

Appendix B

Shell Beads

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As personal adornment items, the shell beads at Killarney Bay likely played a role in the social, economic, and ritual organization of the community. Shell beads were valuable objects that were worn, displayed, and exchanged; they were used in multiple and complex ways; and they were often circulated across vast distances, between cultures, for long periods of time (Trubitt 2003). Adornment items are often associated with information exchange, and their association with mortuary contexts adds another layer of significance for archaeologists. Beads can be linked to social identities (Carey 1998; O’Hear 1998; Sciamia 1998; Trubitt 2003). By wearing certain types and quantities of beads in particular patterns, individuals are able to convey information about political prowess, socioeconomic standing, gender, age, occupation, kin group, cultural group, wealth, status, and religious identity in a clear and simple manner that otherwise would be impossible to visually display (Dublin 1987, 1999; Vanhaeren 2005; Vanhaeren and d’Errico 2006; Wright and Garrard 2003). Adornment items have also been used in

studies of economic systems, including trade and exchange (Allen et al. 1997; Brose 1994; Galm 1994; Quinn 2006; Stiner 1999). Shell beads are a key class of material culture throughout the Woodland period in Ontario (Ferris and Spence 1995) and were a key item in prehistoric exchange networks throughout eastern North America (Brose 1994; Ritchie 1937; Yerkes 1983). Situating the shell beads within the site of Killarney Bay can provide insight into past ritual systems, economic organization, and social information exchange.

About the collections

A variety of shell beads were found at Killarney Bay. Shell beads from Killarney Bay are curated at the University of Michigan Museum of Anthropological Archaeology (UMMAA) and the Canadian Museum of History (CMH). The UMMAA collection has associated field notes,

photographs, and provenience information, while the materials curated at the CMH have no field documentation.

The UMMAA collection contains 178 shell beads and the CMH collection contains 968 shell beads (for a total of 1146 shell beads from the site). All of the UMMAA beads were analyzed for metrics, morphology, genus/species, drilling evidence, evidence of stringing, archaeological context, and initial typological assessment. All of the CMH beads were analyzed for morphology, genus/species, drilling evidence, evidence of stringing, and initial typological assessment. Given the quantity of shell beads at the CMH and limited time with the collections, metrics were recorded for only a sample of the beads (a total of 75).

Metric analysis of the beads will come from a sample of beads drawn from both the UMMAA and CMH collections. The patterns are not significantly changed when the CMH collections are omitted from morphological analysis and they are included here to increase the robusticity of analysis. Because contextual information is lacking from the CMH collection, the contextual analyses will only include shell beads curated at the UMMAA.

Species in the Killarney Bay assemblage

The difficulties of identifying the sources of freshwater and marine shell found in archaeological contexts have generated an extensive literature (cf. Claassen 1998). All such analyses must initially depend on secure species identification, which is no small problem when different species within broadly distributed genera are only occasionally identifiable by variations in shell form or color. In archaeological contexts, there are added problems when shell form or color is distorted by human modification or taphonomic processes. As such, the species identifications presented here should be considered both preliminary and coarse. More detailed scientific analyses are needed to accurately identify the species and source of all of the shells in the Killarney Bay assemblage.

Within this assemblage, there are several broadly distinguishable species represented. Two of the species have undergone minimal human modification to turn them into beads. First, there are tusk shell beads, which are commonly identified as *Dentalium*. It is possible that these shells are one of any of the various *Dentalium* sp., or the nearly indistinguishable species of *Antalis occidentalis*

and *Antalis antillarum*, which are found in the waters of the Atlantic Ocean (from the north and the St. Lawrence Seaway and off the coast of New England to the south and the Gulf of Mexico) (Brunel et al. 1998; Kraeuter 2009; Stimpson 1851).

