported by Country of Origin, 1870-1899.

Country	Percentage	
	Singapore (includes Penang before 1881)	Penang (1881 to 1899 only)
Austria (including Bohemia)	12	0
France	5	2
Germany	12	34
Italy	40	0
Britain	12	2
British India	6	43
Indonesian Archipelago	3	0
China and Hong Kong	4	14
Other (Arabia, Suez, Egypt, Australia, USA, Belgium, Holland, French India, Portuguese India, Turkey)	6	5

Source: Straits Settlements *Blue Books*, 1870-1899 (Straits Settlements 1870-1899).

Expatriate European women may have used glass beads in their woolwork patterns, a popular hobby that had traveled from Europe. Blaze Reidel and Co., a shop on Beach Street in Penang, regularly advertised patterns for woolwork in the *Pinang Gazette and Straits Chronicle* throughout 1886 and early 1887. There was also a demand for European seed beads which were used in *Peranakan* (acculturated) Chinese beadwork and in Malay embroideries.

Volatility in the Bead Trade: 1900-1903

Overall, the period between 1900 and 1903 represents a period of uncertainty and adjustment to the high export demand of the late 1890s. The threefold increase in the value of bead imports between 1899 and 1900 was met by an increase in the value of imports from Germany (+517%), Italy (+70%), and Austria (+170%). In 1901, imports doubled again with a large part of the increase coming from Germany and Calcutta. The latter may have comprised Indian glass beads but could also have included European beads shipped via British traders in India. This surge in 1900-1901 coincides with the beginning of industrial production of glass beads and bangles in Calcutta and Firozabad by Bohemian bead manufacturers (Petr Nový 2003:pers. comm.). Statistics on Indian glass production also reveal the establishment of industrial-scale Indian glass factories at this time (India, Department of Statistics 1917:10-41).

The subsequent decrease in the value of imports in 1902-1903 may reflect traders compensating for excess imports in previous years.

The volatility in bead imports up to 1903 may have resulted from a prevailing uncertainty concerning the demand for beads in the late 19th century, particularly for re-export. Values of bead exports doubled in 1895-1896 and fell significantly in 1897-1898, but remained above the levels of imports during that period. The subsequent sharp increase in the value of bead imports to the Straits Settlements may have been led by the increase in the demand for beads from the Indonesian archipelago. At the height of the bead trade between 1890 and 1914, Sumatra was the most important market for beads re-exported from the Straits Settlements and accounted for 38% by value of total bead exports. Borneo (including Sarawak) imported 20% and the rest of the Indonesian archipelago imported 18% of the total. This contrasts with Francis' (1989b:24) finding that Borneo was the main market for beads exported from Singapore during the 1909-1929 period.

Figure 4 shows the growth in the value of exports from Singapore and Penang to Sumatra from 1890 to 1914. Penang had close business and social ties with the northern half of Sumatra. Although Penang had overtaken Singapore in terms of export values by 1898, the difference was almost negligible by 1905. The trading community in Penang may have taken advantage of a spurt in demand for beads from

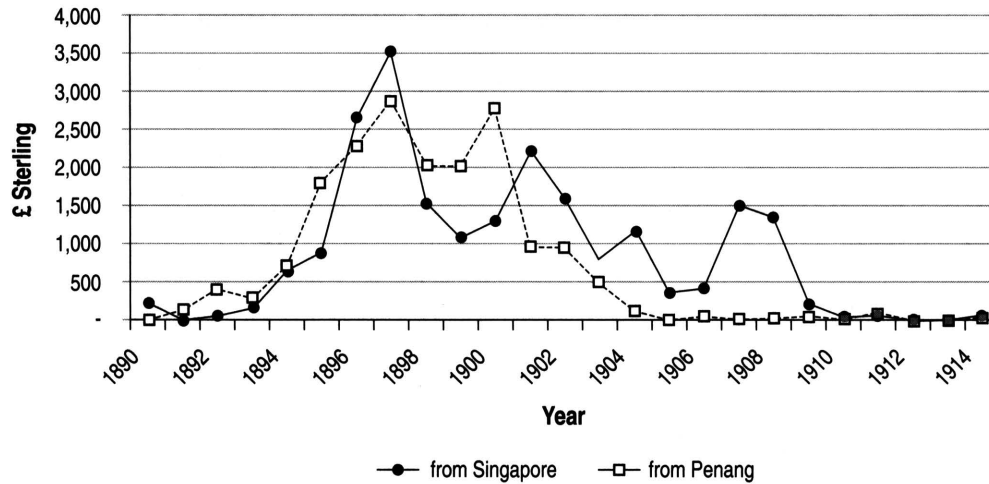


Figure 4. Exports to Sumatra from the Straits Settlements by value (in pounds sterling), 1890-1914 (Straits Settlements 1890-1914).

Sumatra to exploit their traditional trading links. Singapore continued to export to Sumatra until World War I. With a wider distribution network that serviced the rest of the Indonesian archipelago, Indo-China, and the Philippines, Singapore served as the main center for bead trade for the region.

An examination of the types of beads found in the Indonesian archipelago provides insight into the kinds of beads that were being traded during this period. Adhyatman and Arifin (1996) describe a wide selection of beads, including those of gold, semiprecious stones such as quartz and carnelian, and glass. Notable among the latter are monochrome coiled and drawn varieties, and polychrome lampwound beads among which are mosaic and millefiori forms. While the lampwound beads are undoubtedly of European manufacture, those of semiprecious stones may have been produced in India or China.

Decline of the Re-export Trade: 1904-1914

The bead trade during the first half of the 20th century can be clearly divided into two periods separated by World War I. The period from 1904 to 1914 is characterized by a gradual decline in the distributive role of the Straits Settlements in bead trade. During this time the value of imported beads fell more than twofold (from £12,714 to £5,472). This decline was reflected both by the decrease in the re-export of beads (from £5,959 to £2,017) and by net imports. What is interesting is that the value of net imports for this period exceeded that of exports for the entire period, implying the growing influence of domestic demand in the bead trade.

Bead imports were mainly from Germany and Italy, but the overall percentage of beads imported from Europe between 1904 and 1914 was only 49% compared to 78% for the 1870-1904 period (*see* Table 4). Imports of beads from Europe were supplemented mainly by imports from British India (Bombay, Calcutta, and Madras) and Burma. It is uncertain whether the bead trade actually became less European-dominated or if the decline in direct shipments from Europe is simply the result of a larger percentage of European beads being imported indirectly via India.

Although the Netherlands Indies and Sarawak remained important markets, their share of exports fell from 80% of the total value to 52% between 1904 and 1914, with most of the decline occurring in the latter half of this period. The reduced share persisted into the war years. An increase in exports to Indo-China only offset this decline to a small degree.

Figures for glass bead imports (initially termed *koralen*, *glazen* and later changed to *kralen*, *glazen*) to the Netherlands Indies provided in the *Statistiek van den Handel en de In- en Uitvoerrechten in Nederlandsch-Indië* (Statistics of Trade for Imports and Exports in the Netherlands-Indies) suggest that the value of beads channeled through the Straits Settlements, particularly Singapore, was far larger (Dutch East Indies 1910). For 1910, the value of imports from Singapore into the Netherlands Indies totaled 50,596 Dutch guilders (equivalent to 35,630 Straits Settlements dollars), compared to the figure of \$14,167 recorded in the Straits Settlements *Blue Book* for 1910. Java was the largest recipient of glass bead imports (over 80%) through the ports of Batavia, Semarang, and Surabaya.

Table 4. Percentage of Beads Imported by Country of Origin, 1904-1937.

Country	Percentage	
	1904-14	1918-37
Austria (including Czechoslovakia)	13	34
France	0	7
Germany	22	25
Italy	10	7
British India	42	9
Japan	0	10
Other (USA, Belgium, Holland, Middle East, Turkey, non-British India, Indonesia, China, Hong Kong, Australia)	13	8

Sources: Straits Settlements *Blue Books*, 1904-1937 (Straits Settlements 1870-1937), and *Return of Foreign Imports and Exports for British Malaya, 1924-1937* (Malaya 1924-1937).

The discrepancy in values is puzzling. One possible explanation is that the Straits Settlements and Netherlands Indies used different methods of recording the origin and destination of goods. Export values for the Straits Settlements excluded transshipment trade (goods imported and then exported via through bills of lading). It is possible, however, that the *Statistiek van den Handel* listed goods under their transshipment port rather than their port of origin. Another possible reason for the difference is that bead values were based on market prices at their destination and included some mark-up and transportation costs. What the detailed breakdown of values from the *Statistiek van den Handel* reveals is that, although Singapore was a significant exporter to the Netherlands Indies, it faced competition from the Netherlands and Japan, each of which accounted for 20% of the glass bead imports into the Netherlands Indies. It is, therefore, not surprising that the value of exports to Singapore's main markets declined in the following decades.

The Rise of Domestic Demand: 1918-1937

Starting in 1918, there was an increase in the trend value of imported beads which peaked in 1925, and again in 1929. Table 4 shows the percentage of beads imported by value from the main exporting countries. Europe remained the largest supplier of beads, with Czechoslovakia emerging as a major bead exporter in 1927, ten years after it gained independence from Austria. Imports of Japanese beads also increased from 1918, and while their value averaged

7% of the total between 1924 and 1937, their proportion by weight was much larger, averaging 13% for the period (Francis 1989a:23, 2002:172). This differential is due to the lower price per pound of Japanese beads. The increase in the import of Japanese beads is coincident with a general increase in the import of Japanese manufactures which doubled in Singapore between 1929 and 1934, putting them in competition with European imports (Huff 1994:265).

The value of bead exports fell to almost negligible levels after 1918. The value of exports as a percentage of imports decreased from 37% between 1904 and 1914, to 13% after World War I. Francis (1989b:24) argued that the Straits Settlements and Malaya could not have absorbed such large quantities of imported beads and the seemingly large difference between imports and exports was the result of difficulty in recording exports. This explanation is unsatisfactory given the previously high levels of exports. A more plausible explanation for the low level of bead exports is that bead exporters were selling directly to other South-east Asian bead consumers, bypassing Singapore in its role as an emporium.

In the Netherlands Indies (apart from Java), European trading firms started to deal directly with indigenous traders in 1925, side-stepping the local Chinese trading network (Touwen 2001:207). This may have increased the volume of bead imports that bypassed Singapore, which traditionally had close ties with Chinese merchants in Indonesia. Even before the 1920s, ports on the west coast of Sumatra and the Celebes were already receiving over 40% in value of their glass bead imports directly from Japan (Dutch East

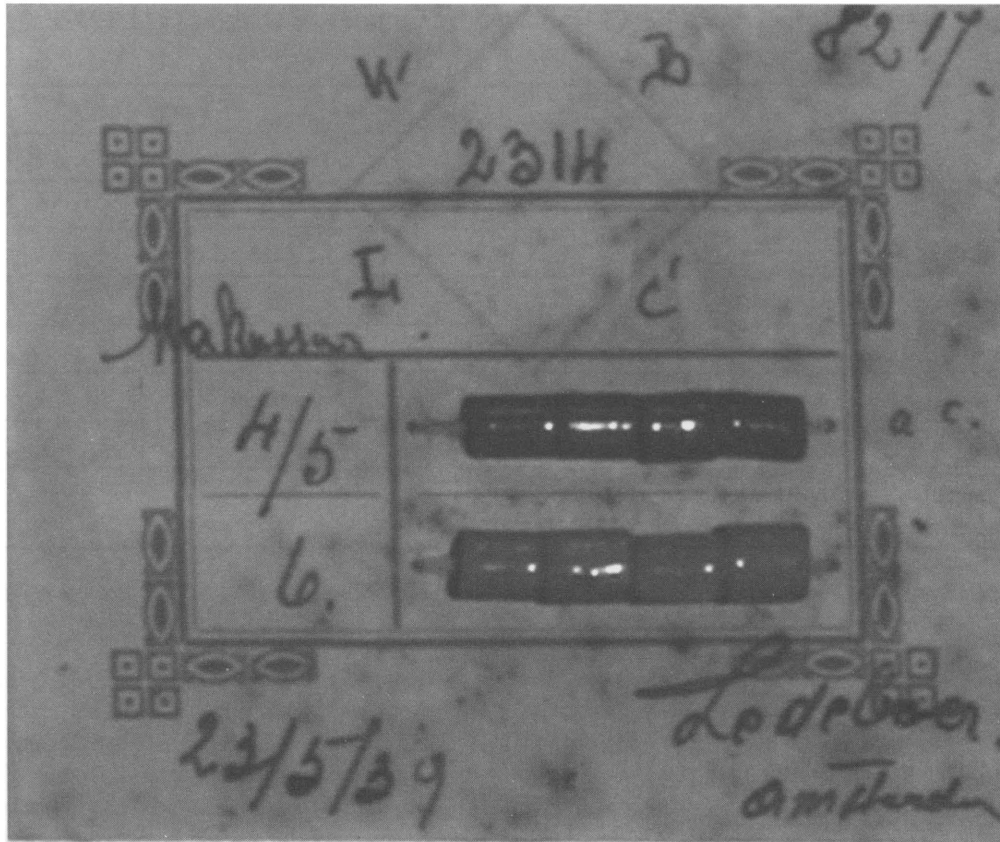


Figure 5. Sample card from the Società Veneziana Conterie, marked “Makassar” and dated 23 May 1939; H: 6 cm (courtesy of Luigi Cattelan, Venice, Italy)(photo by author).

Indies 1910, III). A sample card from the Società Veneziana Conterie e Cristallerie which is marked “Makassar” and dated 23 May 1939 may have been used in bead trade that bypassed the Straits Settlements (Fig. 5). In fact, a significant quantity of beads may have been imported to the surrounding region from places other than the Straits Settlements.

For instance, the annual Sarawak Trade Returns for 1905, 1906, and 1907, which were published in the *Sarawak Gazette* show total bead imports of \$2,682, \$1,403, and \$2,264, respectively (Sarawak, Treasury Department 1906, 1907, 1908), while the Straits Settlements *Blue Book* showed exports of \$702-worth of beads to Sarawak in 1907 only (Straits Settlements 1907). Larger companies such as F.E. Zuellig, a Swiss trading company founded in 1939, exported Venetian beads not only to Singapore but also the Philippines as an adjunct to its other trading activities (Fig. 6).

Figure 7 shows the value of net imports of beads based on the difference between import and export values. From 1918, almost all of the imported beads were for domestic consumption. The sustained periods of high net imports of

beads after 1918 suggests that they resulted from domestic demand and not from an overestimation of re-export demand, as may have happened in the last years of the 19th century.

The pattern of net imports between 1900 and 1937 is particularly interesting given the high percentage of European beads (Fig. 8; Table 4). In the Straits Settlements, both the *Peranakan* Chinese and Malay communities used European beads, particularly glass seed beads manufactured in Venice and Bohemia. The Straits Settlements exported small quantities of beads to the rest of Malaya, possibly for use by the Malay communities. The *Peranakan* Chinese were known for their lavish beadwork creations, some pieces using up to 270,000 beads (Ho 1987:47). Numerous examples of *Peranakan* beadwork survive from the early 20th century, and the growth in net bead imports coincides with periods when *Peranakan* beadwork is likely to have been most actively produced (Fig. 9).

In the early 20th century, the reduction of bead exports and the decline in the role of the Straits Settlements as a regional distributor of beads was replaced by a growing local demand for beads. What had once been an important trade commodity had been incorporated into local traditions,

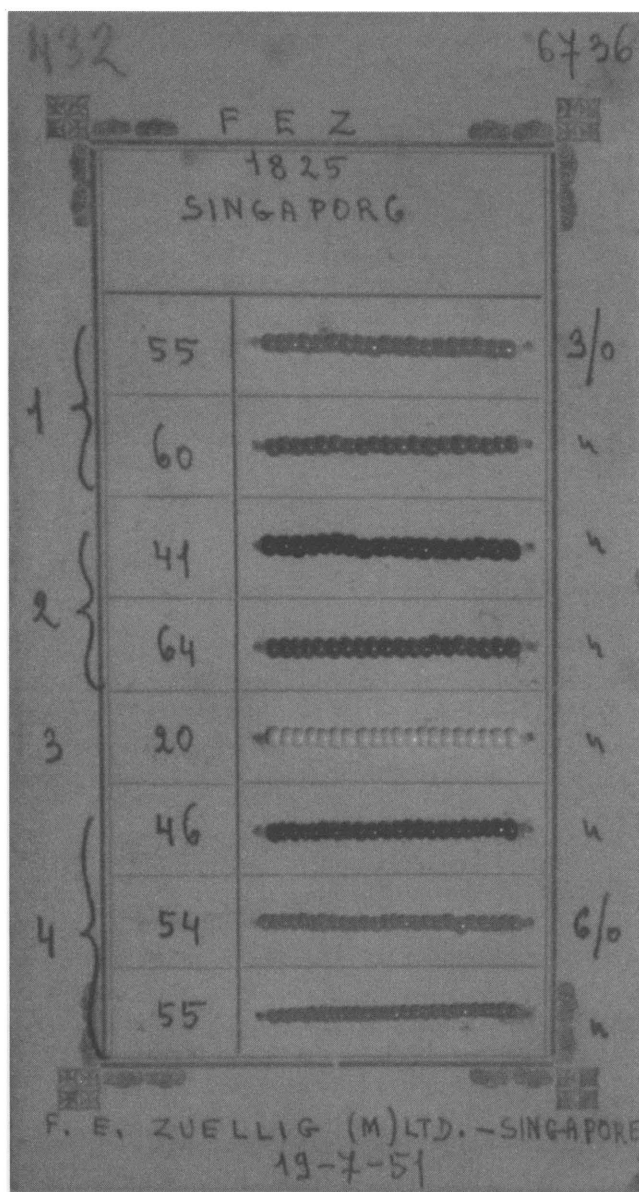


Figure 6. Sample card from the Società Veneziana Conterie, dated 19 July 1951, and marked “FEZ 1825 Singapore” and “F.E. Zuellig (M) Ltd. - Singapore;” H: 12.4 cm (collection of Luigi Cattelan)(photo by author).

facilitating the innovation and creation of new craft forms.

DOMESTIC DEMAND IN PENANG AND MALACCA

Penang is often thought of as the center of the finest *Peranakan* Chinese beadwork.⁶ Despite this, the statistics available for Penang between 1881 and 1920 show that net imports of beads to Penang were frequently negative and never very high compared to Singapore (Fig. 8). A trade in beads between Singapore and Penang must, therefore, have taken place to serve this specific market, one that was not fully reflected in the official statistics. The high proportion

of beads imported into Penang from Germany and Calcutta between 1881 and 1920 (40% and 32%, respectively) satisfied local demand only to a very small extent (Straits Settlements 1870-1937).

Similarly, the existence of *Peranakan* Chinese beadwork from Malacca suggests that it imported a reasonable quantity of glass seed beads. Only sporadic and very negligible values for bead trade were recorded for Malacca (Table 5). Official statistics probably did not capture much of the internal trade in beads occurring between small shopowners and bead merchants located in Singapore and Malacca.

Between 1904 and 1937, it can be surmised that an increasing domestic demand for beads was met by an unrecorded parallel flow of trade in beads from Singapore to Penang and Malacca. As Singapore’s regional role as a trading center diminished with a rise in direct trade between bead exporters and the Indonesian archipelago, its position as a local distributor to its sister ports appears to have strengthened. Non-aggregate statistics for Singapore, Penang, and Malacca are not available after 1920, and the persistence of Singapore as a local distributor remains speculative.

CONCLUSION

The bead trade in the Straits Settlements was dynamic, influenced by its trading networks with the hinterland and by regional demand. Based on available statistics on the imports and exports of beads, it is possible to document the role of the Straits Settlements, particularly Singapore, in this trade.

Until the end of the 19th century, the Straits Settlements acted as a regional emporium for beads. Singapore played a particularly important role, distributing beads to Borneo, the rest of the Indonesian archipelago, and Indo-China. To a more limited extent, this role was also taken up by Penang in the last decade of the 19th century, specifically for a Sumatran market. The movements in bead imports and exports often fluctuated reflecting the adjustments of the bead traders to changing demands. This is most clearly illustrated by the excess demand for re-export beads in the late 1890s, which was followed by sharp increases in bead imports from 1900 to 1903.

As bead exporters developed direct marketing channels with the Indonesian archipelago, the value of the beads exported from the Straits Settlements declined, eroding its position as a regional mart. Starting in the early 20th century, the increase in net bead imports was fueled by a growth in the domestic demand for beads. Local needlework traditions successfully incorporated imported beads, generating a

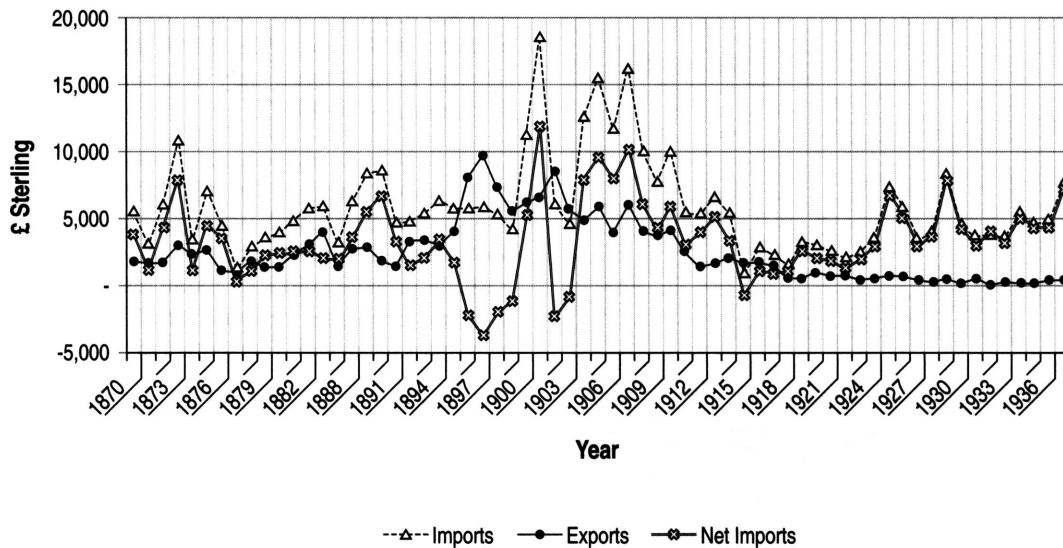


Figure 7. Bead trade in the Straits Settlements (in pounds sterling), 1870-1937 (Straits Settlements 1870-1937; Malaya 1924-1937).

continued demand for beads. The sustained periods of high net imports of beads suggest that there were two major periods in beadworking: one that lasted from about 1895 to 1914, and a second phase from 1920 onwards. Between 1900 and around 1920, Singapore took on a new role as local distributor of beads to Penang and Malacca, ushering in a period of development in local beadwork.

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ENDNOTES

1. What comprised the Netherlands Indies in the past varied over time; it differs from what constitutes present-day Indonesia and is linked to the expansion of Dutch control during the 18th to 20th centuries. See Cribb (2000:113-148) for a detailed discussion.
2. Here and elsewhere, a dollar sign (\$) denotes Straits

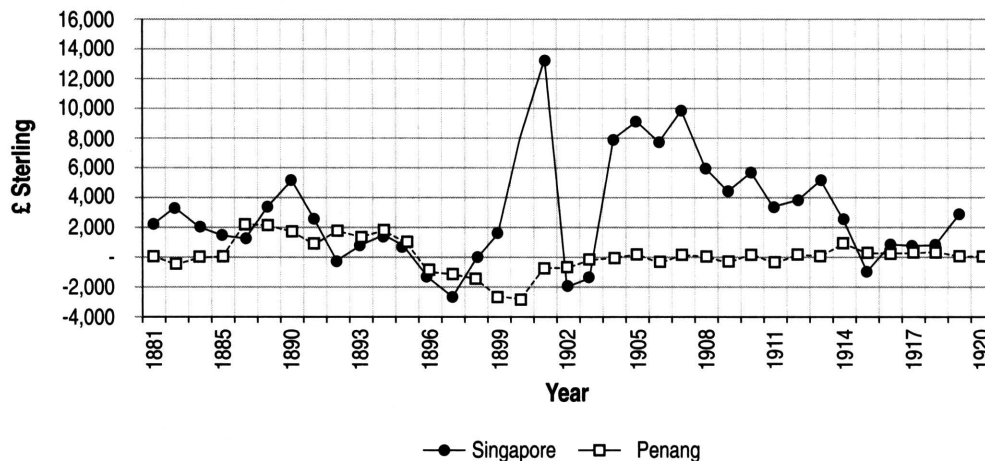


Figure 8. Net imports of beads to Singapore and Penang, 1881-1920 (Straits Settlements 1881-1920).

Table 5. Imports of Beads to Malacca, 1870-1937.

Year	Value (\$)	Origin
1874*	535	Singapore
1905	75	Singapore
1908	1	Inter-port trade
1911	50	Not specified
1913	10	Inter-port trade
1916	95	Inter-port trade

(*) to Malacca and Penang. Source: Straits Settlements *Blue Books* (Straits Settlements 1870-1937), years as specified in table.

Settlements dollars.

- British Malaya comprised the Straits Settlements (Singapore, Penang, Province Wellesley on the mainland opposite Penang, Malacca, Labuan, Christmas Island, and the Dindings), the Federated Malay States of Negri Sembilan, Selangor, Pahang, and Perak, and the Unfederated Malay States of Johor, Kedah, Perlis, Kelantan, and Terengganu.
- Bead prices and, hence, traded values may have been affected by the combined effects of German hyperinflation and the return, in 1925, of Sterling (against which the Straits dollar was pegged) to the Gold Standard at an inflated rate. A single exchange rate for the Reichsmark is difficult to obtain for the years 1923 to 1925, given the rate of hyperinflation, but as an indication, the Reichsmark/Japanese yen exchange rate fell by over 20,000% while the Straits Settlements dollar rose by about 10% against the yen between 1923 and 1926 (*see* Schneider et al. 1992, V:97, 235). It would be interesting to investigate the impact of currency movements on the European bead industry, particularly after the end of World War I.
- The French produced beads called "Porcelain" or "Bapterosses" in the 19th century (Jargstorf 1995:78).
- Tan (1993:2, 25, 31) notes that the acculturated Chinese of Penang did not, in fact, refer to themselves as *Peranakan* but as Straits Chinese or *Baba*. They did, however, do what has been popularly termed as Straits Chinese beadwork (Ho 1987) or *nonya* beadwork (Eng-Lee 1989).

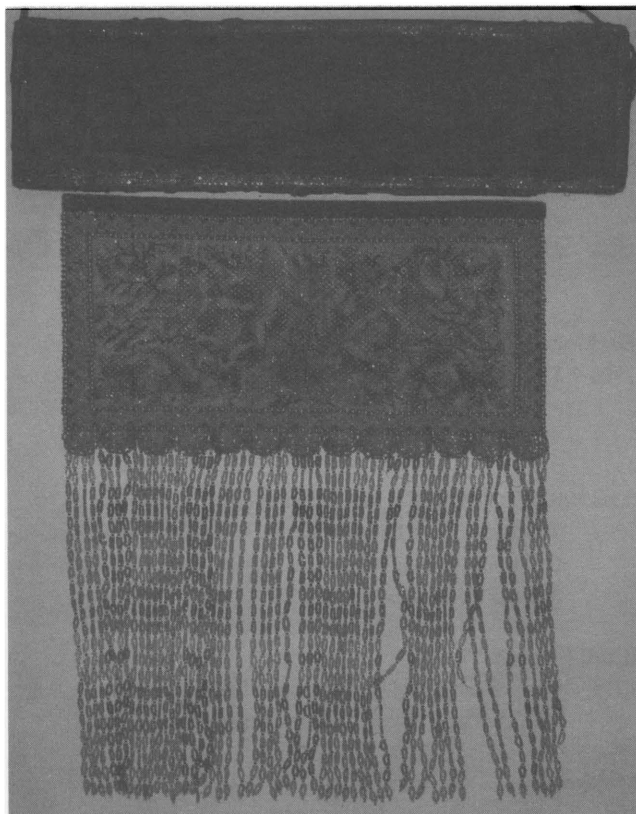


Figure 9. Beadwork panel from Penang, ca. 1900-1920. Width: 22 cm; length 31 cm (courtesy of Ken Yap, Kuala Lumpur)(photo by author).

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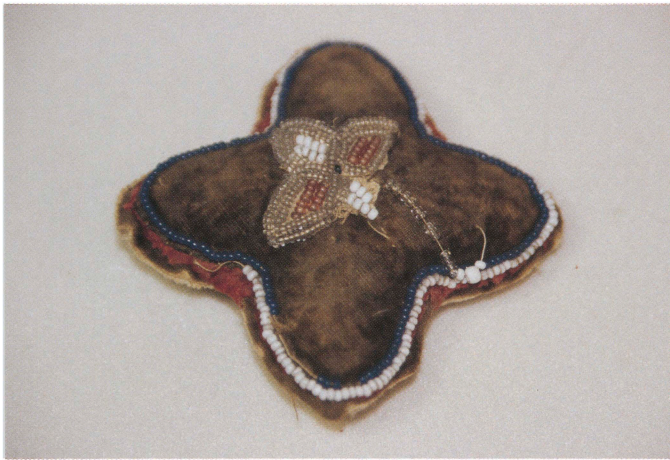


Plate IA. Iroquois: Top: Fancy early 20th-century Mohawk trilobe pincushions with bugle tassels; H: 29 cm (photo: K. Karklins). **Bottom:** The earliest known dated beaded pincushion; H: 6 cm (photo: D. Elliott).

Plate IB. Iroquois: Top: Six-lobed pincushions similar to ones illustrated by Morgan; the largest is 12 cm wide. **Bottom:** Early purse compared to one in Morgan (1850) that illustrates “flowering;” H: 18 cm (photos: D. Elliott).

Plate IC. Iroquois: Top: Stereoview from 1859 showing five seated Tuscarora or Seneca beadworkers. **Bottom:** Pincushion like those shown in the stereoview; H: 15 cm (photos: D. Elliott).

Plate ID. Iroquois: Top: Mid-19th-century Niagara beaded mat; H: 18 cm. **Bottom:** Lobed square Niagara pincushion; H: 19 cm (photos: D. Elliott).

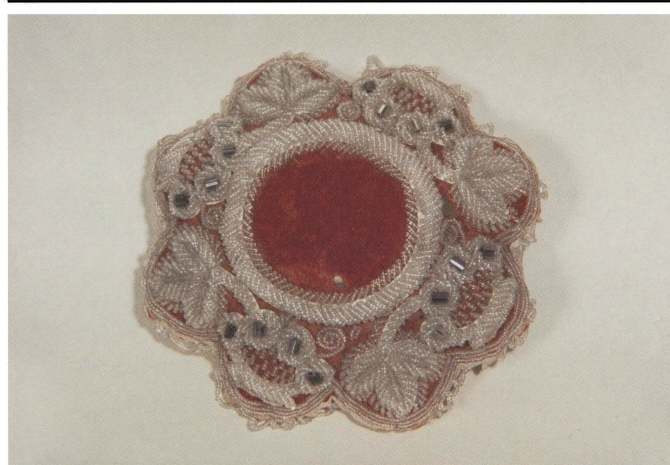




Plate IIA. Iroquois: Top: Tuscarora sewer, Mary Lou Printup, with some of her beadwork; the frame is 25 cm high. **Bottom:** Box made by contemporary Tuscarora sewer, Rosemary Hill; H: 15 cm (photos: D. Elliott).

Plate IIB. Iroquois: Top: Early 20th-century Niagara Falls shoes; width is 19 cm (photo: K. Karklins). **Bottom:** Mohawk purple pincushion with US flags; H: 24 cm (photo: D. Elliott).

Plate IIC. Iroquois: Top: Diamond-shaped pincushions, first half of the 20th century; max. H: 22 cm (photo: K. Karklins). **Bottom:** Fancy square pincushion; H: 20 cm (photo: D. Elliott).

Plate IID. Iroquois: Top: Trifold needle cases; max. W: 12 cm (photo: K. Karklins). **Bottom:** Small needle or card cases; W: 10 cm (photo: D. Elliott).



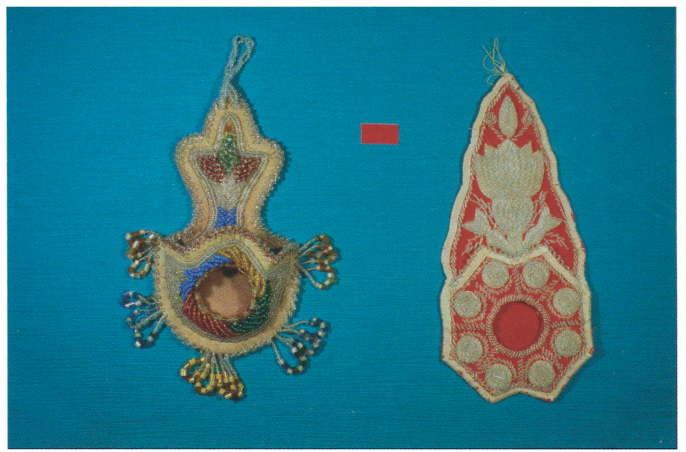
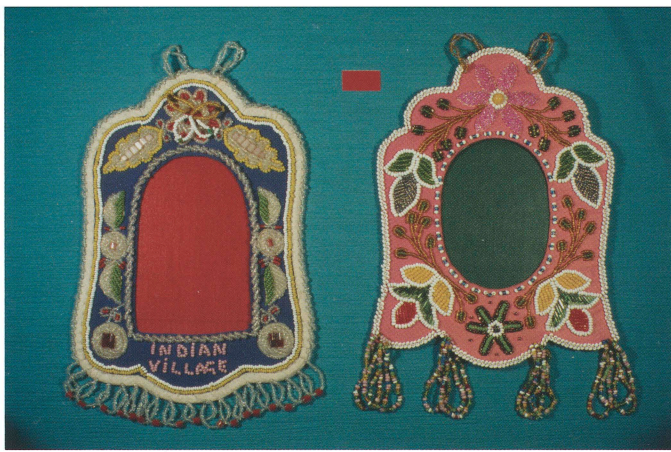


Plate IIIA. Iroquois: Top: Picture frames; Niagara (left; H: 23 cm) and Mohawk (right) (photo: K. Karklins). **Bottom:** Assortment of match holders and a whiskbroom holder (lower right); H: 19 cm (photo: D. Elliott).

Plate IIIB. Iroquois: Top: Watch holders; H: 20-24 cm (photo: K. Karklins). **Bottom:** Early 19th-century Seneca purses; maximum height: 16 cm (photo: D. Elliott).

Plate IIIC. Iroquois: Top: Classic flat black bags; maximum height with fringe: 18 cm (photo: K. Karklins). **Bottom:** 19th-century Niagara fist purse; H: 15 cm (photo: D. Elliott).

Plate IIID. Iroquois: Top: Round cap with frontal panel; 19th century; width: 20 cm. **Bottom:** Iroquois moccasins typical of the late 19th/early 20th centuries (length is 25 cm) on the left; the other pair is ca. mid-19th century (photos: K. Karklins).



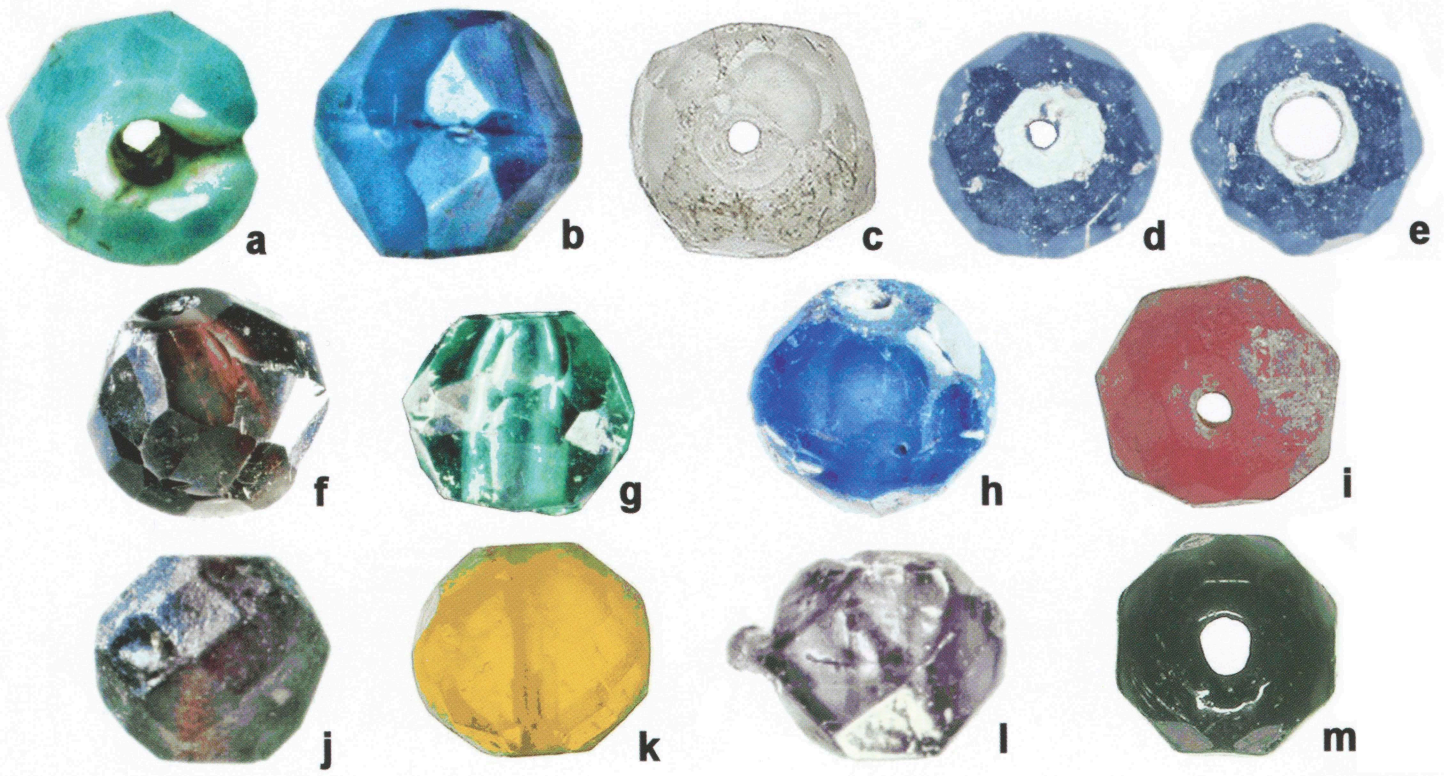


Plate IVA. Mold-Pressed: Examples of 19th-century Bohemian faceted-spheroidal mold-pressed glass beads; see Appendix A on p. 51 for provenience and attribute data (Photos by L.A. Ross and R. Chan).

Plate IVB. Amazon: Top: Yanomamo necklace of ormosia and Job's tears seeds, with Pirarucu scales. **Bottom:** Piraha necklace with Crown Snail shell (all photos by author).



Plate IVC. Amazon: Top: Kayapo necklace of bamboo tubes and ormosia seeds with tortoise scute and pendants of glass beads tipped with tucum palm fruit kernels and red macaw feathers. **Bottom:** Ear ornaments of Rough Andean Jewel Beetle wing cases, worn by Shuar men.



BOHEMIAN FACETED-SPHEROIDAL MOLD-PRESSED GLASS BEAD ATTRIBUTES: HYPOTHESIZED *TERMINUS POST QUEM* DATES FOR THE 19TH CENTURY

Lester A. Ross

Faceted-spheroidal mold-pressed beads have been manufactured in Bohemia since the 18th century. Evolution of manufacturing technology has resulted in the creation of bead attributes that can readily be observed on beads from archaeological contexts. Many North American archaeological sites contain examples of this bead type; but few reports have identified the attributes, much less recognized these beads as mold-pressed. Enough evidence now exists to suggest that some of these attributes have temporal significance for dating archaeological bead assemblages. Terminus post quem dates for faceted-spheroidal mold-pressed bead attributes are hypothesized, and a strategy for future research is suggested so that a more precise temporal sequence can be constructed.

INTRODUCTION

In 1972, while engaged in material culture research for the excavation of Hudson's Bay Company (HBC) Fort Vancouver, the author encountered a unique type of bead, previously unrecognized by material culture researchers. These are now recognized as faceted-spheroidal mold-pressed beads, but initially they were reported as mandrel-wound beads with a composite perforation formed by molding and punching (Hoffman and Ross 1973a). This was not the first reported occurrence of this type of bead from an historical archaeological context in North America (Murray 1964), but it was the first time they were recognized for their unique method of manufacture and abnormal pierced and punched conical perforation (final appearance with a biconical shape, *see* Table 1). After examining additional specimens from HBC Fort Vancouver and HBC Fort Okanogan, these beads were identified as mandrel molded or pressed beads with a composite perforation formed by molding and punching (Hoffman and Ross 1973b; Ross 1974, 1976). Subsequent discussions with bead scholars resulted in the decision to identify this category of beads as one sub-type of the broader type identified as mold-pressed beads (Karklins 1982; Sprague 1985; Ross 1990).

Glass bead varieties and their attributes occasionally have proven to be reliable as sensitive temporal markers (e.g., Karklins 1993; Sprague 1983, 1985). Well-dated archaeological contexts containing faceted-spheroidal mold-pressed beads appear to be restricted to the second through fourth quarters of the 19th century. The number of attributes present suggested a potential for dating bead assemblages. To assess this potential, research was undertaken to identify the country of origin for this bead sub-type, to identify the technology utilized for their manufacture, and to assess the chronological distribution of faceted-spheroidal beads within North American archaeological sites.

MANUFACTURING SOURCES

Historical technical works indicate that during the 19th century, Bohemia (presently the western portion of the Czech Republic) was the most likely source for faceted-spheroidal mold-pressed beads (Neuwirth 1994). During the 19th and early 20th centuries, the technology for their production varied from hand processes using iron tongs with precut mold shapes to hand-operated machines with removable precut dies (Pešatová 1965; Ross with Pflanz 1989). These techniques were used not just for the creation of single-perforation beads. Multiple perforations were made for specialized beads; e.g., double-pierced, Cassinian ovoidal beads possibly used as spacers between multiple strands of beads forming a single necklace (*see* Ross 2004: Variety 51). Other than beads, mold pressing also was used to manufacture a variety of artificial jewels, buttons, hat pins, etc.

Mold-pressed beads were manufactured by pinching or pressing molten glass in a two-part mold. The perforations were pierced by pushing a pin into the mold and through the glass. This technique may have been invented in Bohemia, possibly by the early 18th century. Neuwirth (1994:31, citing Loth 1859:73) noted that: "Bohemian glass beads [were]

Table 1. Potential Temporally Sensitive Attributes for Faceted-Spheroidal Mold-Pressed Beads.

Attribute	Variation	Sub-Variation	Final Appearance	Comments	
Mold Seam Shape	Straight			With or without a vertical seam on the lower half of the bead (Pl. IVA a-j, l).	
	Zig-zag			(Pl. IVA m).	
Mold Seam Orientation	Horizontal			Perpendicular to the perforation and generally around the circumference of the bead; with or without a vertical seam on the lower half of the bead (Pl. IVA a-j, l-m).	
	Vertical			Parallel to the perforation (Pl. IVA k).	
Facets	Ground	Random		Generally confined to the circumference of the bead to remove the mold seam (Pl. IVA a-c).	
		Semi-random		Covering the entire bead, but not forming distinct sides and rows (Pl. IVA d-h).	
		Semi-patterned		Covering the entire bead, forming irregular sides and rows.	
		Patterned		Forming regular rows and sides (Pl. IVA j-m).	
	Molded	Patterned	Unmodified		Possibly polished (Pl. IVA i-m).
			Hot tumbled (perhaps some fire polished)		
			Acid polished		(Pl. IVA m).
Molded and Ground	Patterned			Ground facets are generally confined to the mold seam (Pl. IVA j-k).	
Perforation	Pierced and Punched	Conical	Biconical	Pierced conical perforation with a flat facet on the top of the bead that has its top punched out forming a biconical perforation with very sharp edges (Pl. IVA a-b, f-g, j).	
		Biconical		Pierced conical perforation with a molded conical facet on the top of the bead forming an incomplete biconical perforation with the thin fin of glass between the cones punched out creating somewhat sharp edges (Pl. IVA c, i).	
	Pierced	Conical		Perforation is pierced through the entire bead (Pl. IVA d-e, h, m).	
		Biconical		Perforation is pierced through the entire bead.	
		Cylindrical		(Pl. IVA k-l).	

made from glass canes which were 'squeezed by means of a mold, pierced and lined up'."

The principal center for the production of pressed-glass beads was the market town of Gablonz in northernmost Bohemia (Neuwirth 1994:22, citing Kreutzberg 1836:25, 26). Jargstorf (1993:28) noted that "the Riedel glassworks supplied canes and tubes for lampworkers. It is also recorded that since at least 1803 they delivered the stronger canes for pressmolding workshops." She also noted that "records clearly indicate that composition-making and cutting began to concentrate in the Gablonz area in at least the 1780s" (Jargstorf 1993:33).