The other species of shell that has undergone minimal modification is the spiral shell bead commonly identified as *Marginella*. Shells from the family Marginellidae, including the common Atlantic marginella (*Prunum apicinum*) (Menke 1828), are found in intertidal waters in the Gulf of Mexico and along the Atlantic Coast of the United States as far north as North Carolina (Felder and Earle 2009; Silva et al. 2011).

The rest of the shell beads at Killarney Bay have undergone significant human modification that makes identification of species more difficult. The shell bead production process can remove diagnostic visual markers of species. These beads are common throughout the Eastern Woodland prehistoric deposits and may be made from the collumella of marine conch or marine whelks such as *Busycon* sp. (Brose et al. 1985; Winters 1968).

One major avenue of investigating the nature of Middle Woodland social relationships relies on accurately assessing the geographic connections for exotic goods. Because *Marginella*, *Dentalium*, and *Busycon* are among the most widely occurring marine gastropods, it is nearly impossible to identify specific geographic source locations based on visual inspection of the shells alone. Additional chemical analyses may be able to elucidate this issue (see Claassen and Sigmann 1993). Nevertheless, the species represented in the shell bead assemblage are evidence of long-distance exchange. Nonlocal marine shell would have been procured through trade networks.

Typology

There are four different types of shell beads at Killarney Bay (Table B.1). Within the literature on the prehistoric Eastern Woodland, there are typologies based on raw material and shape that have limited integration and quantified justification. In order to adequately characterize the variation and patterns within the Killarney Bay assemblage, a typological analysis was conducted in order to identify morphological types. This morphological typology links species identification and shape descriptions that have been previously employed into a coherent framework.

Table B.1. The shell bead typology and summary data from the Killarney Bay assemblage.								
Qualitative description			Quantitative description (in mm)			Total		
Type	Shape	Species	Mean length (std. deviation)	Mean width (std. deviation)	Mean perforation diameter (std. deviation)	UMMAA	CMH	with metrics
Type 1	Tubular bead	Conch/Whelk	5.54 (1.86)	10.88 (0.82)	4.33 (0.66)	26	194	48
Type 2	Disc bead	Conch/Whelk	1.85 (0.45)	7.11 (0.67)	3.19 (0.44)	107	774	79
Type 3	Dentalium (narrow tusk shaped) bead	Dentalium	13.07 (5.20)	3.59 (0.34)	na	16	0	12
Type 4	Marginella bead	Marginella	9.22 (0.76)	6.22 (0.47)	na	29	0	22

For this analysis, several metric measurements were recorded for the beads (Figure B.1). The measurements were taken according to the way in which they would have been strung, worn, and seen. Length is the distance along the string. Width is the thickness of the bead perpendicular to the length and string axis. In some cases (for noncircular beads), an additional thickness measure of height was recorded. The maximum perforation diameters were also recorded.

Different species will produce shells of varying morphology. The initial shell morphology will significantly restrict the morphology of beads that they are modified to produce. As such, the first step in the analysis is to determine the species or genus of each bead. In the Killarney Bay collection, *Marginella* spp., *Dentalium* spp., and *Busycon* spp. are represented.

For some shells, their morphology allows for more manipulation by humans into a range of bead shapes and sizes. As such, the second contributing factor to shell morphology is intentional manufacture by humans. In the Killarney Bay assemblage, the *Busycon* shells show the most intensive human modification.

Together, the parent shell shape and human modification will produce beads with different morphologies. The distribution of the shell beads at Killarney Bay, plotted by length and width, produces morphological clusters that can be seen in Figure B.2. Within this plot, four clusters of beads can be identified. The different clusters represent at least three different shell species (*Dentalium* spp., *Marginella* spp., and *Busycon* spp.), and intentional human manufacture of beads of different morphological clusters from one species (likely *Busycon* spp.). These clusters are the four different types of beads at Killarney Bay (see Table B.2).