Benda attributes the introduction of the molding process to Gablonz to a "certain Endler":

The invention of "molding" stones into shapes has caused the stone cutting profession to be reduced to a common trade. In Turnau they already practiced this molding in the last [18th] century, but kept the secret of how to do it very strictly.... Nevertheless, a certain Endler from Gablonz must have succeeded in finding out something about it, since he erected the first molding hut in Gablonz toward the end of the last [18th] century. This Endler, known under the name, "the old molder," must have been born around the year 1760 and was, to a certain extent, a genius.... It wasn't until the years between 1817 and 1820 that Anton Mai, No. 146, erected the first composition furnace in Gablonz (farther away in the mountains there was a certain Seidel who was supposed to have made compositions earlier) and he made ruby and garnet colored compositions which he molded into beads (Neuwirth 1994:243, quoting Benda 1877:281 ff).

Analysis of the composition of 19th-century Bohemian glass and faceted-spheroidal mold-pressed beads indicates the presence of similar percentages of potassium (K) and calcium (Ca). Approximately 9.0-15.0% K and 5-7.5% Ca for Bohemian glass and 11.0-13.7% K and 5.2-5.9% Ca for mold-pressed beads (Kenyon et al. 1995:5-6).

Bohemia was a major source for faceted mold-pressed beads in the 19th century, but similar beads were manufactured under the influence of the Bohemian industry in the mountainous region of northern Bavaria (Franconia) called the Fichtelgebirge, Germany (Kenyon et al. 1996:15).

Mold pressing glass beads was not exclusively confined to Bohemia and Bavaria, but presently they are the only regions where beads of this type are positively known to have been manufactured. By at least the second quarter of

the 19th century, mold-pressed beads had reached North America (Ross 1989a:156, Type MPIIa-2 bead). At least by the end of the 1860s, improved hand- and machine-operated mold-pressing machines were being patented in the United States (e.g., U.S. Patent No. 79,635, July 7, 1868). It has yet to be determined if such patents were ever placed into the factory production of mold-pressed beads.

MANUFACTURING TECHNOLOGIES

In Bohemia at the beginning of the 18th century, the Wenzel brothers and Franz Fischer in Turnau had already developed a different method for beadmaking "using iron pincer-molds for pressing out 10 to 15 and more of the same stones at one time, so that proper facets appeared on each pressed stone with this method because the iron mold was already shaped that way" (Schreyer 1790:93).

Sibylle Jargstorf, however, notes that press molding presumably began around the mid-18th century. She cites several documents: 1) "A treaty concluded in 1764 between the stonemason's guild and the glass-cutter's guild, indicating that pressmolding was already a common procedure," and 2) "Records from between 1766 and 1780 noting Hans-Georg Pfeiffer (1711-1788) and Gottfried Pfeifer in Labau as Drucker, i.e., 'pressmolders'" (Jargstorf 1993:49-50).

In a 1774 report by the Count von Zinzendorf, there is already talk of a pair of tongs with a mold in which the desired figure is "pinched" (Kleinert 1972:17).

For the early 19th century:

The production is mostly headed by local entrepreneurs who supply the workers scattered throughout the neighboring dominions of Morchenstern and Kleinskall with samples and materials. The former are divided into: composition burners, who melt the supplied glass batches in the most varied colors and shades, and then shape them into canes and tubes; glass and composition press-molders (squeezers) who shape the soft mass into raw chandelier and jewelry stones with molding tongs; these are then further refined by cutting, which takes place in their own grinding mills, a single one of which often contains 6-15 work places, which the grinding mill owner turns over to individual workers to use in return for a fee; bead blowers, cutters, gilders and stringers, of which the latter... string the finished beads onto wire and thread (Neuwirth 1994:22, citing Kreutzberg 1836:25, 26).

In Bohemia during the first half of the 19th century, mold-pressed beads were made individually or in pairs by

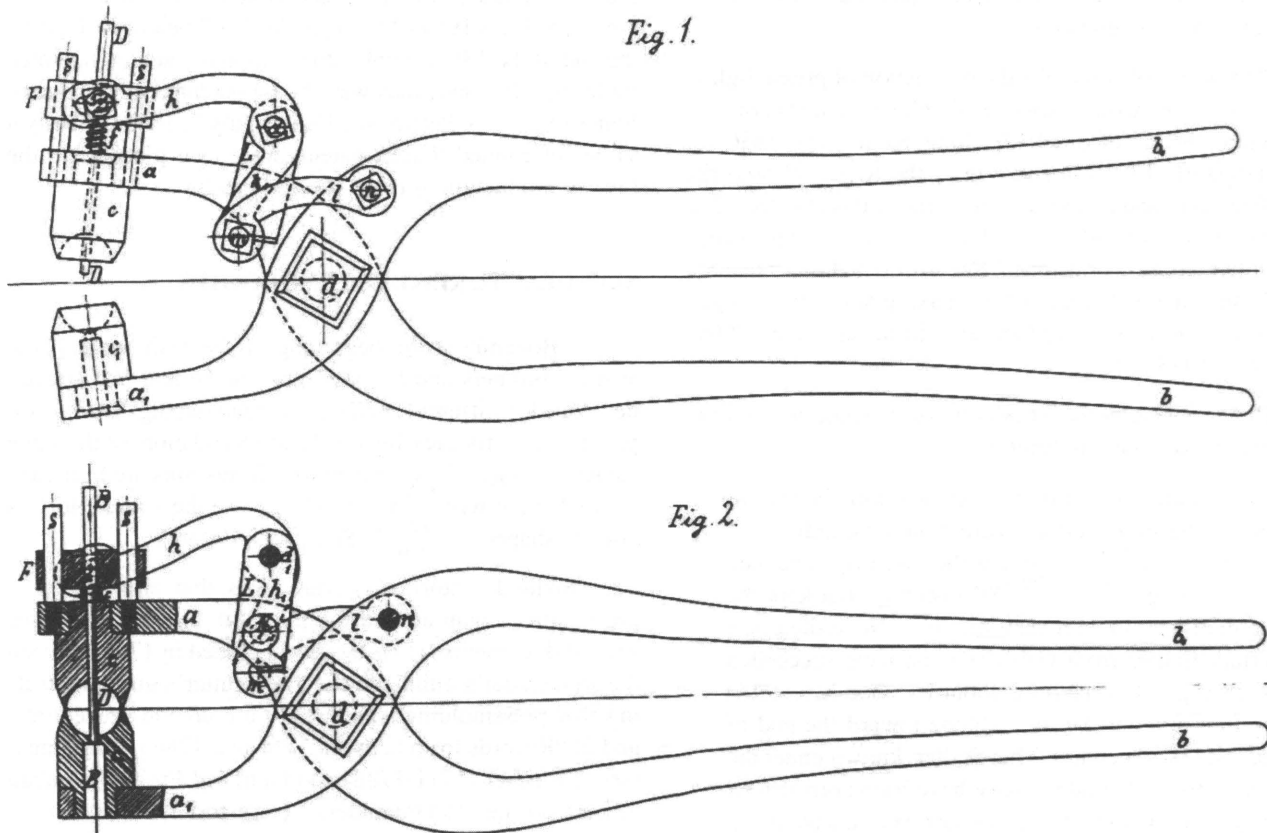


Figure 1. Tongs for making pressed glass beads, 1884. Franz Hiebel, locksmith in Friedrichswald; privilege no. 34/1872. – Austrian Patent Office, Vienna (Privilegium Nr. 34/1872. – Österreichisches Patentamt, Wien) (Neuwirth 1994:219).

pressing glass in simple iron tongs equipped with opposing hemispherical cavities. Perforations were partially formed by either a tapered pin that appears to have been an integral part of one cavity (Ross 1974:17 and Fig. 3; 1976:759-762), or by a pin inserted through one cavity (Anonymous 1913; Pešatová 1965; Ross with Pflanz 1989). Later, various patents were issued for a number of improved hand-operated tongs (e.g., Fig. 1). Upon removal from the mold, the preform had a partially formed perforation and a mold seam around its circumference with fine glass fins protruding from the seam. Facets were subsequently ground on the bead, thus removing the fins (the fins could also be removed prior to faceting by sieving or abrasion), and the incomplete perforation was punched through, forming a roughly spherical faceted bead with a biconical perforation. At least between 1860 and 1880, facets were molded and fins were ground off (Neuwirth 1994:246).

On July 7, 1868, George J. Capewell of West Cheshire, Connecticut, was issued U.S. Patent No. 79,635 for an improved glass-pressing machine (Fig. 2). His patent described a hand-operated lever molding machine that was designed to form glass beads by molding glass around a

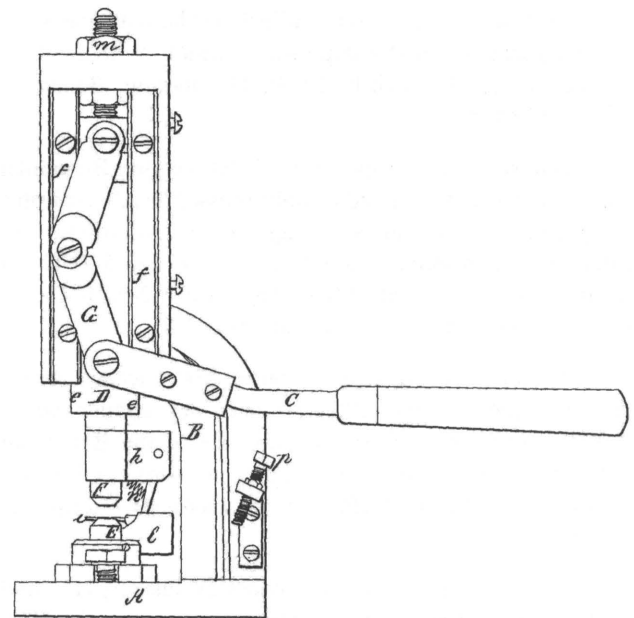


Figure 2. Improved glass-pressing machine patented by George J. Capewell (U.S. Patent No. 79,635) on July 7, 1868.

nipple and pressing a pin through the bead. Since this patent was for an "improved" machine, the assumption is that there were similar earlier devices. A search of all U.S. Patent Office records for glass manufacturing patents located nothing earlier.

By the end of the 19th century, techniques and mold-pressed products increased in complexity:

Glass molding... concerns itself with the molding of stones, buttons, beads, kernels, laurel berries, cubes and so on. The method of production is already indicated in the word, "mold." For it, the molder uses iron tongs into which the shape of the particular design is engraved which the article is to acquire. The production of these molds (called "Kappel," i.e., the main component of these tongs) gives work to many engravers, specifically in Gablonz and its environs. In order to protect their designs, some of the exporters of such "Kappel" make them in factories built especially for this purpose. One of the first molders was a certain Endler (beginning of this century), Waldgasse No. 10 in Gablonz, not far from the furnace of Clemens Huyer.

Among the molded glass articles made during the years 1867-1873, the little glass stones with holes, the so-called "Flüßel," had especially enormous sales. In molded buttons and the like, either holes for sewing or threading or applying are pressed in with the mold, or metal shanks were inserted as a part of the molding process.... Molded beads, mostly black, but also in all the other colors, are molded in iron molds in the molding works, then cut in different ways and decorated (iridized, etc.) for sale. If the pressing is done in molds of steel or nickel (which makes the corners turn out more sharply defined and the surfaces smoother), then they are called abraded or "sanded" beads; these are usually not cut, but supplied to be used in this state (Neuwirth 1994:244, citing Lilie 1895:164-166).

By abraded or sanded buttons, one means those which are not cut, but which are made to imitate cut buttons by using a press-mold that is polished so smooth on the inside with an abrasive that the buttons pressed in them acquire the appearance of being cut (Neuwirth 1994:244 citing Benda 1877:287).

Another source mentions that the so-called "sanded bead" was press-molded in hot nickel molds which gave them a surface that looked almost cut (Fischer n.d.). Arnold (1909:92) calls "Flüßel" "little black stones" that have two pierced holes and are marketed strung for use in passementerie (Neuwirth 1994:245-256). Around the turn-

of-the-century, Winter (1900:16) reports on molders and the use of double molds which were forbidden at times (Neuwirth 1994:246).

FACETED-SPHEROIDAL MOLD-PRESSED BEAD ATTRIBUTES

Among collectors, faceted-spheroidal mold-pressed beads are called "cut," "Czech," or "vaseline" beads (e.g., Johnson 1975), presumably for their technique of manufacture, emulating cut stone beads, country of manufacture, and glossy appearance, respectively. Early 18th-century varieties manufactured in Bohemia lacked the high polish exhibited by later varieties. This glossy finish may have been created by washing the beads in an acid bath, similar to the 20th-century technique used to polish cut lead crystal glassware (Jones and others 1985:55, 56).




For the faceted-spheroidal beads, a succession of techniques used throughout the 19th century created a variety of attributes. These attributes and their potential combinations can create a wide variety of finished faceted-spheroidal mold-pressed beads. Presently, it is not possible to define discrete bead sub-varieties on the basis of the various combinations of attributes. Rather, the discrete attributes must be identified and reported (Fig. 3 and Table 1).







FACETED-SPHEROIDAL MOLD-PRESSED BEAD ATTRIBUTE TEMPORAL ASCRIPTIONS

Beads with these attributes from temporally sensitive archaeological contexts in North America have been recognized at 11 sites (Table 2). From these sites, *terminus post quem* dates for specific attributes can be suggested (Table 3).

Based upon limited archaeological evidence, it appears that molded facets post-date ground facets. This observation is supported by historical accounts of the beadmaking industry in 19th-century Bohemia (Pešatová 1965; Ross with Pflanz 1989). Further, the presence of both ground and molded facets on the same bead appears to represent a technical transition from totally ground to totally molded facets.

It also appears that there may be a technical transition for the formation of perforations: from pierced and punched conical, to pierced and punched biconical, to pierced biconical, and finally to pierced cylindrical perforations. The pierced and punched conical perforation had become a standard trait of the early forms of mold-pressed beads, but it may represent an even earlier trait associated with stone-

MOLD SEAM SHAPE AND ORIENTATION	Horizontal		Vertical
	Straight		
Zig-Zag			

FACETS	Ground	Molded	Molded and Ground
Random			
Semi-Random			
Semi-Patterned			
Patterned			






PERFORATIONS	Conical	Biconical	Cylindrical
Pierced and Punched			
Pierced			

Figure 3. Attributes of faceted-spheroidal mold-pressed beads (drawing by L.A. Ross).

Table 2. North American Archaeological Sites with Faceted-Spheroidal Mold-Pressed Beads with Potential Temporally Sensitive Attributes from known Temporal Contexts.

Site	Variety Number	Mold Seam		Facets	Perforation	Comments
		Shape	Orientation			
Spanish Mission Santa Ines, California, post-1804 (Ross 1989a)	MPIIa-2	Straight	Horizontal	Random ground	Pierced and punched conical	Associated with a ca. 1804-1835 context
	MPIIa-1	Straight	Horizontal	Patterned molded and ground	Pierced and punched conical	With 7 sides and 5 rows; associated with an 1833-1870 context
Kiusta, Queen Charlotte Island, pre-1850s (personal examination)		Straight	Horizontal	Patterned molded and ground	Pierced and punched conical	
Fort William, Ontario, 1803-1878 (Karklins 1973)		Straight	Horizontal	Random ground	Pierced and punched conical	
Hudson's Bay Company Fort Vancouver, Washington, ca. 1829-1860 (Ross 1990:51-55)	10 varieties	Straight	Horizontal	Random to semi-random ground	Pierced and punched conical	Principally dated to the 1830s-1850s
American Fur Company Fort Pierre I, South Dakota, 1832-1857 (Billeck 2006:pers. comm.)		Straight	Horizontal	Patterned molded	Pierced cylindrical	Information based upon a preliminary analysis
American Fur Company Fort Union, South Dakota, ca. 1828-1865 (Ross 2000)	329	Straight	Horizontal	Semi-patterned ground	Pierced and punched conical	With 6 sides and 3 rows
	159					With 6-7 sides and 3 rows
	318					With 6-8 sides and 5 rows; associated with an 1850s-1860s context
	42					With 7-8 sides and 3-5 rows
	98 and 165					With 10 sides and 5 rows
	300	Straight	Horizontal	Semi-patterned ground	Pierced conical	With 7-8 sides and 5 rows

Table 2. Continued

Site	Variety Number	Mold Seam		Facets	Perforation	Comments				
		Shape	Orientation							
American Fur Company, cont.	338					With an unknown number of sides and 5 rows				
	323	Straight	Horizontal	Patterned ground	Pierced and punched biconical	With 7-8 sides and 5 rows				
	292 and 299					With 8 sides and 5 rows				
	332					With 10 sides and 5 rows				
	74	Straight	Horizontal	Patterned ground	Pierced conical	With 8 sides and 5 rows; associated with an 1850s-1860s context and a ca. 1867-1880 intrusive burial				
	260					With 10 sides and 5 rows				
	314	Straight	Horizontal	Patterned molded and ground	Pierced and punched biconical	With 8 sides and 2 rows; associated with a post-1864 context and a ca. 1867-1880 intrusive burial				
	136 and 214					Pierced biconical	With 6 sides and 3 rows			
	4						With 6-8 sides and 3-4 rows			
	264						With 7 sides and 3 rows			
	5						With an unknown number of sides and 3 rows; associated with an 1820s-1830s context			
	289					Straight	Horizontal	Molded and ground	Pierced cylindrical	With 5 sides and 3 rows
	53									With 9 sides and 5 rows; associated with an 1820s-1830s context
	Jasper House, Alberta, ca. 1830s-late 19th century (Karklins 1986)						Straight	Horizontal	Random ground	Pierced and punched biconical
Palus Burial Site (45FR36B), Washington, 1840-1914 (Sprague 1965, 1967; Fenstermaker 1976; personal examination)						Straight	Horizontal	Random ground	Pierced and punched conical	Burials 6, 19, 37, 57, 67, 81, 84, 117, 158, 1840-ca. 1914 Burial 21, 1840-1890 Burial 131, 1840-1904 Burial 162, 1840-1881 Burial 181, 1840-1851

Table 2. Continued

Site	Variety Number	Mold Seam		Facets	Perforation	Comments
		Shape	Orientation			
Palus Burial Site, cont.		Straight	Horizontal	Patterned molded and ground	Pierced biconical	Burial 67, 1840-ca. 1914
		Straight	Horizontal	Patterned molded	Pierced cylindrical	Burial 67, 1840-ca. 1914
U.S. Army Yuma Quartermaster Depot, Polhamus House, Arizona, ca. 1862-1880s (Ross 1989c)		Straight	Horizontal	Semi-random ground	Pierced conical	With roughly 8 sides and 5 rows
Shepherd Ranch, Locus J, California, ca. 1872-1905 (Ross 2004)	73	Straight	Horizontal	Random ground	Pierced and punched conical	
	55	Straight	Horizontal	Patterned molded and ground	Pierced cylindrical	With 5 sides and 3 rows
	38					With 5 sides and 5 rows
	56					With 6 sides and 5 rows
	52	Straight	Vertical	Patterned molded and ground	Pierced cylindrical	With 8 sides and 5 rows
	17, 18, and 70	Straight	Horizontal	Patterned molded	Pierced cylindrical	With 5 sides and 3 rows, possibly hot tumbled
	68	Zig-zag	Horizontal	Patterned molded	Pierced conical	With 7 sides and 5 rows; acid polished
	61					With 8 sides and 5 rows; acid polished
Batoche, Letendre House, Saskatchewan, ca. 1878-1906 (personal examination)	21N9E 1001-3951	Straight	Horizontal	Random ground	Pierced and punched conical	
	21N9A 10-2784	Straight	Horizontal	Random ground	Pierced biconical	

bead technology, the drilling of two conically shaped holes from opposite ends of the bead. It is possible that following this stone perforation technology the earliest faceted mold-pressed beads may have had drilled biconical perforations, however, no evidence presently exists to evaluate this inference.

For the glass bead industry, it is suspected that the early form with the pierced and punched conical perforation may reflect a fortuitous event whereby an artificial-jewel pin head with its partial perforation was converted into a bead

by punching out the remaining glass. Bohemia was known for its artificial jewelry trade prior to the 19th century, and if faceted-spheroidal pin heads were precursors to faceted-spheroidal beads, then beadmakers may have adopted an existing technology to create a new product.

CONCLUSIONS

Based upon the limited evidence presently available, it is suggested that the attributes now recognized for faceted-

Table 3. Hypothesized *Terminus Post Quem* Dates for Attributes of Faceted-Spheroidal Mold-Pressed Beads based upon known North American Archaeological Contexts.

Attribute	Variation	Sub-Variation	Final Appearance	Terminus Post Quem	
Mold Seam Shape	Straight			Early 19th century	
	Zig-zag			Early to mid-19th century	
Mold Seam Orientation	Horizontal			Early 19th century	
	Vertical			Late 19th century	
Facets	Ground	Random		Early 19th century	
		Semi-random		Mid-19th century	
		Semi-patterned		Mid-19th century	
		Patterned		Mid-19th century	
	Molded	Patterned	Unmodified		Early 19th century
			Fire polished, hot tumbled, or acid polished		Mid- to late 19th century
Molded and ground	Patterned			Early 19th century	
Perforation	Pierced and punched	Conical	Biconical	Early 19th century	
		Biconical		Mid-19th century	
	Pierced	Conical		Early to mid-19th century	
		Biconical		Mid-19th century	
		Cylindrical		Mid- to late 19th century	

spheroidal mold-pressed beads from the 19th century may have potential *terminus post quem* dates that could prove useful for dating North American sites (Table 3). The hypothetical dates postulated here can be used cautiously to place bead assemblages into relative temporal sequences, but they should not be used strictly for dating archaeological contexts. Additional historical, ethnographical, and archaeological research is required to evaluate these temporal hypotheses.

Historical sources for the distribution of many of the faceted-spheroidal mold-pressed beads found in North American sites probably consist of a few major distribution centers. For example, within the Pacific Northwest, including Washington, Oregon, Idaho, northern California, British Columbia, and coastal southern Alaska, one primary distribution source has been demonstrated to be the Hudson's Bay Company, and for the years 1829-1860 (especially 1829-1850), the center for distribution was Fort Vancouver. The same pattern appears to exist for British Canada, with the source again being the Hudson's Bay Company, and primary distribution centers being York Factory, Lower Fort Garry, and Fort Temiscamingue. The existence of

faceted-spheroidal mold-pressed beads at Spanish sites may reflect the use of relatively large and well-decorated beads as rosary beads. Their presence at Native American sites may reflect casual loss during beading activities, discard, or interment of personal ornamentation; or from purposeful deposition during religious ceremonial activities. Finally, their presence in Euro-American residential and mercantile sites of the late 19th century may reflect casual loss from fashion accouterments, including clothing, jewelry, and sewing baskets.