Type 1 beads are short and tubular-shaped, although their length can vary to the point that some of these beads range from disc-shaped to almost cylindrical (Figure B.3). Type 2 beads, which are disc beads, are smaller and much more standardized than Type 1 beads (Figure B.4). Type 3 beads, because they are made from *Dentalium*, are thin and tusk-shaped (Figure B.5). Type 3 beads vary in length due to snapping and cutting into segments, but their width is much more standard (and smaller than all other types of beads). Type 4 beads retain the shape of the *Marginella*

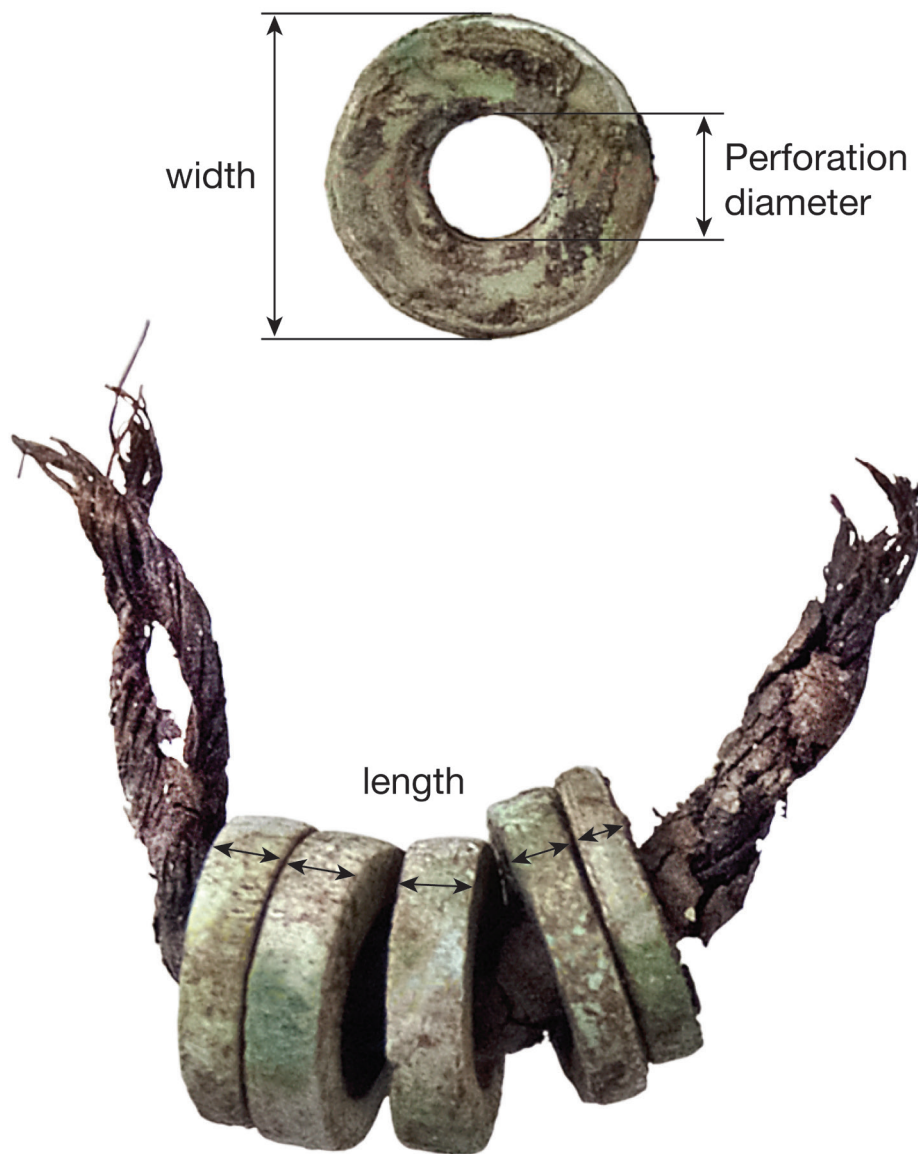


Figure B.1. Schematic showing the location and orientation of measurements taken on the Killarney Bay 1 bead assemblage, including length, width, and perforation diameter.