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APPENDIX A: PLATE IVA PROVENIENCE AND ATTRIBUTE DATA

- a. Hudson's Bay Company Fort Vancouver, Washington; 1829-1860; bottom view. Random ground facets; pierced and punched conical perforation; horizontal straight mold seam with a vertical lower seam.
- b. Hudson's Bay Company Fort Vancouver, Washington; 1829-1860; side view. Random ground facets; pierced and punched conical perforation; horizontal straight mold seam showing intensified color at mold seam.
- c. Shepherd Ranch, Owens Valley, California; 1864-1905; top view. Random ground facets; pierced and punched conical perforation; horizontal straight mold seam.
- d. U.S. Army Yuma Quartermaster Depot, Polhamus House, Arizona; ca. 1862-1880s; top view. Semi-random ground facets; pierced conical perforation; horizontal straight mold seam.
- e. U.S. Army Yuma Quartermaster Depot, Polhamus House, Arizona; ca. 1862-1880s; bottom view. Semi-random ground facets; pierced conical perforation; horizontal straight mold seam.
- f. Hudson's Bay Company Lower Fort Garry (1K4A1-613), Manitoba (photo RA-4243T by Rock Chan, Parks Canada); view from side showing top. Semi-patterned ground facets; pierced and punched conical perforation; horizontal straight mold seam.
- g. Hudson's Bay Company Lower Fort Garry (1K3H2-122), Manitoba (photo RA-4248T by Rock Chan, Parks Canada); side view. Semi-patterned ground facets; pierced and punched conical perforation; horizontal straight mold seam.
- h. Hudson's Bay Company Fort Temiscamingue (15G7Z2), Quebec; 1720-1901 (photo RA-4240T by Rock Chan, Parks Canada); view from side showing top. Semi-patterned ground facets; pierced conical perforation; horizontal straight mold seam.
- i. American Fur Company Fort Union, South Dakota; 1828-1865; top view. Patterned ground facets; pierced and punched biconical perforation; horizontal straight mold seam.
- j. Spanish Mission Santa Inez, California; post-1804; side view. Patterned molded and ground facets; pierced and punched conical perforation; horizontal straight mold seam.
- k. Shepherd Ranch, Owens Valley, California; 1864-1905; side view. Patterned molded and ground facets; pierced cylindrical perforation; vertical straight mold seam.
- l. Olive Jones, personal collection; date unknown; side view. Patterned molded facets; pierced cylindrical perforation; horizontal straight mold seam showing mold fin.
- m. Shepherd Ranch, Owens Valley, California; 1864-1905; bottom view. Patterned molded facets; pierced conical perforation; horizontal zig-zag mold seam; acid polished.

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BIRDS, BEASTS, AND BOTANICALS: ORGANIC BEADS AND PENDANTS FROM THE AMAZON BASIN

Deborah G. Harding

The people of the Amazon Basin have an incredible array of organic materials available to them, which they use to make beads and pendants. The Carnegie Museum of Natural History in Pittsburgh, Pennsylvania, has extensive recent collections from the Amazon Basin, with hundreds of necklaces, belts, aprons, and ear and arm ornaments which contain beads made from organic materials. These collections are used to illustrate a variety of the beads and their materials.

INTRODUCTION

The majority of beads and pendants used in the Amazon Basin today, other than those of introduced European materials, are organic in nature. The huge area of the Amazon Basin has a varied topography with different habitats, which are intimately known and used by their inhabitants (Fig. 1). Organic beads come from all the animal families, as well as from plants. Often the materials for beads come from an animal that was killed for food, and the collecting of beadmaking materials is incidental. Certain birds are often kept as pets and as providers of wing and tail feathers, which are plucked each time they grow in. Although much beadwork is worn strictly for ornamental purposes, some also has protective or ritual significance. The most common beaded items are necklaces, ear and upper arm ornaments, aprons and belts, and the occasional hair tube or bracelet.

When this paper was proposed to the now-late Pete Francis, Jr., in March of 2002, he asked that the plants and animals that provided the bead materials be identified to genus and species (Table 1). That request has been complied with as much as possible, and gathering that data comprised most of the research focus and a preponderance of the time. Pete also encouraged the author to interpret “bead” rather loosely so that some of the spectacular feathered items could be included. Even then much had to be left out, to the author’s great regret.

The Amazon Basin collection of the Carnegie Museum of Natural History (CMNH) has been accumulated over a period of more than one hundred years. The majority was

collected in Brazil specifically for the museum in the last 25 years. Three tribes in particular are particularly well represented: the Yanomamo of northwestern Brazil and southwestern Venezuela (Dr. Giovanni Saffirio, collector); the Kayapo of central Brazil (the late Dr. Darrell A. Posey); and the Kuikuru of the Xingu River valley in south central Brazil (Dr. Michael J. Heckenberger). Sixty-eight other tribes are represented in the collection as well. This figure represents less than half the tribes extant in the Amazon Basin today. All tribes listed in the following pages are Brazilian, except for the Shuar (Jivaro), who live in eastern Ecuador and Peru.

Given that there are hundreds of necklaces alone in the CMNH collection, it is not possible to include images of all the beads that are discussed here. Beads that are not illustrated have their identifying CMNH catalog number in parentheses as a reference for those who wish to pursue the subject further.

ORGANIC BEAD SOURCES

Botanicals

Most beaded items contain botanicals—seeds, nuts, and beans, and the occasional bamboo tube. It has been very difficult to identify the plant origins for many of the seeds and nuts, mostly because botanists do not consider them important in the classification and identification of the plants, and may collect in the wrong season for fruit (Bonnie Isaac 2004:pers. comm.). A couple of beads are found almost everywhere in the Amazon, and are readily recognizable: *Ormosia*, also known as the “bead” or “necklace” tree; and Job’s tears (Pl. IVB top). There are at least 50 species of ormosia, but the red-and-black variant is primarily seen in the CMNH collection.

The author has grown Job’s tears, and finds that the dried seed is readily converted into a bead by pulling the dried blossom from one end. The blossom is attached inside to the other end of the seed and removing it creates a hole for stringing. Although most often used just strung as



Figure 1. Northern South America showing the location of several tribes (drawing by K. Karklins).

necklaces, the seed can also be further modified for other uses. The Waiwai in northern Brazil cut them in half at the circumference and weave them into women's pubic aprons (CMNH #34544-156). The cut seed is bell-shaped, and the makers alternate the direction of the open end from row to row to keep the weaving square.

The Waiwai also pierce small, flat, brown seeds across their width and weave them into rectangular strips for men's belts. Some of the beads are dyed black or red-brown to create patterns of plants and birds (CMNH #35751-171). They use the same seed for women's belts, but in a completely different form and technique. The belts consist of two strands of seeds connecting two rectangular panels placed at the center, front and back. The panels are woven in an open, looped mesh, with an edging of small macaw feathers (CMNH #34856-59).

Of unknown species are small tubers often worn by Yanomamo men as protection against evil spells and spirits. The necklace (called *aroariki* by the Yanomamo) in Fig. 2 was made by Puuxim of Wakathautheri village, in the Catrimani River drainage (Couture-Brunette 1986:91). Another unidentifiable tuber (called *marasik*) is used to make a necklace worn by men to increase their sexual desirability (CMNH #32735-44-b). A man wearing these beads is said to be irresistible to women (Giovanni Saffirio 2001:pers. comm.). The necklace arrived at CMNH smeared with red body paint, so presumably it had been used.

The kernel in various palm fruits is carved into ring-shapes, flat discs, rectangular plaques, and animal-effigy beads (Fig. 3; Pl. IVB bottom). The Kayapo carve little turtles, the Arauete carve birds (CMNH #34988-63), and the Urubu-Ka'apor make things that look like feet (CMNH 34544-149). The star nut, or tucum, palm is a common tree that provides wood for building and weapons, leaves for thatching houses and weaving baskets and mats, an edible fruit, and the hard kernel for beads (Anderson 1978:39; Cavalcante 1991:218-220). The tucum palm kernel is used so much by the Kayapo in a particular pendant configuration that it has become emblematic of Kayapo identity. In fact, Kayapo dolls are made by affixing the pendant to a Brazil nut pod (Fig. 4). Only human beings (i.e., the Kayapo) wear this pendant, hence anything with this pendant represents a person (Darrell A. Posey 1993:pers. comm.).

Fish

Fish are represented by the extensive use of vertebrae, which make exceptionally good beads—they are sturdy, need little shaping or drilling, and come in interesting forms. Unfortunately, vertebrae are particularly difficult to identify as to species, and often even as far as genus. Three scientists were consulted regarding the Pareci necklace in Fig. 5, and their best identification was "bony fish." One, who will remain unnamed to protect his reputation, commented that he hated fish vertebrae.

Table 1. Species Providing Parts for Amazon Basin Organic Beads and Pendants.

<p>Botanicals: <i>Astrocaryum aculeatum</i> Tucum palm <i>Bixa orellana</i> Achiote or urucu <i>Caryocar</i> sp. Piquia <i>Cocos nucifera</i> L. Coconut Palm <i>Coix lacryma-jobi</i> Job's tears <i>Lagenaria</i> sp. Gourd <i>Ormosia</i> sp. "Lady bug," "necklace," or "bead" tree</p> <p>Fish: <i>Arapaima gigas</i> Pirarucu or paiche</p> <p>Reptiles: <i>Geocheone</i> sp. (possibly <i>carbonaria</i>) South American Red-footed Tortoise <i>Melanosuchus niger</i> (Spix) Black Caiman</p> <p>Mollusks: <i>Anodontites</i> sp. <i>Castalia ecarinata</i> <i>Castalia stevensi</i> (H.B. Baker) <i>Corona regalis</i> (Hupe) Crown Snail <i>Doryssa</i> sp. <i>Ecuadores</i> sp. <i>Strophocheilus oblongus</i> (Mueller)</p> <p>Insects: <i>Chrysophora chrysochlora</i> (Latreille) Rough Andean Jewel Beetle <i>Euchroma gigantea</i> (Linnaeus) Giant Metallic Wood-borer</p>	<p>Mammals: <i>Agouti paca</i> Paca <i>Alouatta seniculus</i> Red Howler Monkey <i>Aotus azarai</i> Azara's Night Monkey <i>Blastocerus dichotomus</i> Marsh Deer <i>Cabassous unicinctus unicinctus</i> Naked-tailed Armadillo <i>Cebus apella</i> Brown Capuchin <i>Coendou prehensilis</i> Brazilian Porcupine <i>Dasyypus novemcinctus</i> Nine-banded Armadillo <i>Herpailurus haguaroundi</i> Jaguarundi <i>Leopardus pardalis</i> Ocelot <i>Myrmecophaga tridactyla</i> Giant Anteater <i>Panthera onca</i> Jaguar <i>Priodontes maximus</i> Giant Armadillo <i>Pteronura braziliensis</i> Giant Otter <i>Tapirus</i> sp. Tapir</p> <p>Birds: <i>Ara ararauna</i> Blue-and-yellow Macaw <i>Ara</i> sp. Macaw (various) <i>Chloroiphanes spize</i> Green Honeycreeper <i>Cochlearius cochlearius</i> Boat-billed Heron <i>Cotinga cayana</i> Spangled Cotinga <i>Cotinga cotinga</i> Purple-breasted Cotinga <i>Dacnis lineata</i> Black-faced Dacnis <i>Pasrocolius</i> sp. Oropendola <i>Pteroglossus</i> spp. various aracarís <i>Ramphastos</i> spp. various toucans <i>Ramphastos vitellius ariel</i> Channel-billed Toucan <i>Tangara callophrys</i> Opal-crowned Tanager <i>Tangara gyrola</i> Bay-headed Tanager <i>Tangara schrankii</i> Green-and-gold Tanager <i>Xipholena lamellipennis</i> White-tailed Cotinga</p>
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Easily recognized, on the other hand, are the scales of the Pirarucu or Paiche (*Arapaima gigas*) (Pl. IVB top). These fish can weigh over 1000 kg, and reach 3.0 m in length (James Albert 2004:pers. comm.). The necklace is Yanomamo, from northeastern Brazil, and also includes Job's tears and ormosia beads.

Reptiles

Beads derived from reptiles are less common. Particularly interesting are necklaces made by the Aguaruna Shuar from the bony plates (osteoderms) found under the skin of the Black Caiman (Fig. 6). The only alteration was to drill the holes for stringing; the small patterned holes

occur naturally, and allowed blood vessels to pass through to feed the skin. Caiman, like a number of other vertebrates, contribute teeth for beads, as well as meat, to the Indians (Fig. 7). Teeth are usually arranged on a necklace in the order they appear in the mouth, with the incisors and canines in the center. Whole tortoise shells (CMNH #33339-310) and individual scutes from the carapace, in this case the South American Red-footed Tortoise, are also used (Pl. IVC top).

Invertebrates

Certain beetles provide iridescent wing cases for both native and Neo-Brazilian jewelry. In the latter case, entire beetles are often used to make pins. Among the Shuar,

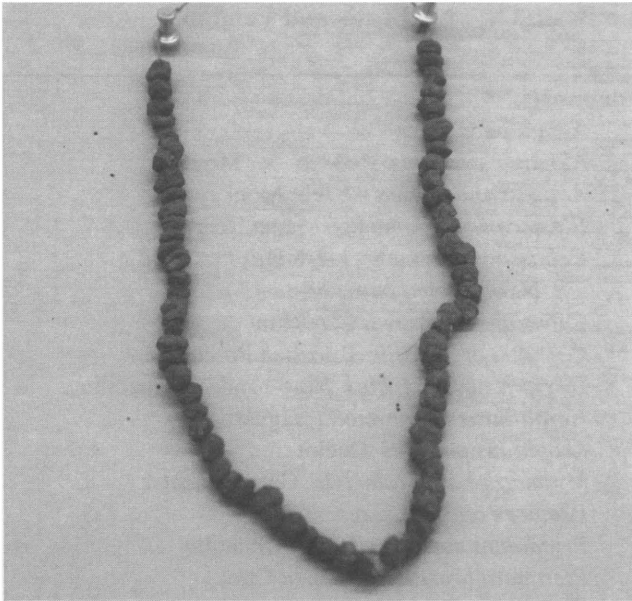


Figure 2. Yanomamo necklace. These tubers protect the wearer from evil spells and spirits (all photos by author).

wing-case earrings are worn by men in dances (Roe 1995:94-95) (Pl. IVC bottom). The wing cases serve both as decoration and as rattles, sounding each time the wearer moves his head.

Mollusks, both aquatic and terrestrial, provide another source of material. Land and tree snails in South America

are often large and colorful, and the uncommon ones may be traded for hundreds of miles. The owner of the Piraha necklace in Pl. IVB (bottom) was very reluctant to part with it, because of the difficulty in obtaining the snail shell, and the other “exotic” trade goods—the plastic bead and clear rubber tubing (Dan Everett 1991). There are also cat and monkey teeth, and palm-kernel rings on the necklace.

Yanomamo women pierce small mussels in the hinge area and hang them, along with toucan feathers, glass beads, and *tirimoku* seeds, at both hips of their aprons (CMNH #32735-298) (Couture-Brunette 1986:69, Table 1). The Kayapo also use a whole mussel shell, but pierce both long edges and hang tucum palm pendants from the lower edge (CMNH #32689-260) as part of a necklace.

Besides being used whole, shells are also cut into shapes, usually very simple ones. Kayapo men make the stiff *ngapokredje* (mussel-shell necklace) to be worn daily by male children and by men of particular age classes (Pl. VA). The color of the string pendants on the back indicates the level of the wearer’s ritual privilege (Verswijver 1992:143). The Kuikuru cut tree-snail shells into similar shapes, only pierced and strung at both ends, and make a more flexible, almost sinuous, necklace (CMNH #35751-96). The Rikbaktsa notch the edges of mussel shells to make fish shapes, and hang them on the ends of long pendant strings of seeds and macaw feathers on men’s back ornaments (CMNH #34544-1) (Roe 1995:42-43, Fig. 65).



Figure 3. Kuikuru necklace with carved palm-kernel turtles. Glass seed beads are becoming more available in the area, although it is still a two-week boat trip to the nearest landing strip.

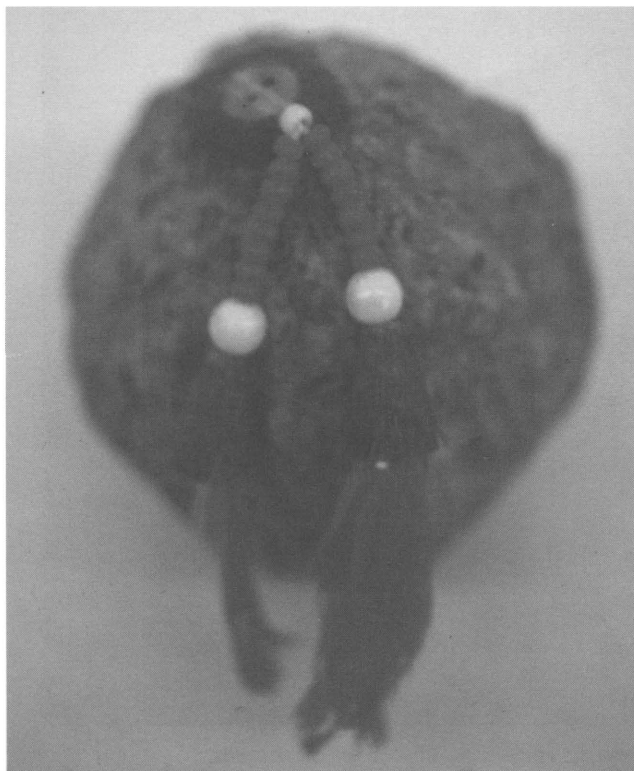


Figure 4. Kayapo doll with pendants of glass beads, tucum palm fruit kernels, and macaw feathers. Smooth *inaja* palm nuts are also made into dolls by applying body paint in intricate patterns.

Mammals

When the average person thinks of beads made by “primitive” people, they often imagine necklaces made of bones and large predator teeth. Cut bone tubes and plates are common, but with no remaining distinguishing features, they cannot even be identified as to animal type, let alone genus or species. The Campa of eastern Peru sew carved bone plaques along one edge of their woven cotton baby carriers; the plaques give the baby something to play with while the mother is busy (CMNH #35068-1).

Teeth are one of the most commonly used mammal materials, but are often small and come from herbivores. The teeth of a variety of different monkeys are used, as well as the Paca (a large rodent) and the Giant Otter (CMNH #450-12). Among the Kayapo, the type of monkey teeth used indicates the person’s level of ritual privilege (Verswijver 1992:142-143). When predator teeth are used, they are not necessarily in impressive clusters of large teeth, but often as a single pendant in the center of a necklace of simple round black seeds (CMNH #34544-104).

One of the earliest pieces from the Amazon collection came from an explorer in the upper reaches of the river in 1897. The bracelet, cut from the wrist of a child, has

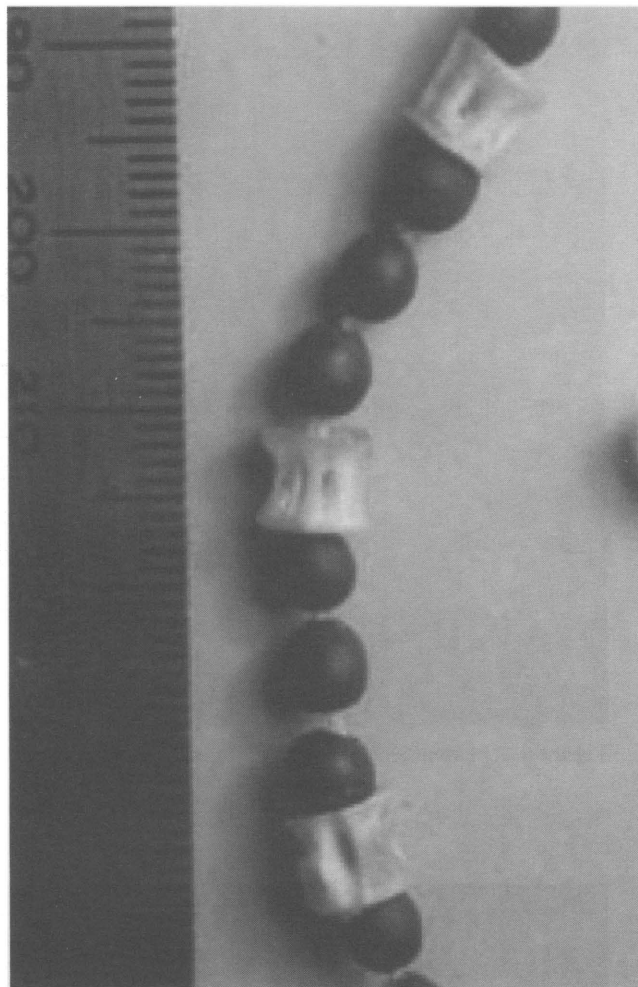


Figure 5. Pareci necklace with unidentifiable fish vertebrae and black seeds (the scale is in millimeters).

Azara’s Night Monkey teeth, ground flat and sewn to a native cotton woven strip (Kerbey 1897) (Fig. 8). The same collector also acquired a necklace containing the incisors and canine teeth of five jaguars (CMNH #450-11). In the days before the introduction of firearms, a man who killed that many dangerous cats with a spear or bow and arrows would proudly wear the evidence of his bravery and hunting prowess. Even with modern weapons, it would still be a feat of courage and skill.