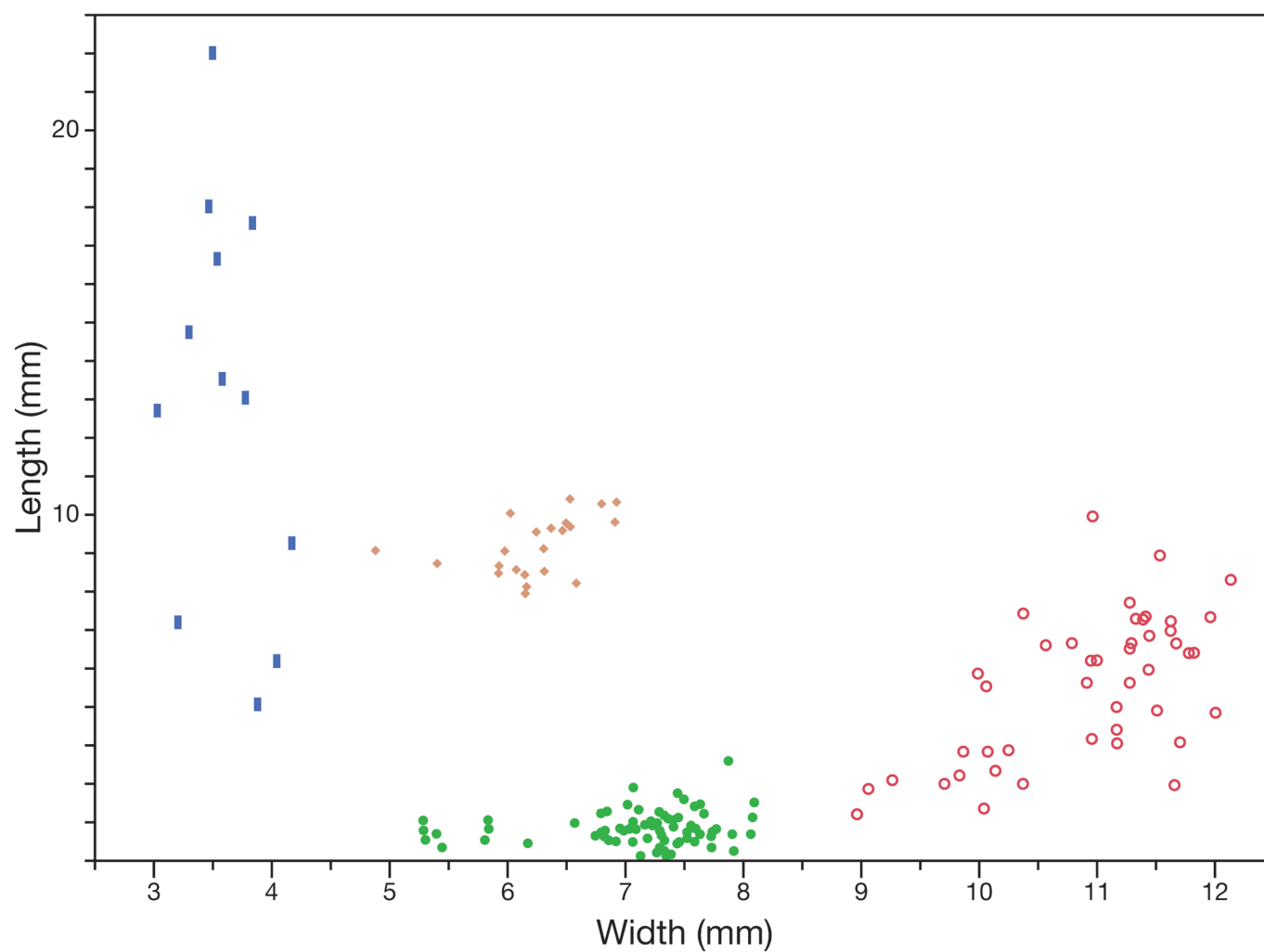


Table B.2. Shell beads by burial at Killarney Bay.