Claws are also used, but there are none in the CMNH collection from large cats. This might be a result of the Endangered Species Act preventing them from coming to the museum, or it might be a choice of the native beadmakers. Most common are the front claws of the Giant Armadillo (Pl. VB) and Giant Anteater. The tucum palm kernel pendants indicate their Kayapo origin. Hooves are also used to make cap-like beads—the necklace in Fig. 9 with juvenile Marsh Deer hooves, coupled with wing feathers of the Blue-and-

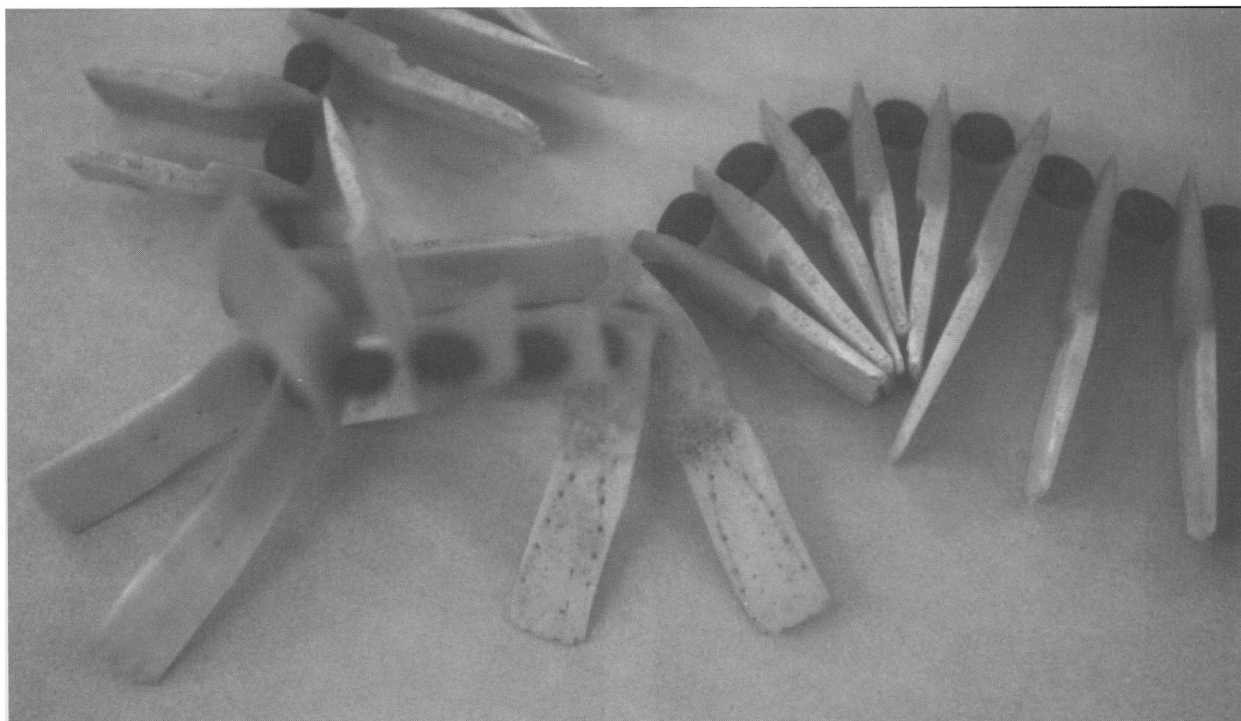


Figure 6. Aguaruna Shuar necklace with Black Caiman osteoderms and the ubiquitous, unidentified black seeds.



Figure 7. Close-up of Black Caiman teeth. They have a lens-shaped cross-section and sharp edges. The bases are pierced and strung before being lashed among strands of handspun native cotton.

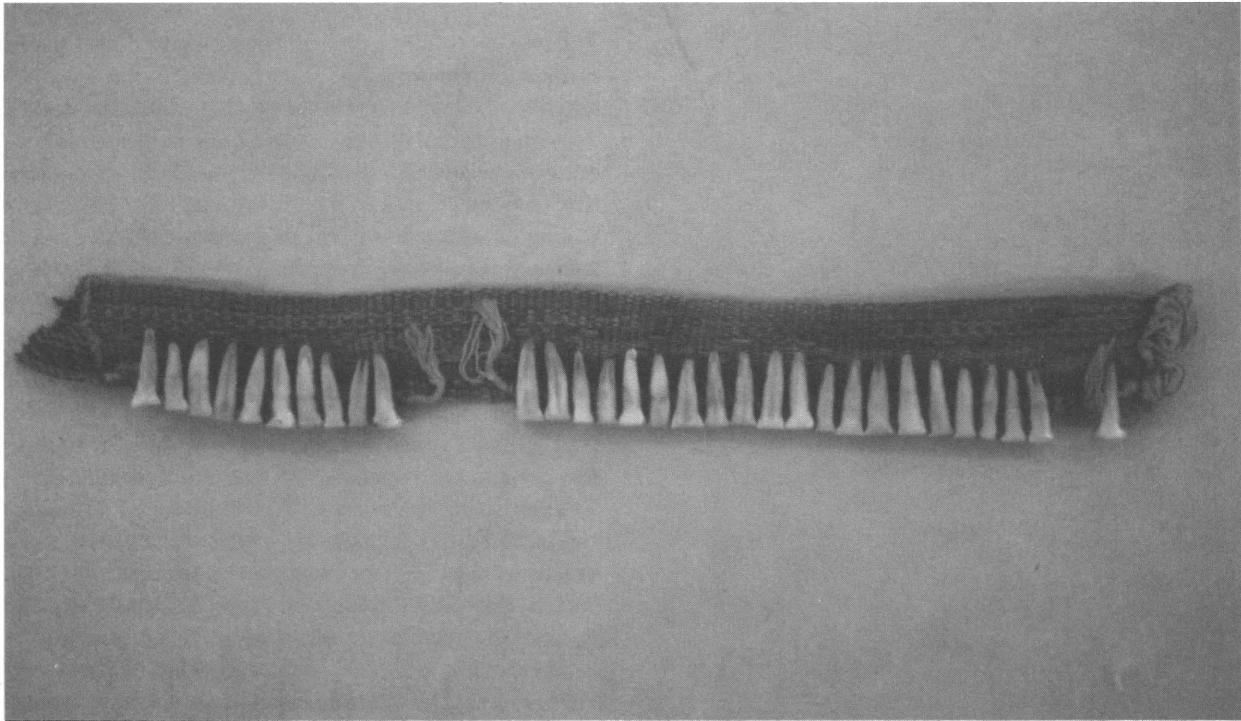


Figure 8. Child's bracelet of Azara's Night Monkey teeth. Among some groups, such bracelets are worn until outgrown, then replaced with larger ones. The old bands are saved as a record of the child's growth.

yellow Macaw, was purchased from the Karaja tribe. In another necklace, the Shuar used the split hooves from three legs of a Tapir, as well as bone tubes, a rodent tooth, and the ear bones (petrosals) of a Paca (Fig. 10; Pl. VC).

Less frequently encountered are jawbones. Easily identified is the mandible of the Giant Anteater (Fig. 11). Although it has no teeth, it does serve to keep the anteater's long snout from collapsing. Despite the lack of tucum palm kernels, the pendants are readily recognizable as made by the Kayapo. The Waiwai cut the lower jaw of a Jaguar behind the first bicuspids to use it as a pendant at the center of a seed necklace. They put red and black feathers on either side of the jaw, with one of the upper fangs at one side, but no tooth on the other side (CMNH #34856-57). One wonders whether the contributing jaguar had lost a fang, or if not, what happened to that other impressive tooth?

A rather uncommon item is the tail tip of the Nine-banded Armadillo, used in a simple necklace called *opoxina* by the Yanomamo (Fig. 12). Because the necklace is made from animal parts, it is worn only by men (Couture-Brunette 1986:74).

Porcupines are not usually associated in the average person's mind with South America, but there are three species of prehensile-tailed porcupines in Brazil alone. The Kayapo use the quills of the Brazilian Porcupine in necklaces,

with the sharp tips cut off (Pl. VD). Porcupine quills were also used by the Bororo to create composite beads (Pl. VIA top). A bamboo tube forms the bead foundation, and the porcupine quills are lashed on with native cotton coated with blackened beeswax. Alternating on the same necklace are beads made of a bamboo wrapped with palm leaf strips and waxed cotton. The alternate leaf strip is dyed orange, probably with *urucu* seeds (*Bixa orellana*).

Birds

Birds provide a major portion of the ornamentation in the Amazon Basin. While most of the spectacular featherwork does not qualify as beadwork, some of it does. Other bird parts are used as well.

The Aguaruna Shuar make a necklace with two strands. One strand has tubes cut from the bones, and the other stripped feather shafts, all from unidentified birds (Fig. 13). Once cut, identifying the species from which a bone came is usually impossible. In one instance, it is reasonably sure that the bones are cut bird ulnas (Pl. VIA). The curve and roundness of the bones had the author convinced that they might be snake ribs, but consultation with a herpetologist and an ornithologist indicated otherwise. The only snake big enough to have that gentle a curve would be a very



Figure 9. Karaja necklace strung with small, unidentifiable white seeds. The juvenile Marsh Deer hooves cap Blue-and-yellow Macaw wing feathers. The feathers are blue on the upper surface, and yellow on the underside.

large anaconda, and the bones would then be much more robust. Bird ribs are flat, and these bones correspond much better to the ulna. Since there are only two ulnas per bird, the necklace represents about 35 individuals (Steven Rogers and Robin Panza 2004:pers. comm.). The Urubu-Ka'apor, who created the necklace, make extensive use of bird parts, especially feathers, in their ornamentation.

Instantly recognizable to the trained eye, the bill of the Boat-billed Heron has been used by the Kayapo as the main feature of a necklace pendant (Pl. VIB top). The opaque white-glass beads were an exotic trade good when the necklace was made in the mid-1980s, a time when a trip into their area necessitated a week or more in a boat. Air travel came to the region in the last decade, and foreign goods are now more readily available.

As well as using selected bits of the bird, whole birds are used as well. A 19th-century necklace, one of the oldest artifacts in the Amazon Basin collection, has five pairs of small birds tied to multiple strands of black seeds (Fig. 14). The Oiampi still use entire birds as pendants on their *akaneta* headbands (Braun 1995:14-15)(Pl. VIB bottom). The septum between the nostrils of the Plum-throated Cotinga is pierced and tied to a cotton cord, to hang down a man's back from his headband of toucan feathers. Other species of cotinga are used for headband pendants as well.

The use of feathers is only lightly touched on here, but is typified in the Urubu-Ka'apor *tukaniwar* necklace illustrated in Pl. VIC. It represents at least four different bird species. A red macaw feather forms the backing of the pendant, to which breast feathers from the Spangled Cotinga, wing feathers of the White-tailed Cotinga, and red macaw body feathers are attached with plant sap. The yellow-orange feathers on the neck cord come from toucan breasts, probably the Channel-billed Toucan. The necklace is worn by women during name-giving ceremonies, and is made with only one smaller pendant at the top (Roe 1995:66-67). The men have a different version for the same ceremony, using longer feathers and a Harpy Eagle bone pendant (CMNH #35655-19). Among many tribes, birds and their feathers have considerable significance, indicating social and cultural affiliations, and degree of ritual privilege (Verswijver 1992:49-50, 65-66).

The ultimate "bead" in this collection is the composite pendant on an Urubu-Ka'apor arm ornament (Fig. 15). Long, red macaw tail feathers are lashed to strips of split bamboo, and inserted behind a tight band on a man's upper arm. One feather in perhaps 10-20 has a pendant tied to its end (Pl. VID). The pendant starts at the top with a thin bamboo tube covered with black monkey fur. Short red and blue macaw feathers and longer trimmed yellow and black feathers are lashed to the top. The yellow feathers are from an oropendola species, but there are a number of possibilities for the black feathers. Below the tube is a triangular bark plaque covered with purple feathers, probably Purple-breasted Cotinga. A pair of split cane hoops hang from handspun native cotton, and below them depend the pierced wing cases of Giant Metallic Wood-borers. The whole affair bobs and rustles as the man dances. Truly a wonderful creation.

CONCLUSION

Humans throughout the world spend a considerable amount of time creating means of adorning their persons, to make themselves beautiful, and to indicate their social and religious status. The people of the Amazon Basin are

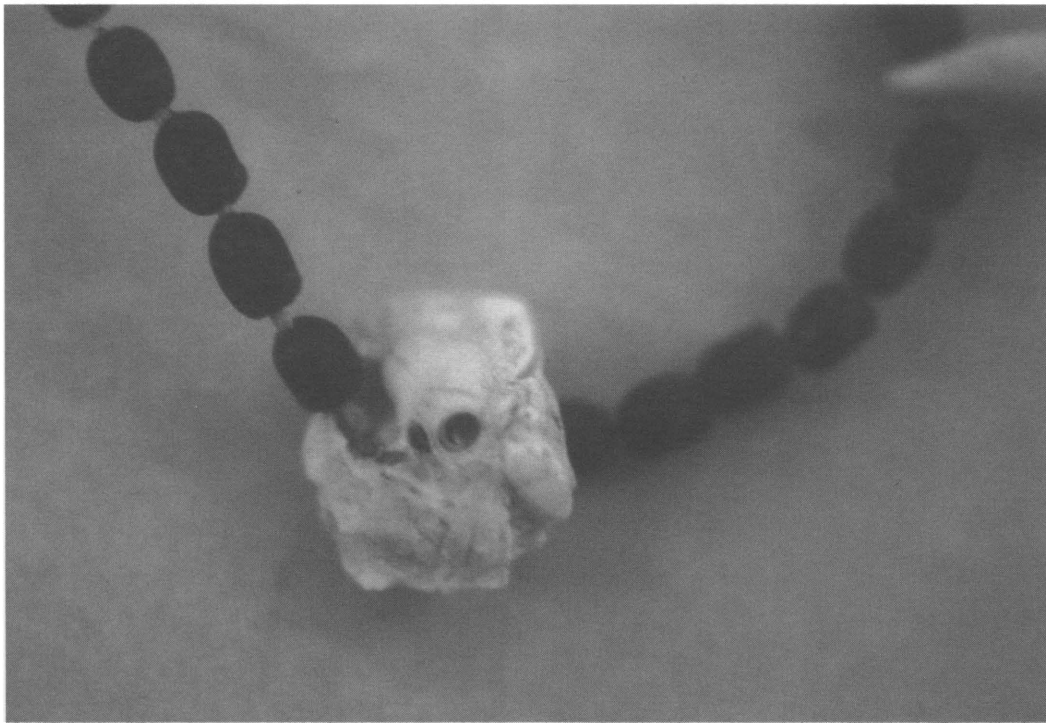


Figure 10. Close-up of Paca petrosal. Minimal drilling is required for stringing; all other features are natural.

no exception. The vast majority of the sources for their beads and pendants are organic—plants, fish, reptiles, shells, insects, mammals, and birds. Some beads are highly modified forms, barely recognizable as to origin, while others are hardly altered. Although these tribal peoples are not working in the more permanent or “precious” materials of metal, stone, or glass, their beads and pendants are as beautiful and important as those of the broader world.

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Environmental Archaeology Laboratory, Florida Museum of Natural History; John R. Wible, Section of Mammals, Carnegie Museum of Natural History.

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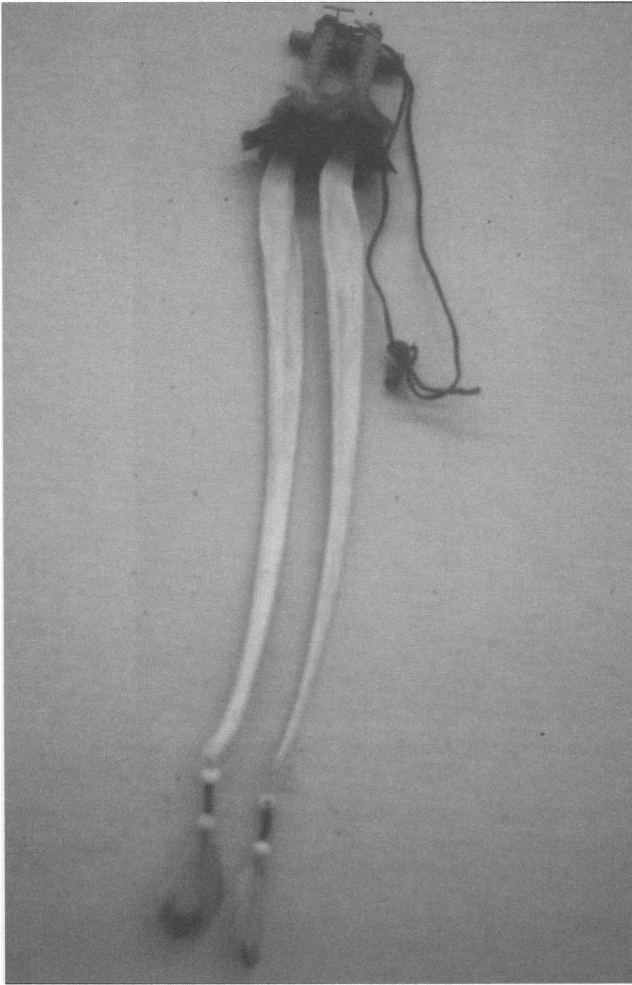


Figure 11. Kayapo neck ornament of the mandible of a Giant Anteater. The tops are lashed to a bamboo crossbar, and wrapped with commercial pink cotton cord. The upper feathers are red and black, probably macaw and toucan, respectively. The tip pendants are white and blue glass beads and macaw feathers.

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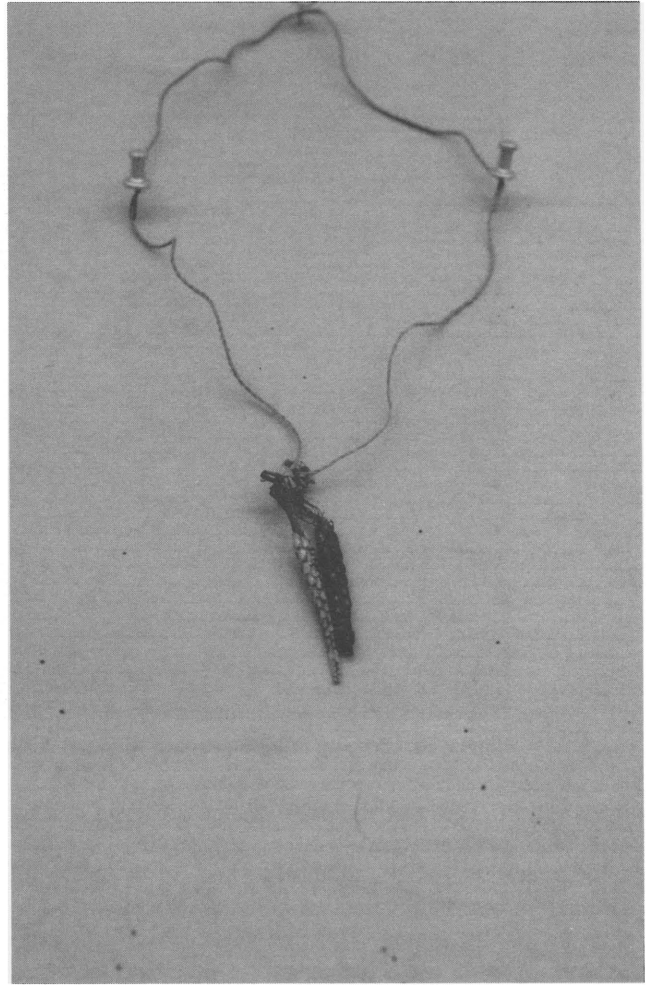


Figure 12. *Opoxina* necklace from the Yanomamo with armadillo tail tips. Only men may wear parts of game animals. Women may wear feathers, which can come from pet birds as well as hunted ones.

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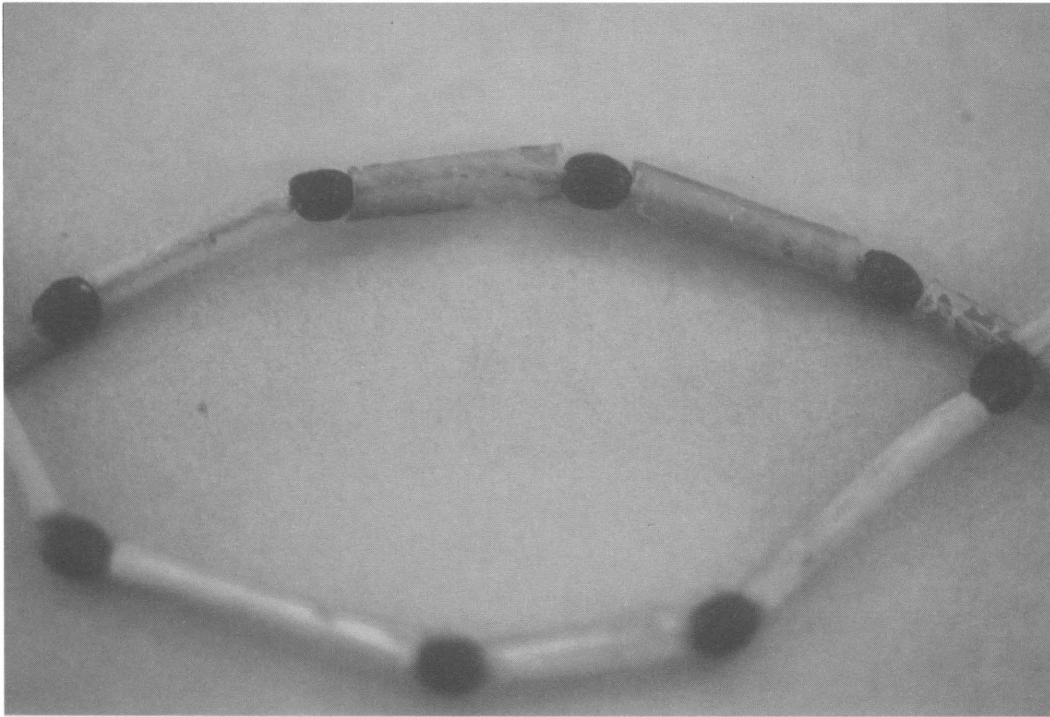


Figure 13. Detail of Aguaruna Shuar necklace. One strand has bird bone tubes and the other stripped feather shafts.



Figure 14. Campa(?) necklace of multiple strands of unidentifiable black seeds and whole birds. There are three species of tanager, a dacnis, and a honeycreeper tied through the septum of the upper beak, in pairs. Several have become detached at the neck.

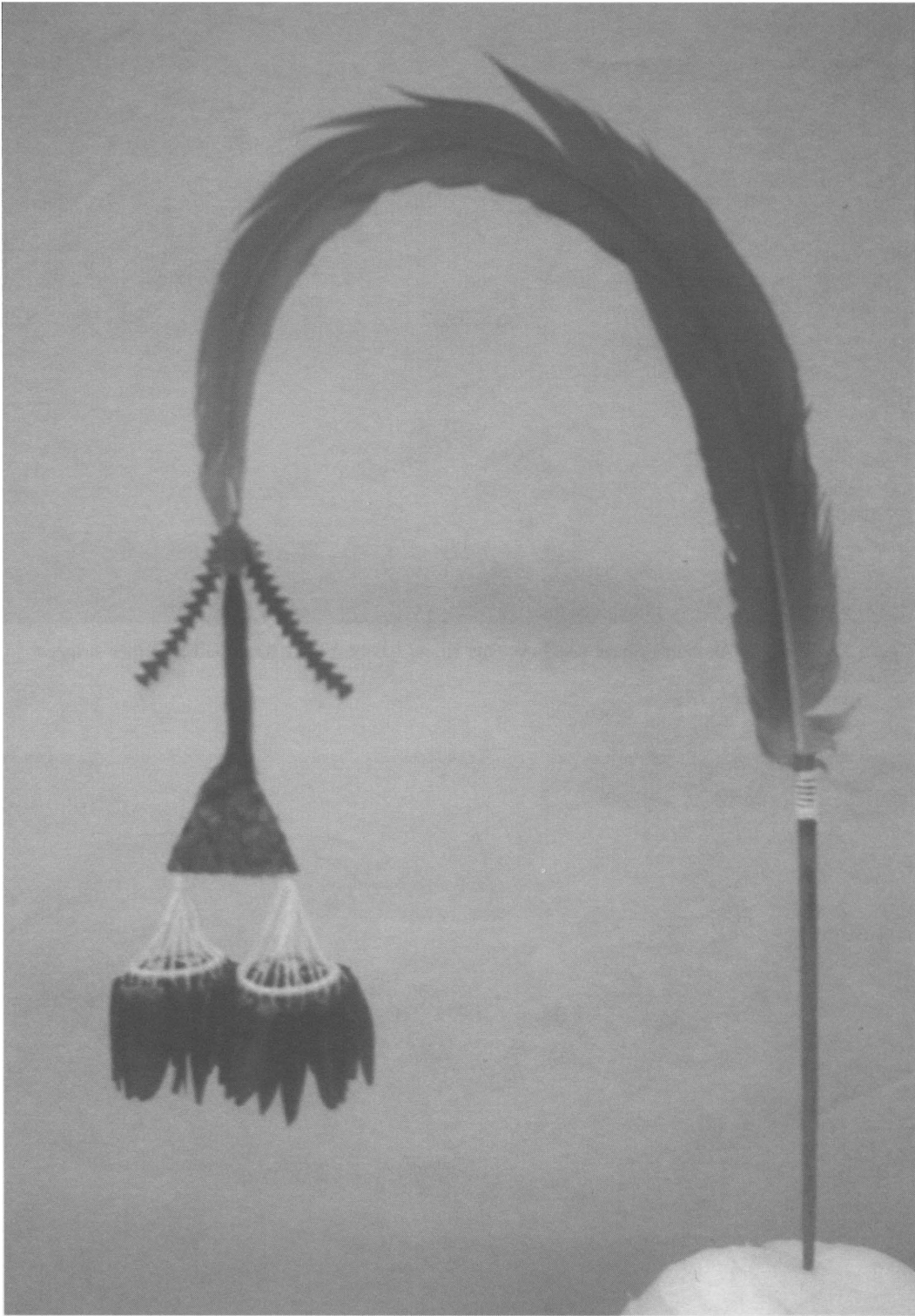


Figure 15. Urubu-Ka'apor man's arm ornament. Only men may use the larger feathers from the wings and tail.

EARLY UPPER PALEOLITHIC ORNAMENTS FROM ÜÇA IZLI CAVE, TURKEY

Mary C. Stiner and Steven L. Kuhn

Beads and similar ornaments appear early in the archaeological record associated with modern humans (Homo sapiens), first in Africa and somewhat later in Eurasia. They are thought to be among the first indicators of human use of symbols. This paper discusses criteria used to distinguish early mollusk-shell beads from other kinds of shells in archaeological deposits, focusing on evidence from the site of Üça izli Cave in Turkey. Upper Paleolithic beadmakers at this and other sites clearly preferred certain forms of shell for ornamental purposes, although the reasons for that selectivity remain obscure.

INTRODUCTION

It will come as no surprise to readers of this journal that virtually every known human society makes or uses beads and similar ornaments. As it turns out, this is a comparatively old habit of humans. Beads and bead-like objects are found in archaeological layers dating to more than 70,000 years ago in Africa, and more than 40,000 years or more in Eurasia. Seemingly, wherever one finds archaeological evidence of *Homo sapiens* (i.e., anatomically modern humans), one also finds beads. The beads may not be numerous or prepossessing, but they are extremely widespread in time and space nonetheless.

The earliest beads and ornaments are often minimally altered objects taken from nature. This raises some challenges for archaeologists who seek to distinguish artifacts from other naturally occurring materials. Not all things that look like beads are anything of the sort. For example, there are scattered reports of possible ornamental objects from much earlier archaeological deposits in Eurasia associated with Neandertals and other human forms predating *Homo sapiens*. In almost all of these earlier cases, however, evidence of human manufacture is dubious (d'Errico and Villa 1997).

Early ornaments made of mollusk shells present particular analytical challenges. Shells may wind up in archaeological sites for any number of reasons. People may carry shells to their campsites because they contain edible meat, or the shells may be carried along by accident,

clinging to materials such as driftwood and seaweed. Damage to shells by predatory mollusks and wave action can superficially resemble that produced by humans during ornament making. In this paper we describe some of the criteria that archaeologists use to identify early shell beads, using as illustration data from our own research at Üçağizli Cave in Turkey. These observations help us determine what was collected for ornamental purposes and what was collected for food. They also help to reveal just how raw material was obtained, the techniques used for manufacturing ornaments, as well as providing clues as to the criteria for selecting certain shells for use as beads.

A VERY BRIEF HISTORY OF EARLY BEADS

One should always be cautious about discussing the "first" example of anything, as new discoveries inevitably push the earliest known dates back in time. The oldest beads currently known come from Middle Stone Age (MSA) layers at Blombos Cave on the coast of South Africa, and date to around 70,000 years before present. These objects are shells of small marine gastropods (*Nassarius kraussianus*) with natural and artificially enhanced perforations (Henshilwood et al. 2004). There are no diagnostic human fossils from the layers yielding the beads, but it is thought that the Blombos beads were produced by an early population of anatomically modern humans, *Homo sapiens*. Similarly, early ostrich eggshell beads have been reported from eastern Africa (e.g., McBrearty and Brooks 2000) but the dating is less certain. The widespread tradition of making beads from ostrich eggshell had certainly begun in East Africa by around 40,000 years ago (Ambrose 1998).

Ornaments appeared in Eurasia somewhat later than in Africa, sometime between 45,000 and 40,000 years ago. The precise ages of the very earliest specimens are not well understood because they lie at the practical limits of the radiocarbon dating technique, the most widely applied method for obtaining absolute dates. The first indisputable beads in Eurasia are associated with early Upper Paleolithic cultural remains which, like the South African material, are

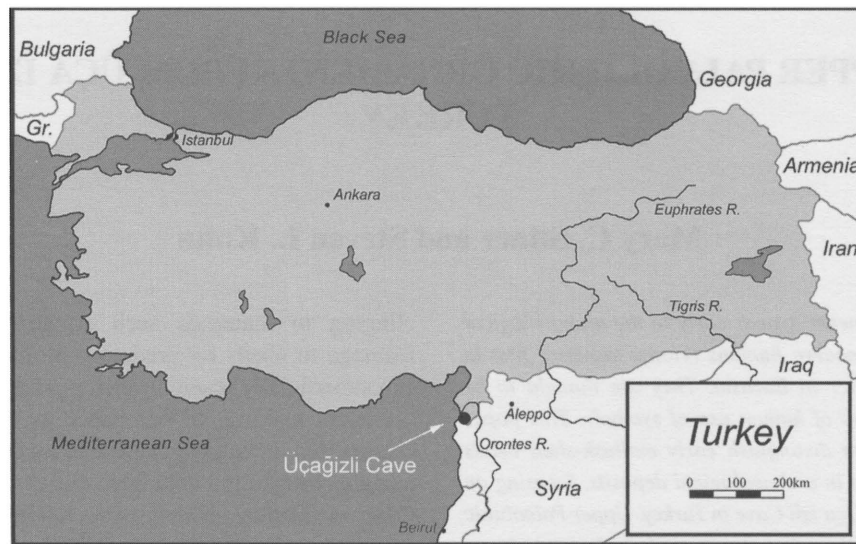


Figure 1. Location of Üçağızlı Cave in the Hatay region of south-central Turkey (all photos by the authors).

thought to have been produced by anatomically modern *Homo sapiens*. Interestingly, the forms of these early beads vary from place to place. For example, in the Mediterranean basin, early Upper Paleolithic ornaments are almost exclusively made of marine gastropod shells, whereas in central and eastern Europe they are usually made of pierced animal teeth (Kuhn et al. 2001; Stiner 2003; White 2003).

The Middle Stone Age beads from southern Africa and early Upper Paleolithic ornaments from Eurasia are numerous and they are unquestionably artifactual. Moreover, they take standardized forms that persist across time and space. Small, flat, circular beads of ostrich eggshell have been used in Africa continuously from 40,000 years ago up to the present day. Some of the basic forms of mollusk shell beads from Mediterranean Europe continued to be made and used for tens of thousands of years, into the Neolithic and Bronze Ages. Thus, the early beads from Eurasia and Africa therefore represent not only ornaments, but canons of ornamentation, cultural rules about what was appropriate (and inappropriate) to use as decoration.

The ubiquity of beads in the material culture of *Homo sapiens*, both in the present and in the archaeological past, tells us that personal ornaments play a very fundamental role in human life. We are not suggesting that there is a stretch of DNA in the human genome that codes for beadmaking. Whether or not to make beads, what kinds of beads to make, and how to use them are cultural choices. Yet they are choices that most every community of human beings has chosen to make at some point. In the most general sense, beads are components in languages of personal ornamentation,

material means for expressing the identity of the wearer to a variety of audiences.

There are three main hypotheses for the first appearance of ornaments in the Paleolithic, all of which relate to their role in communication. One hypothesis holds that beads are simply one symptom of sudden cognitive changes associated with the appearance of *Homo sapiens* (Klein and Edgar 2002): the first examples of beads and other elements of material culture such as art and decoration would thus coincide with an expansion of humans' biologically based abilities to communicate through symbols. Other explanations focus more on the conditions of life than on the abilities of past humans. We have argued that the first appearance of beads coincides with certain thresholds in human population sizes and densities, marking a point in time when it became necessary for people to broadcast aspects of their identities to individuals from beyond their immediate social group (Kuhn et al. 2001). A related hypothesis is that early beads are the first material expressions of social inequality and status competition in human groups.

ORNAMENTS FROM ÜÇAĞIZLI CAVE

We are fortunate to have been able to conduct collaborative archaeological studies with Turkish colleagues at Üçağızlı Cave, a site that dates to the early Upper Paleolithic period. It was during this period that anatomically modern *Homo sapiens* dispersed into Eurasia, replacing or swamping other human forms such as Neandertals. Üçağızlı Cave has also yielded some of the largest collections of Upper Paleolithic beads in Eurasia.

Table 1. Relative Abundances (MNI) of Taxa in the Ornamental Shell Assemblages in the Northern Part of the Main Trench in Üçağizli Cave, by Layer or Layer Group.

Shell types	EPI %	B %	B1-4 %	C-D %	E %	F-Fc %	G-H %	H1-3 %	I %
<i>Columbella rustica</i>	22	32	46	51	52	37	3	1	0
<i>Nassarius gibbosula</i>	22	55	42	31	23	49	95	98	83
<i>Dentalium</i> spp.	20	0	0	0	0	0	0	0	0
<i>Gibbula</i> spp.	24	4	3	0	0	0	0	0	0
Rift/brackish types*	0	3	3	10	23	4	1	0	8
Marine bivalves	9	4	4	3	0	0	0	0	8
Other species	4	2	3	4	2	10	1	1	0
Total assemblage MNI	46	328	705	94	52	214	96	151	12

(*) Fresh- and brackish-water taxa, dominated by *Theodoxus jordani* but may include the genera *Cobicula*, *Melanopsis*, and *Potomida*. The nearest sources would be the Orontes River drainage. Material from the Epipaleolithic layer in the south end of the site is also included for comparison.

Üçağizli (“three mouths”) Cave is situated on a rugged stretch of the Mediterranean coast in Hatay province in south-central Turkey (Fig. 1). The terrain around the site is characterized by dramatic relief. As the coastal topography is so steep, the site would always have been within a few kilometers of the sea, even during periods of very low sea level associated with full glacial conditions during the Pleistocene.

The main archaeological sequence at Üçağizli Cave is more than three meters deep, and almost all of the deposits excavated so far date to the early Upper Paleolithic period; more recent Epipaleolithic-aged deposits are preserved in another part of the cave. Given the ambiguities that currently plague radiocarbon dating for age ranges in excess of 35,000 years, we will not attempt to assign precise dates to individual layers at Üçağizli Cave. At this point, however, we are reasonably confident that the early Upper Paleolithic sequence spans the period between approximately 29,000 through 41,000 (uncalibrated) radiocarbon years before present. In fact, the radiocarbon determinations for the earlier layers represent minimum age estimates that likely underestimate the true age by several thousand years. The Epipaleolithic deposit dates to around 17,000 years ago.

Excavations at Üçağizli Cave between 1997 and 2002 have yielded more than 1,900 ornamental objects. Almost all of these are beads or small pendants manufactured from marine and brackish-water mollusk shells. Frequencies of the most important ornamental mollusk species in assemblages from the northern sector of the excavation are shown in Table 1. The only definite non-shell ornament recovered to

date is the talon of a very large raptor (probably *Gyps*; e.g., *G. fulvus*). The talon has a small notch cut in the anterior proximal end (Fig. 2), presumably to facilitate suspension. One other non-shell item of note is the large tusk of a wild boar (*Sus scrofa*) that was separated from the skull at its base by a relatively clean transverse fracture. Though this object was clearly collected for some reason, there is no evidence that it was suspended or worn.

The sheer quantities of beads from Üçağizli Cave are especially remarkable in light of the small size of the excavated area. We do not believe that the abundance of beads implies that Üçağizli Cave occupied a special social or symbolic role in the cultural landscapes of the early Upper Paleolithic groups that used it, however. Due to its location close to the sea, the cave may simply have been an especially convenient place to make shell beads. Moreover, foragers’ use of ornaments is not necessarily confined to ritual or socially important situations. Beads, and more importantly, beaded products (clothing, headgear, and “accessories”) serve in part to inform people outside the wearer’s immediate group about that individual’s age, marital status, role in society, and other factors. Foragers may carry ornaments and display them in almost any situation where they are likely to encounter strangers or other people who might need visual clues about their identities. The large collections of beads from Üçağizli Cave could reflect nothing more than normal use and refurbishment of beaded ornaments and clothing over long periods of time.

The Upper Paleolithic hunter-gatherers who occupied Üçağizli Cave introduced mollusk shells into the site for a

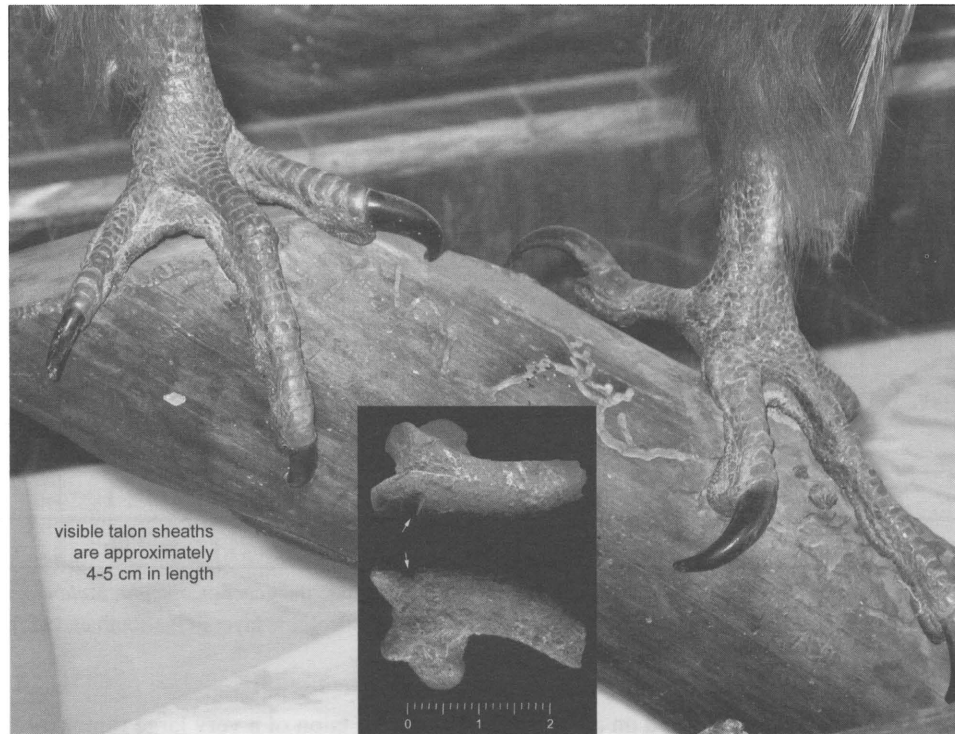


Figure 2. Incised bony core of a large raptor talon from Üçağızlı Cave (inset, probably *Gyps fulvus*), and an example of modern talons complete with horny sheaths of the similarly sized Eurasian black vulture (*Aegypius monachus*).

variety of reasons. Some shell-bearing mollusks also found their way into the cave by themselves. We have distinguished “ornamental” shells from other types of mollusk shells in the archaeological deposits—food species and land snails—using an aggregate of damage characteristics. The most important characteristics for distinguishing ornaments

are: a, high frequencies of particular types of perforation; b, consistent placement of perforations; c, moderate incidence of wave-induced abrasion, which indicates that shells were collected from beaches well after the death of the animals; d, consistently small shell size; and e, a tendency toward completeness (Table 2) (Stiner 1999).

Table 2. Summary of Damage Frequencies (Percentages) for Various Shell Categories from Üçağızlı Cave.

Variable	(Orn) Small gastropods	(Orn) Tusk shells	(Orn) Most bivalves	(Food) Various turbans	(Food) Various limpets
Beach polish (% of NISP)	46	10	12	0	0
Index of completeness (MNI/NISP)	98	53	64	42	63
Perforation (round hole or slit, % of MNI)	67	30	34	0	0
Burned (% of NISP)	10	5	10	14	4
Punched-out spire (% of MNI)	24	n/a	4	95	1
Predated by naticid mollusk (% of MNI)	5	0	7	0	0

Notes: (Orn) Ornamental shell group; (Food) Edible marine mollusks. Perforation count refers to sectioning in the case of tusk shells. Data are for all layers combined. Punched out spires can be the result of intentional damage during processing of food shells by humans, or from wave-induced collisions with shoreline rocks; association or the lack of it with wave abrasion is required to infer cause; (n/a) not applicable to tusk shells (*Dentalium*, Scaphopoda).

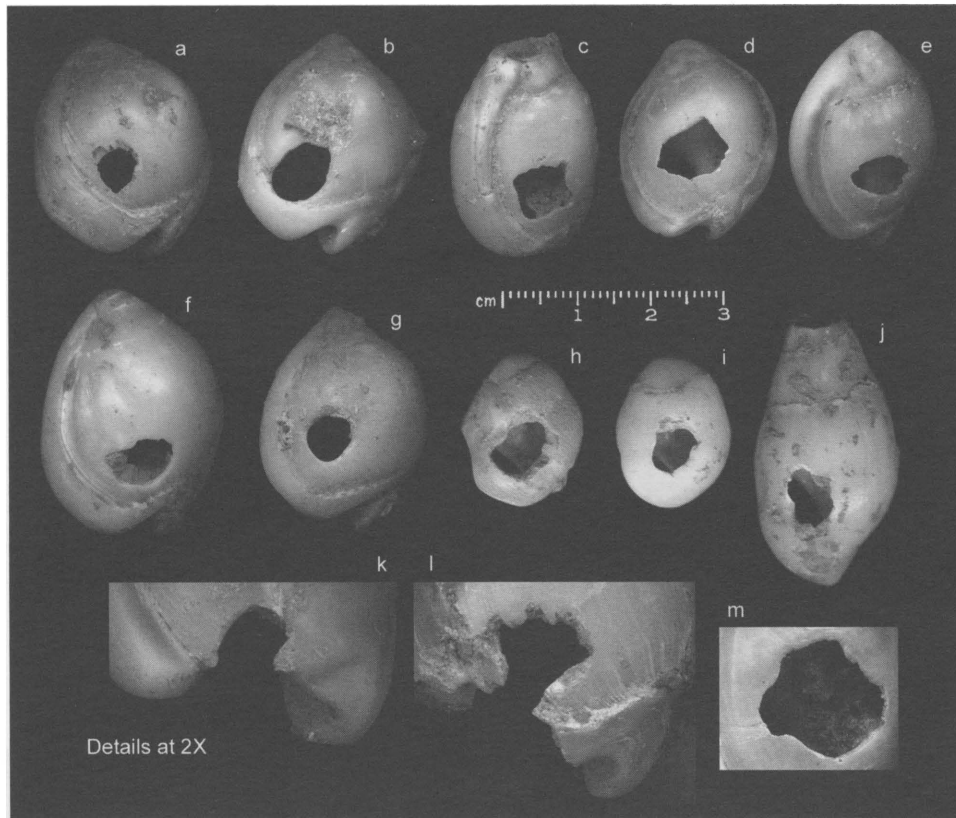


Figure 3. Typical perforations in small marine gastropod shells (*Nassarius* [a-g, k-m], *Theodoxus* [h-i], and *Melanopsis* [j]) made by humans using a simple punching technique. Some shell flanges were broken through the perforation point at the time of manufacture or, in other cases, from use. Abrasion damage on some specimens is confined to the edges of these holes (absent from the rest of the shell), sometimes asymmetrically, and is indicative of cord-wear.

Wave-induced abrasion is quite common on the shells of ornamental species. This kind of damage is never present on the types of shells interpreted as food species. Edible taxa—mainly turban and limpets—also tend to be much larger than the ornamental types. In addition, the degree of shell completeness is very high for all ornamental shells other than *Dentalium*, which was regularly sectioned into tube beads. By contrast, species used as food tend to be highly fragmented. Not surprisingly, the shells of species interpreted as food were never perforated. Interestingly, evidence for burning is about equally frequent on shells used for ornaments and food. While there was no reason to burn ornaments, it appears that mollusks used for food were not often cooked either. Much or all of the burning damage appears to have occurred incidentally, probably from the accidental burning of debris.

These observations imply distinct histories of modification and acquisition for ornament and food shell types. Ornamental shells were frequently obtained as beach-cast material, whereas—predictably—food mollusks

invariably were always taken while alive. Some of the ornament shells show small, neatly beveled perforations typically produced by predatory naticid and muricid mollusks, consistent with deaths from nonhuman causes (Table 2). Food species at the site never exhibit this kind of damage.

Between 63% and 77% of all shells from species commonly used as ornaments have holes in them, some made by humans and others from surf damage. Figure 3 shows typical human-made perforations in gastropod shells from Üçağızlı Cave. Most of the perforated shells are small (1-2 cm), but a few larger shells were also modified in this way (Fig. 4). The typical perforation is a rough circle, usually located in the shell's flange. The walls of the perforation are perpendicular to the outer face of the shell. In some cases the holes seem to have been started by pecking or scratching (see Fig. 3,k-m), but a simple punching motion or pressure applied by a pointed object was the most common perforation technique. There is no evidence that people drilled holes in shells using a radial motion. In fact, human

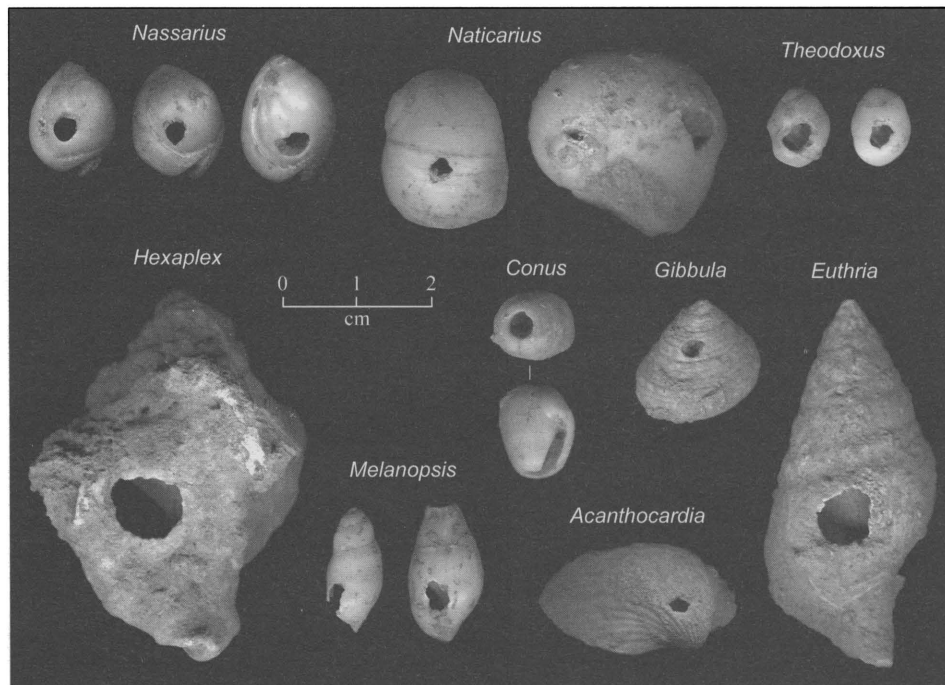


Figure 4. Variation in shell types used as ornaments at Üçağizli Cave (*Dentalium* not shown).

made perforations are very different from the symmetrical beveled openings that naticid and muricid predators drill into the shells of live mollusks (Figs. 4-5) (see also d'Errico et al. 1993). A less common method of perforation involved sawing the lips of moon snails (*Naticarius* and *Neverita*) to create a slit-shaped aperture (Fig. 6). *Dentalium* (tusk) shell beads, common only in the Epipaleolithic at Üçağizli Cave, were sectioned by sawing or snapping, followed in some cases by grinding. The Paleolithic occupants of the cave also took advantage of natural perforations in beach-cast shells, particularly those on the dorsal face of *Nassarius* shells, as well as voids left by broken spires on *Columbella* and *Conus* shells (see Fig. 4).

Some shells in the collections from Üçağizli Cave

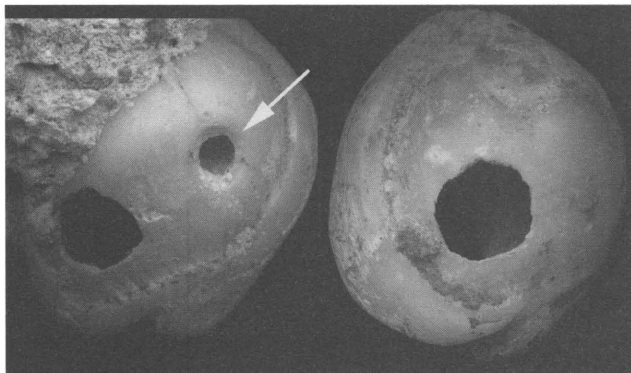


Figure 5. Close-up of *Nassarius* specimens showing the difference between large irregular holes produced by humans and small symmetrical holes produced by predatory mollusks or “drills” (indicated by arrow).

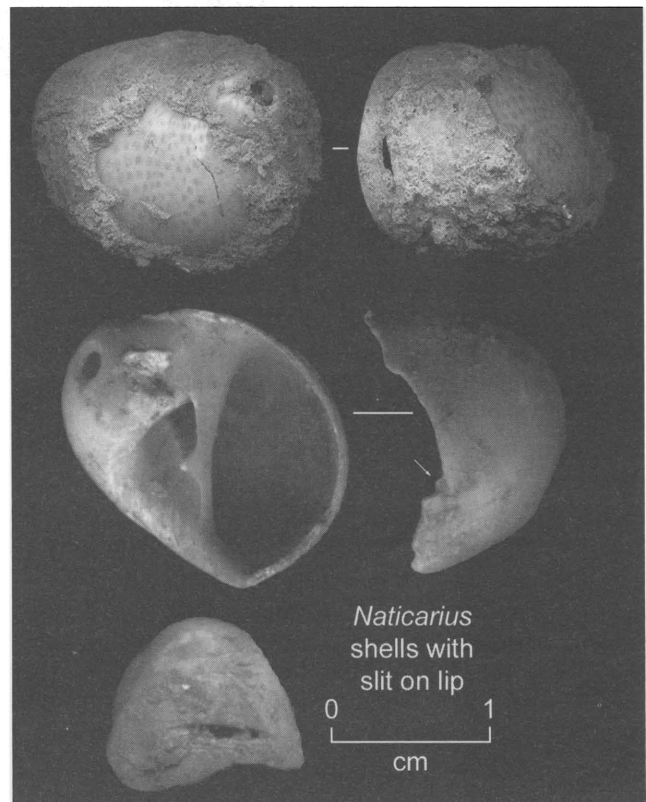


Figure 6. Slit-shaped holes incised into the lips of moon shells (*Naticarius* and *Neverita*). The middle specimen has broken through the hole. The additional round hole in the specimen at the top is human-made, whereas that on the middle specimen is from a molluskan predator or “drill.”

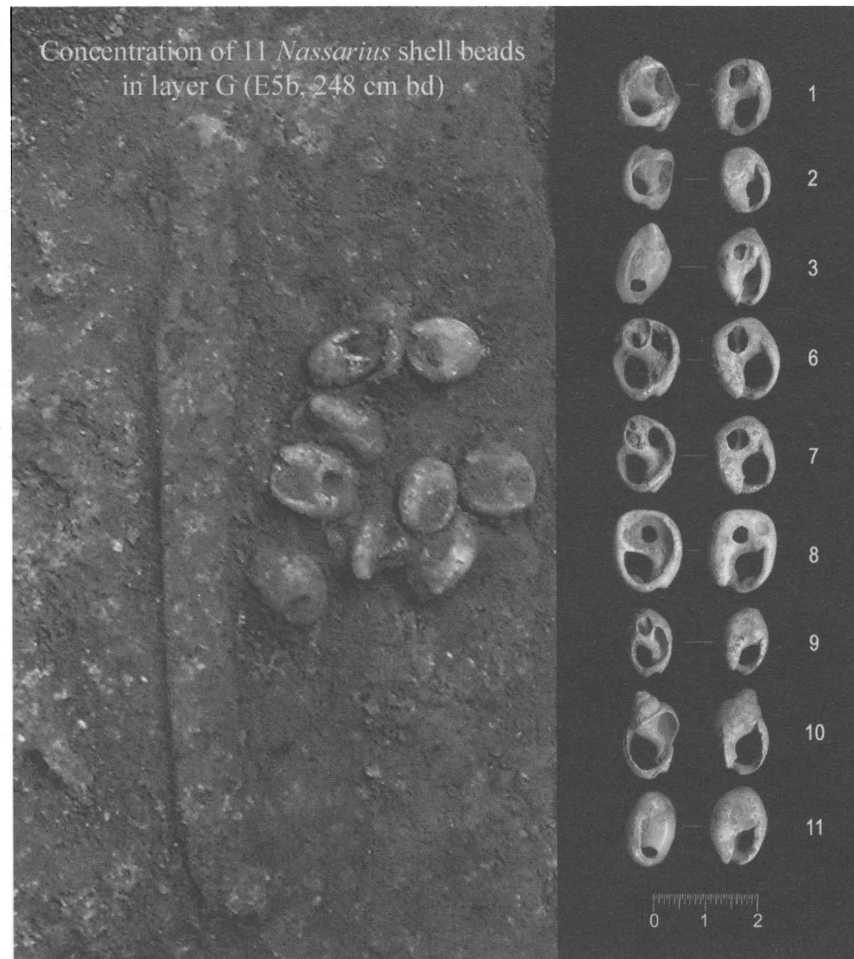


Figure 7. *In situ* concentration of 11 *Nassarius* and *Sphaeronassa* shell beads from layer G, with multiple views of most specimens. Note that only some of the shells are perforated and that their conditions vary.

appear to have been broken during attempts at perforation while others seem to have broken as a result of use (see Fig. 3). A minority of the holes in shell beads display fine abrasion, sometimes in an asymmetrical pattern, apparently from prolonged contact with fiber. This kind of abrasion contrasts with the fresh condition of the specimens and is not due to wave-induced abrasion. It is also interesting that not all specimens of typical ornament shells have holes in them (see Table 2; Fig. 7). Apparently some shells appropriate for beadmaking were collected but never used, probably indicating that beads were manufactured on site.

All ornamental mollusk species identified in the Upper Paleolithic and Epipaleolithic layers of Üçağizli Cave could have been collected within 20 km of the site and most could have been found even closer. Most of the taxa used as beads, such as *Nassarius* and *Columbella*, occur in near-shore saltwater environments and could easily have been picked up on beaches in the immediate vicinity of the cave, although

they are not especially common in beach-cast material in the area today. Some ornament shells come from mollusks that live in fresh or brackish water of the nearby Asi River and its tributaries and in the inland lakes of the northern Rift Valley (e.g., *Theodoxus* and *Melanopsis*). Today some of these inland types are washed downstream to where the Asi River empties into the sea a few kilometers north of Üçağizli Cave, and they could have been obtained locally by Paleolithic foragers from time to time. *Dentalium*, which is common only in the Epipaleolithic deposit, is seldom if ever found on beaches in the area now. Fossil dentalium shells, however, occur in abundance in exposures of Pliocene deposits a few kilometers from the site (Fig. 8). We suspect these fossil deposits are the source of the archaeological tusk shells as well. Use of fossil shells for ornaments is known from other early Upper Paleolithic sites (e.g., see Taborin 1993).

The absence of clearly “exotic” species at Üçağizli does not necessarily mean that long-distance exchange

never took place, though it does show that such shells were not a particularly valued object for trade. On the other hand, it is also clear that people did not just pick up the most common shells found around the cave, but instead exercised considerable selectivity in the things they used to make ornaments. A high proportion of the mollusk shells used for making ornaments (such as *Nassarius*) are from ecologically uncommon carnivores or scavengers. Others (e.g., *Theodoxus*) probably came from inland aquatic sources. In other words, certain kinds of shells were considered appropriate for producing beads, but most were not. This selectivity suggests that certain types of shells were invested with a certain amount of cultural “value.”

Although relatively uncommon species were apparently valued more, the absence of evidence for long distance exchange indicates the value of ornamental shells did not derive exclusively from scarcity or “exoticness.” Instead, the criteria determining what was an “appropriate” ornament shell at Üçağızlı Cave and other early Upper Paleolithic sites in the Mediterranean seem to have centered on shape, size, and probably also color (see Stiner 1999, 2003; Taborin 1993). Asymmetrical rounded, basket-shaped, or pearl-shaped forms 1-2 cm in length are especially common in the ornament assemblages of Üçağızlı and other European Upper Paleolithic sites. Interestingly, Upper Paleolithic people made use of distinct molluskan families apparently to meet a common aesthetic (Fig. 9). At Üçağızlı Cave, the demand for small, oval “basket-shaped” beads was met using *Nassarius gibbosula* and *Theodoxus jordani*. *Columbella rustica*, another important ornamental shell type, possesses similar proportions. The same species were used at Ksar ‘Akil in Lebanon (Kuhn et al. 2001). On Mediterranean shores farther west different species were utilized but these were similar in form and size (Stiner 2003). The sizes and shapes of shell beads also overlap to a remarkable degree with the same characteristics in non-shell beads (made from ivory, bone, soft stone, or the canine teeth of red deer (*Cervus elaphus*) in the European Paleolithic (e.g., White 2003). Remarkably, the earliest beads known to date from South Africa display these same characteristics (Henshilwood et al. 2004).

This widely shared esthetic and tendency to emphasize certain bead forms is intriguing but difficult to interpret. It is, however, important to distinguish commonality in form from commonality in meaning. The fact that the same shapes were selected time and time again by people living in widely scattered areas may even speak to some very basic shared characteristics of the human perceptual apparatus. At the same time, beads and other ornaments would have been

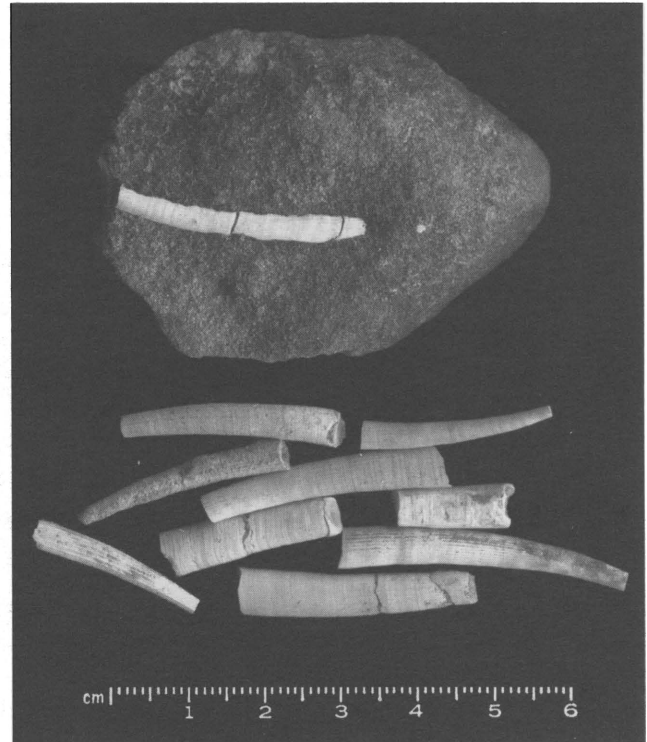


Figure 8. Fossil dentalia (tusk) shells from Pliocene mudstones near Üçağızlı Cave.

invested with symbolic meaning or value. By definition, however, the meaning or value of a symbol is arbitrary. Thus, very similar kinds of ornaments may have meant very different things to different people.

ACKNOWLEDGEMENTS

We are grateful for the assistance and hard work of many students and colleagues from the University of Arizona, Ankara University, and other institutions, and particularly our primary Turkish collaborator, Prof. Eksin Güleç. The work reported here could not have been accomplished without their efforts. We also gratefully acknowledge the assistance of the Turkish Directorate of Monuments and Museums (Anıtlar ve Müzeler Genel Müdürlüğü) and the Antakya Museum. This research has been carried out with the financial support of the United States National Science Foundation (grants SBR-9804722 and BCS-0106433). Additional funding has been provided by the University of Arizona, Ankara University, and the Turkish Ministry of Culture.

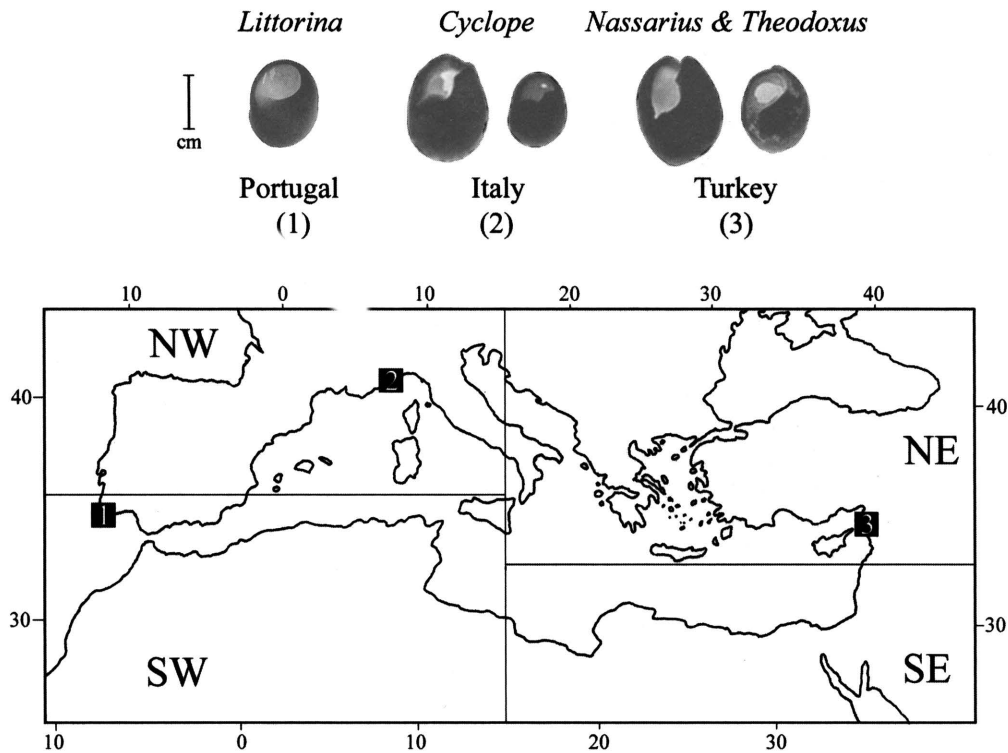


Figure 9. Similarities in shell size and form were preferred by early Upper Paleolithic peoples for ornament-making across the Mediterranean rim: 1, Algarve region of Portugal; 2, Liguria region of Italy; 3, Hatay coast of Turkey. Note that four different genera are represented.

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BOOK REVIEWS

Beadwork: A World Guide.

Caroline Crabtree and Pam Stallebrass. Rizzoli, New York; Thames & Hudson, London. 2002. 208 pp., 600+ color figs., index. \$50.00/ £ 29.00 (hard cover).

At first sight, this book, with its colorful dust jacket and over 600 illustrations, mostly in color, seems to be everything that a lover of beadwork could wish for, and would greet with enthusiasm.

The layout of contents is promising, with headings that read Introduction; Bead Manufacturing Centers; Africa; The Americas; Asia, Oceania, and the Arabian Gulf; Europe; and Construction and Techniques. The book ends with short appendices on Collecting Beadwork; Acknowledgments; Sources of Illustrations; Collections; Bibliography; and Index. But when one gets down to study the book seriously, the many flaws become sadly apparent.

When it comes to the picture captions and the textual content, there are disappointing errors. Almost at once (p. 12), we have the name of George F. Angas misspelled in the caption to a Zulu illustration dated to 1849. Then on p. 15, we have the picture of a sandal made of faience beads, "probably dating from the New Kingdom, ancient Egypt, 1500-1000 BC". It is, in fact, from the grave of the pharaoh Tutankhamun, who died in 1325 B.C., and is in the Egyptian Museum, Cairo, and not, as stated, from the collection of Torben Sode.

There is unorthodox and questionable terminology: "red-under-white" [sic] rather than the generally used "white heart" (p. 17) and "sweetie" beads (p. 18). On p. 21, glass beads are described as "porous"—an obvious mistake. When discussing beads from Bohemia, there is no mention of the amount of work that was done in Czech prisons under Communist rule. The beads on p. 14, described as handmade, from Papanaidupet, India, look suspiciously like machine-drawn white beads with blue stripes, such as are common in African beadwork, and of European origin.

The section on African beadwork (concentrating on the Tsonga, the San and Ovambo, and the Ndebele), which was written by outside contributors, is more or less adequate till it comes to western Africa where the treatment is far from that. The Cameroonian elephant mask shown on p. 69 looks all wrong, as it lacks the long trunk-like flaps and has

a crouching animal on the crown. It looks like something made for the tourist market. Despite writing about Yoruba beaded crowns (pp. 70-73), not one is illustrated—the illustrations are all of headgear or caps, lacking the essential conical shape, beaded veil, and ritual birds. These ritual birds do not refer to the power of women, as stated on p. 72; they are the royal *okin* birds. The belt at the bottom of p. 70 is Kuba, from the Congo, and should have been on the previous page. The illustrations on p. 71 are far from doing justice to the skills of Yoruba beaders. At the end of the book, on p. 199, there is an "unique horned hat made by the Kuba." If it was made by the Kuba, it would indeed be unique since the type is that of the Pende, and more recently, the Yaka. It is modern, and made for the tourist market.

Sometimes there is a lack of coherence in the text. In writing about beadwork in the Americas, topics such as dentalium shells and quillworking are mentioned without clarification, which may come a few pages later on. When writing for the popular market, as here, it is better not to use out-of-the-way terms like *katami* (p. 107) without saying what they are. And on p. 110, there is no such place as the Caucus mountains of Georgia—the Caucasus are obviously meant, although not featured on the accompanying map.

There is a missed chance to make an interesting connection between the Naga head hunters (p. 116) and the necklace illustrated which shows two small replica heads as tokens of the real thing. It is too bad that the accompanying necklace is not Naga, but from the Solomon Islands of Melanesia, right on the edge of the map, and that on p. 138, the caption refers to the "Soloman" Islands.

Moving on to the Ukraine (pp. 158-161), the textual coverage is thorough and detailed enough to make one wonder if Tamara Stadnychenko, whose work is cited in the bibliography, wrote it. Yet there is no trace of her writings to be found through an Internet search, and no detail of the publication in 2001 is given.

While I am not fully versed in the finer points of beadwork technique, there are some obvious lapses. On p. 178, there is a piece in so-called "Shembe stitch," which is misleading, as the key feature of Shembe-style beadwork is a cross-like motif on a white ground—not at all like the design illustrated. On p. 181, Ndebele beadwork is described as being in strong primary colors, yet the piece illustrated on

pp.180-181 shows the post-1970 palette, which uses darker colors. The Gujarati fan on p. 189 is certainly not in three-bead netting as stated. The term “zipper edging” (p. 193) is an unsatisfactory substitute for “picot edging.”

Anyone seriously interested in beadwork would want to know where a given piece illustrated in the book is to be found. Here the Sources of Illustrations on p. 202 is not only in minuscule print (which is, regrettably, par for the course) but also unevenly put together and woefully lacking in real and correct information. A vast number of pieces are credited to Tessa Bunney who turns out to be a photographer, not an owner, and, furthermore, one whose captions are often incorrectly given. This means, among other things, that a good many illustrated pieces in Stefany Tomalin’s collection are not credited to her but to Tessa Bunney. While it would have meant that captions were fuller and more obtrusive, it would have been so much more useful to give the location or ownership of each piece as part of the caption instead of forcing the researcher to trawl through the Sources of Illustrations section on p. 202. Yet we find that the Afri-Karner collection is credited not only on p. 202, but also in every hyped caption to an illustrated piece from it. It should have been possible to extend that treatment to all the illustrated pieces.

“Collections” on p. 203 lists 13 South African museums with collections, which is useful to know but nearer home, the British Isles and Europe could have been better covered. Museums in the U.S.A. and Canada seem to be well listed.

The Bibliography contains some surprising omissions and errors. The very first entry, *Beaded Splendor*, ought to have put in under Africa, and it is remiss not to have included Stefany Tomalin’s *Beads!* The articles in Bead Society of Great Britain newsletters nos. 48 and 52 ought to have been named. Under “Africa,” Ulli Beier’s *Yoruba Beaded Crowns* and even my own *Beads and Beadwork of West and Central Africa* should have been included. Under “Asia,” Jamey Allen would very likely be the first to say that *Magical Ancient Beads* was not worth including, and should be replaced by Heidi Munan’s pamphlet on beads in the Sarawak Museum, or by Oppi Untracht’s *Traditional Jewelry of India*. The whole bibliography should have included the place of publication, date, and preferably, ISBN number for every entry.

At the end of this review, the feeling is one of great regret that a book that has so much going for it in splendid illustrations and wide coverage of the subject should have so many avoidable flaws. A complex subject like this needs to be checked, re-checked, and checked again, not only by the

authors, but also by the proofreaders of Thames & Hudson and Rizzoli who have done a cursory job in spotting typos.

Errors in the text and captions are far too numerous to list here, where I have limited myself to just a few. The Bead Society of Great Britain is concerned that there are many factual and textual errors in this volume which ought to be corrected in a second or subsequent edition, and a list of *errata* is being compiled which will be sent in good faith and in a spirit of co-operation to the authors and the publishers in the hope that these mistakes will be rectified and enhance the reputation of the book in future editions. A copy of the *errata* will be posted on the Bead Society of Great Britain’s website <http://www.beadsociety.freeserve.co.uk>.

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A Bead Timeline. Volume I: Prehistory to 1200 CE.

James W. Lankton. The Bead Society of Greater Washington, The Bead Museum, 400 Seventh St., N.W., Washington D.C. 20004. 2003. 96 pages, 79 color figs. \$24.95 (paper cover).

This catalog was published as an adjunct to “The Bead Timeline of History,” a permanent exhibition that opened in 2000, at the Bead Museum in Washington, D.C. It is intended to be the first volume in a series to accompany the exhibit and covers the time period from the Paleolithic/Neolithic transition (ca. 12,000 BCE) through the Early Islamic period to 1200 CE. But its subject matter and value go far beyond what one generally expects from exhibition catalogs.

Installation of the Timeline exhibit was carried out by Jamey Allen, James Lankton, and Hilary Whittaker. It is about 34 feet long and displays some 5,000 beads which are organized so that chronological time runs along the horizontal axis and cultural/geographical associations are placed on the vertical axis. Over 2,300 of the beads are illustrated in the book. Lankton electronically repositioned some of the beads for the publication to correct their location and added a few others that were not included in the Timeline at time of publication. This is entirely in character with the concept behind the exhibit for it is meant to be a work in progress, with beads being added or rearranged when appropriate.

Inside the catalog’s front cover are two useful maps that show the locations of the main cultures of Europe, western

Asia, and northern Africa that are discussed in the text. A similar one for Asia is located inside the back cover as is a “world” map that shows principal long-distance trade routes for beads and bead materials.

A forward by Robert K. Liu and an introduction by James Lankton are followed by Joyce Diamanti’s essay *Beads, Trade, and Cultural Change*. Beginning with the earliest beads yet found, which are nearly 60,000 years old [recent evidence suggests an even earlier origin], she sets the scene for the exhibit and catalog by explaining that beads provide important clues in the search for the origins of human culture, including the development of abstract thinking, artistic creativity, technological inventiveness, and self-awareness. As culture developed, beads were used to mediate social relations and played a role in religious, political, and economic life. Long distance trade in the materials used to make beads as well as trade in the beads themselves is evident from early on.

An essay by Jonathan M. Kenoyer on *Stone Beads and Pendant Making Techniques* follows. It is a useful synopsis of the history and technology of stone beadmaking, describing the minerals used and the techniques developed to alter and decorate them as well as explaining how they were shaped, perforated, and polished.

The main text, by archaeologist James Lankton, is divided into eight chapters based on time periods. Throughout the volume, Lankton emphasizes the historical events and technological changes that influenced beads and beadmaking. Each chapter is accompanied by a full-page photograph showing the Timeline segment under discussion. In addition there are numerous close-ups of selected groups of beads. All of the superb photographs in the catalog were taken by Robert K. Liu.

Chapter 1 covers the period from 12,000 to 4000 BCE. Beads were made mainly of shell and teeth in the early periods but began to diversify during the Neolithic when agriculture, animal husbandry, and large permanent settlements developed. Lankton notes that there was an expansion in the uses and meanings of beads, and materials to make them were traded over longer and longer distances. Beads played an increasingly important role through time as symbols of ethnic identity, status, and wealth, thereby reinforcing social order.

Chapter 2 covers the millennium from 4000 to 3000 BCE. Lankton discusses the link between fired clay tokens (which are thought to have represented quantities of commodities) and the invention of writing in West Asia and notes that these tokens can be considered as beads or pendants since many of them were pierced. They played an important role in facilitating the expansion of trade, which in

turn accelerated the spread of new ideas and technology and culminated in large urban settlements and the rise of states based on class distinction. Other advances included new systems of accounting and writing, which led to numeracy and literacy, and the development of the wheel—both for vehicles and pottery. The origins of monumental art and architecture also date to this time. Indeed, this era could be considered as the beginning of civilization. Beads from this period were made from increasingly diverse varieties of stone including steatite, quartz, carnelian, rock crystal, and lapis lazuli, and some were carved in fanciful or animal shapes. Early Egyptian and Chinese beads, especially those of jade, are discussed as well.

Chapter 3 continues from 3000 up to 2000 BCE (essentially the Early Bronze Age). This period witnessed a huge demand for luxury goods that accompanied the rise and fall of numerous dynasties and empires. As Lankton states, such goods, which included beads, were used to demonstrate and legitimize the power of emerging elites and the demand for them led to revolutionary developments in prestige technologies. Lankton also relates the story of the first war fought over beads, noting as well that craft workers were part of the booty of war and that this strategy became a means by which craft technology spread throughout the ancient world.

Again, both the varieties of the stone used for beads and their shapes increased. Numerous spacer beads, the first bronze beads, and large, rather elaborate faience ones are found. The first melon beads appeared, plus long biconical and etched carnelians from the Indus Valley, both of which demonstrate the mastery of the beadmakers there. Lapis lazuli, most of which originated in Afghanistan (over 2000 km from Mesopotamia), was the defining gem of this millennium in West Asia and beads made from it were restricted to the most wealthy and powerful.

In Chapter 4, which covers the second millennium BCE and the first two centuries of the first, Lankton discusses the development of glass beads in the context of prestige technology. From at least the middle of the 3rd millennium, crafts workers from Mesopotamia or Syria had begun to work with glass, but the technological advances necessary to produce quality glass products (such as mosaic beads which appear during this period) were probably driven by the need of the rulers of emerging states to find a prestigious substitute for lapis lazuli, which had become increasingly rare in the second millennium. As a new technology, glass and the beads made from it were rare and highly valued.

In Egypt, Lankton notes that glass beads and vessels were being made in a palace-based industry by the mid-15th century BCE and that within a generation, Egyptian beads

rivalled and even surpassed those made in western Asia. New innovations from the Nile Valley included the first drawn glass beads (made by folding a long plaque of glass around a mandrel, then drawing it into a tube).

Chapter 5 deals with the period from about the 8th century through to 400 BCE. Although referring to the time span of the previous chapter, Lankton here notes that the catastrophic end of the Late Bronze Age in 1200 BCE was accompanied by the widespread destruction of traditional centers in West Asia and the disappearance of most luxury products, including glass, for the following two hundred years. Glass bead production did, however, continue in Egypt and began in Europe (where early sites date to the 11th and 10th centuries). The eventual revival of international commerce in the early 1st millennium BCE can be seen in the trade in new bead varieties which increase through time as new technologies, spurred on once again by a rising demand for luxury goods, are developed. The new types included stratified eye beads and face beads.

Lankton also questions why so much early glass was turquoise, proposing that one reason could be that early glass-like substances (such as faience and stone glazing) involved the use of copper which yields a beautiful blue-green. He follows with a valuable discussion of faience and frit and the problems involved in how these terms are used (and misused).

Chapter 6 begins with the 4th century BCE and continues to the mid 2nd century CE—roughly the Hellenistic and early Roman periods. This was a time of great innovation in glass technology and led to the development (or rediscovery) and use of plaques and canes of mosaic glass. Decoration on glass beads proliferated. The manufacture of eye beads changed from the stratified technique (in use since the 6th century BCE), where the design was formed by adding successive layers of different colored glass, to the simpler and potentially more intricate method of applying thin sliced segments of bullseye canes to the hot glass bead (mosaic cane eye beads). Gold-glass beads, made by combining gold foil with drawn colorless glass, appeared as well as layered glass beads that resemble banded agate.

Glass beadmaking in China and Southeast Asia is also discussed, including the intricate Warring States eye beads from China and the long, cylindrical folded beads from Ban Chiang in present-day Thailand.

Chapter 7 begins in the mid-2nd century and ends in the late 7th century with the Arab capture of the primary and secondary glassworking areas of West Asia and Egypt. It includes the peak and decline of the western Roman Empire. Lankton points out that, although most of the complex glass beads from this period are commonly called Roman

beads, they were in fact produced in many different regions. Indeed, Roman women preferred well-made stone beads of lapis lazuli, carnelian, or rock crystal rather than large or decorated glass beads.

Well before this time, primary glassmaking and secondary glassworking were carried out in different locations. Glassmaking was undertaken at a few centralized places near sources of raw materials, mostly away from population centers, while glassworking, including beadmaking, was decentralized and took place mainly in urban areas. It is thought that much of the glass used in the glasshouses of the West during this period was made in present-day Israel.

Lankton discusses in some depth beads found in Europe, West Asia, Egypt, India, Southeast Asia, Asia, and the Americas. This period saw the invention of glass blowing to make vessels—it was used for beads as well but only rarely. Segmented beads were another innovation.

Chapter 8 covers the period from the mid-8th century to 1200 CE, which corresponds roughly to the Early Islamic period in Egypt and West Asia. Beads and their technology changed little from the previous period until the late 8th to early 9th century when the distinctive bead style we associate with the early Islamic period was developed. One unique new type, known as Fustat fused-rod beads, was probably made in Fustat (ancient Cairo). Other distinctive beads from this period include folded beads (sometimes called mirror beads) and torus-folded beads. Mosaic cane beads are also widespread, not only in West Asia and Europe but also in West Africa and in Indonesia where they first appeared at least three hundred years before their Early Islamic counterparts. Other beads highlighted in this chapter include stone varieties from Nishapur (Iran), China, and South and Central America.

The catalog ends with two pages of highlights of a recent bequest to the museum from Jeanette and Jonathan Rosen, as well as a helpful page by Deborah Zinn describing several bead-related websites and providing hints on how to navigate the web. A useful six-page list of references completes the volume.

The only difficulty I found in navigating this most valuable catalog is that it is sometimes hard to find a specific bead or group of beads in the full-page photos. I imagine this is because beads were moved to more accurate positions on the Timeline for the publication while their original identification numbers were maintained.

There are very few typos considering the amount of detail in the text. One occurs in the bottom left-hand column of page 16 where extra conjunctions occur. Then a reference

to bead number 637 on page 79 indicates it is to be found in Fig. 8.0 but it is actually in Fig. 7.0. Additional errors of the same type occur on pages 82 and 83: bead number 688 is referred to Fig. 8.1 but the bead is to be found in Fig. 8.0. Likewise, number 690 is found in Fig. 8.7 not 8.8; 693 is in Fig. 8.0, not 8.8; and 689 is in Fig. 8.7, rather than 8.8.

This catalog goes far beyond enhancing the Timeline exhibit. It encompasses an enormous swath of time, placing beads and the technologies developed to make them in their cultural and historical context, a true tour de force. It is a "must-have" resource for anyone, professional or novice, who is interested in ancient beads.

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Amber in Archaeology.

Curt W. Beck, Ilze B. Loze, and Joan M. Todd (eds.). Institute of the History of Latvia Publishers, 1 Akadēmijas Laukums, Rīga LV-1050, Latvia. 2003. 260 pp., 125 b&w figs. \$25.00 postpaid (soft cover).

This volume presents the Proceedings of the Fourth International Conference on Amber in Archaeology which was held in Talsi, Latvia, in 2001. It contains 18 articles which span the region from Scandinavia and the Baltics to the Balkans and Mediterranean. Most of the articles are by European researchers but the United States is also well represented. The reports are organized into six sections: The Chemistry of Amber; The East Baltic Area; Northern Europe; Eastern Europe; Central Europe; and the Balkans and Mediterranean.

The section on THE CHEMISTRY OF AMBER contains but one article: **The Chemistry of Sicilian Amber (Simetite)**, by Curt W. Beck, Edith C. Stout, and Karen M. Wovkulich. Quite technical in nature, the article consists primarily of a lengthy table which lists the compounds found in simetite. The study reveals that this form of amber was produced by trees of the family *Leguminosae*.

Six articles comprise the section on THE EAST BALTIC AREA:

Amberworking as a Specialist Occupation at the Sarnate Neolithic Site, Latvia, by Valdis Bērziņš. The distribution of amber artifacts and waste material at this workshop site reveals that there was organized serial

production here, with different stages of work being performed in different parts of the site.

Lithuanian Amber Artifacts from the Roman Iron Age to Early Medieval Times, by Audronė Bliujienė, provides an informative and well-illustrated survey of the material recovered from numerous sites across Lithuania.

Middle Neolithic Amber Workshops in the Lake Lubans Depression, by Ilze B. Loze, reviews the adornments, principally beads and pendants, excavated at an amber-working site in eastern Latvia.

Viking Age and Medieval Finds of East Baltic Amber in Latvia and the Neighbouring Countries (9th-16th Century), by Ēvalds Mugarēvičs, briefly discusses later material, principally beads, crosses, tiny axes, spindle whorls, and pendants.

Stone Age Amber Finds in Estonia, by Mirja Ots, reveals that there are relatively few amber artifacts in this region but they are, nonetheless, fairly varied.

The "Gold Coast" of the Gulf of Riga, by Ilga Zagorska, discusses the amber-rich western coast of the Gulf of Riga with emphasis on the artifacts uncovered at the Siliņupe settlement site which was occupied during the Middle and Late Neolithic periods.

NORTHERN EUROPE is represented by three articles:

Beads of Belonging and Tokens of Trust: Neolithic Amber Beads from Megaliths in Sweden, by Tony Axelsson and Anders Strinnholm, hypothesizes that beads may have been intentionally broken and the halves shared by members of a group or by members of different groups as tokens.

The Importance of Amber in the Viking Period in the Nordic Countries, by Bente Magnus, starts with a survey of amber through the centuries before it turns to the topic at hand.

A Grave of a Noble Iron Age Woman with Many Amber Beads in Järrestad, South-East Sweden, by Berta Stjernquist, provides insight into bead usage, manufacture, and trade in Sweden.

The single paper dealing with EASTERN EUROPE is **Amber Ornaments from the Konchanskii Burial Grounds**, by Maja Zimina. This extensive Neolithic cemetery (267 burials) in western Russia produced a variety of amber ornaments, primarily "buttons," as well as rings, beads, and pendants.

The CENTRAL EUROPE segment contains five articles:

The Central European Amber Route During the La Tène and Early Imperial Times, by Jan Bouzek, deals with amber in the region of Bohemia, Moravia, and Bavaria from the 3rd century B.C. to the end of the 1st century B.C.

Amber on the Threshold of a World Career, by Janusz Czebreszuk, examines amber-working in the two principal amber-bearing centers: Jutlandia and Sambia.

Amber Spacer Beads in the Neolithic and Bronze Ages in Europe, by Colette du Gardin, concentrates on beads with multiple perforations, particularly their form and chronology.

The Social Ranking of Graves with Amber during the Early Bronze Age in South-West Slovakia, by Klára Marková, Anna Tirpáková, and Dagmar Markechová, provides a statistical survey of grave goods associated with amber objects, and reveals that there is a high incidence of amber with the tools of persons presumed to be artisans.

Amber Artifacts of Hungary from the Middle Bronze Age to the Hungarian Conquest (from 1600 BC to 896 AD), by Emma Sprincz, summarizes the nature of amber finds in Hungary for a 2,500-year period.

There are two articles in the BALKANS AND MEDITERRANEAN section:

A Composite Amber Jewelry Set from Novi Pazar, by Aleksandar Palavestra, describes the spectacular

amber ornaments found in a princely Iron Age grave in the Balkans.

When Amber Speaks: The Archaeological Evidence and the Historical Record, by Joan M. Todd, provides a critical review of amber research by both archaeologists and historians.

The volume concludes with a most-useful BIBLIOGRAPHY: **Amber Beads in Archaeology. Publications since ca. 1993**, by Helen Hughes-Brock. This is divided into 17 sections, both topical and geographical, and annotates 219 books and articles dealing with amber around the world.

Amber in Archaeology is an attractive, informative, and well-illustrated publication. It is unfortunate that there are no color illustrations—save for the front cover—as the beauty of amber dies in black and white. Sadly, the production budget was quite limited so the editors had to forego this “luxury.” While there are a few typos, the book is an excellent source of information on European amber, and will be of interest to archaeologists, collectors, and those who just love the warm feel of this enchanting substance.

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Plate VA. *Amazon:* Rigid Kayapo necklace of iridescent cut mussel-shell plaques. The tassels are dyed orange-brown with urucu. The pendants are dark blue, red, and white glass beads with cut tucum palm fruit kernels.

Plate VC. *Amazon:* Aguaruna Shuar necklace of unidentifiable black seeds and cut bone tubes. The inner strand has tufts of toucan feathers, Paca petrosals, and a rodent tooth. The outer strand has only black seeds, and tapir hooves.



Plate VB. *Amazon:* Necklace pendant of Giant Armadillo claws, pierced through the tips and hung from a pair of cotton-wrapped sticks. The lower pendants are of dark blue glass beads, cut tucum palm fruit kernels, and multi-colored feathers of the Blue-and-yellow Macaw.

Plate VD. *Amazon:* Kayapo necklace of porcupine quills. The central feathers are probably macaw.



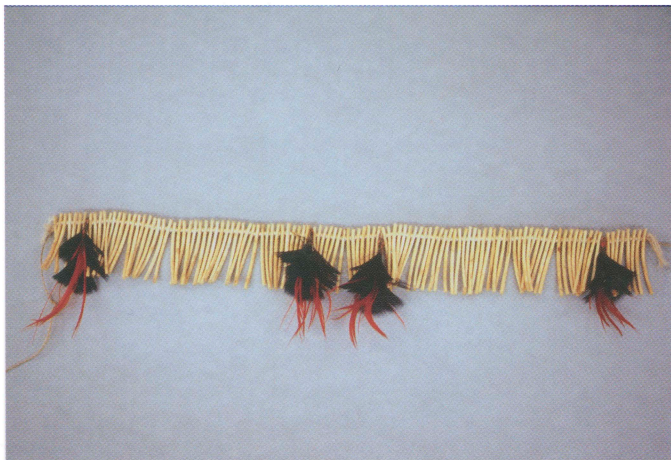
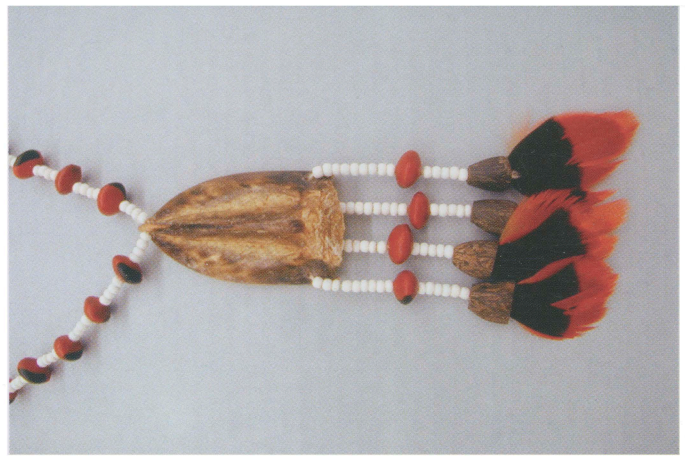


Plate VIA. Amazon: Top: Close-up of beads on a Bororo necklace. The feathers on the one bead are unidentified; the spacer bead is an ormosia seed. **Bottom:** Urubu-Ka'apor necklace of bird ulnas and toucan feathers. After the bones are drilled and strung, a cord is cross-lashed around each bone to give the necklace stability.

Plate VIB. Amazon: Top: Kayapo Boat-billed Heron beak pendant with glass beads, ormosia seeds, black feathers, and red feathers (macaw). **Bottom:** Oiampii headband incorporating a Plum-throated Cotinga. The headband is made of a flexible strip of split palm stem, and the toucan feathers lashed on with native cotton cord.

Plate VIC. Amazon: Urubu-Ka'apor woman's necklace. Women also wear wristlets made of similar, smaller pendants.

Plate VID. Amazon: Close-up of Urubu-Ka'apor composite pendant. Only a moving picture with sound does this piece justice.