Burial	Age	Sex	Type 1	Type 2	Type 3	Type 4	Total
1	Child	Unknown	0	0	0	0	0
2	Adult	Female	0	102	0	0	102
3	Child	Unknown	2	0	0	0	2
4	Adult	Male	0	0	0	0	0
5	Unknown	Unknown	0	0	0	0	0
6	Adult	Male	0	(1?)	0	0	(1?)
7	Infant	Unknown	0	0	16	27	43
8	Adult	Male	17	4	0	0	21
9	Adolescent and adult	Unknown	0	0	0	0	0
10	Adolescent	Female	0	(cluster)	0	0	0



Figure B.3. Type 1 (tubular) beads.



Figure B.4. Type 2 (disc) beads.



Figure B.5. Type 3 (*Dentalium*) beads.



Figure B.6. Photograph of Type 4 (*Marginella*) beads.

shells they are made from (Figure B.6). As a result, Type 4 beads do not vary much in terms of size or morphology.

Bead Production

The different species of shell underwent different types of modification to turn them into beads. The *Dentalium* shells were easily turned into beads because of their naturally hollow centers. The *Dentalium* shells at Killarney Bay show some evidence of snapping the shell into segments for the beads, although some of this snapping may be associated with postproduction taphonomic processes. The *Marginella* shells at Killarney Bay had sawed-off ends that created perforations for stringing. The *Busycon* beads were cut, ground, biconically drilled, and then polished. All of the beads in the Killarney Bay assemblage were finished beads.

Stringing of Beads

The shell beads were strung together using a leather cord (Figure B.7). There are preserved leather cords in the collection, and some of the bead are still strung together. Field photographs from the excavation also suggest that a majority, if not all, of the beads were strung at the time of deposition. The lengths of some of the preserved pieces (particularly in the CMH collection) suggest that they were likely necklaces, though it is possible that they were worn and placed on other areas of the body as well.

Multiple lines of evidence suggest that the different morphological types identified in the collection were never mixed on the strings. First, all of the preserved strands all have only one type of bead on them. Second, field descriptions suggest associations even when the material is not currently preserved. For example, field notes state



Figure B.7. Type 2 disc beads with leather cord still in place.

that the Type 3 beads from Burial 7 were strung together with a knot between them. Unfortunately, the leather cord articulating the beads from Burial 7 was not preserved. Third, the perforations on the beads—particularly Type 1 and Type 2 shell beads, which were intentionally drilled—suggest they were manufactured for leather cords of different thicknesses. An initial examination of all Type 1 and Type 2 beads suggests that the perforation size is not normally distributed (Figure B.8a). Additionally, the distribution appears to have two modes. When separated by morphological type, the two modes strongly correspond with the two different bead types, each of which has a normally distributed perforation size within their own type (Figures B.8b and B.8c). This further supports the suggestion that these bead types are not only identifiable for archaeologists, but that they were intentionally manufactured by people in the past. As such, they likely indexed different types of socially, economically, and ritually significant information for the people at Killarney Bay.

Contextual Analysis

The shell beads at Killarney Bay were buried as grave goods. Mortuary treatments are conscious and intentional decisions made by the living (O'Shea 1996:10). Mortuary rituals are not passive snapshots of identities or the social relationships among the living. The funerary process and associated rituals are social contexts in which the natures of social relationships are reified, unmade, or reorganized. Funerary events are venues for performance, and as spectacles and public events have distinct political implications (Inomata and Coben 2006). As such, within the contextual analysis of the beads at Killarney Bay, we must be cognizant of the specific formation processes of the mortuary record. There are very few shell beads at the site, but some of the initial patterning in deposition suggests that those beads that are there may hold the key to important social information about the inhabitants.

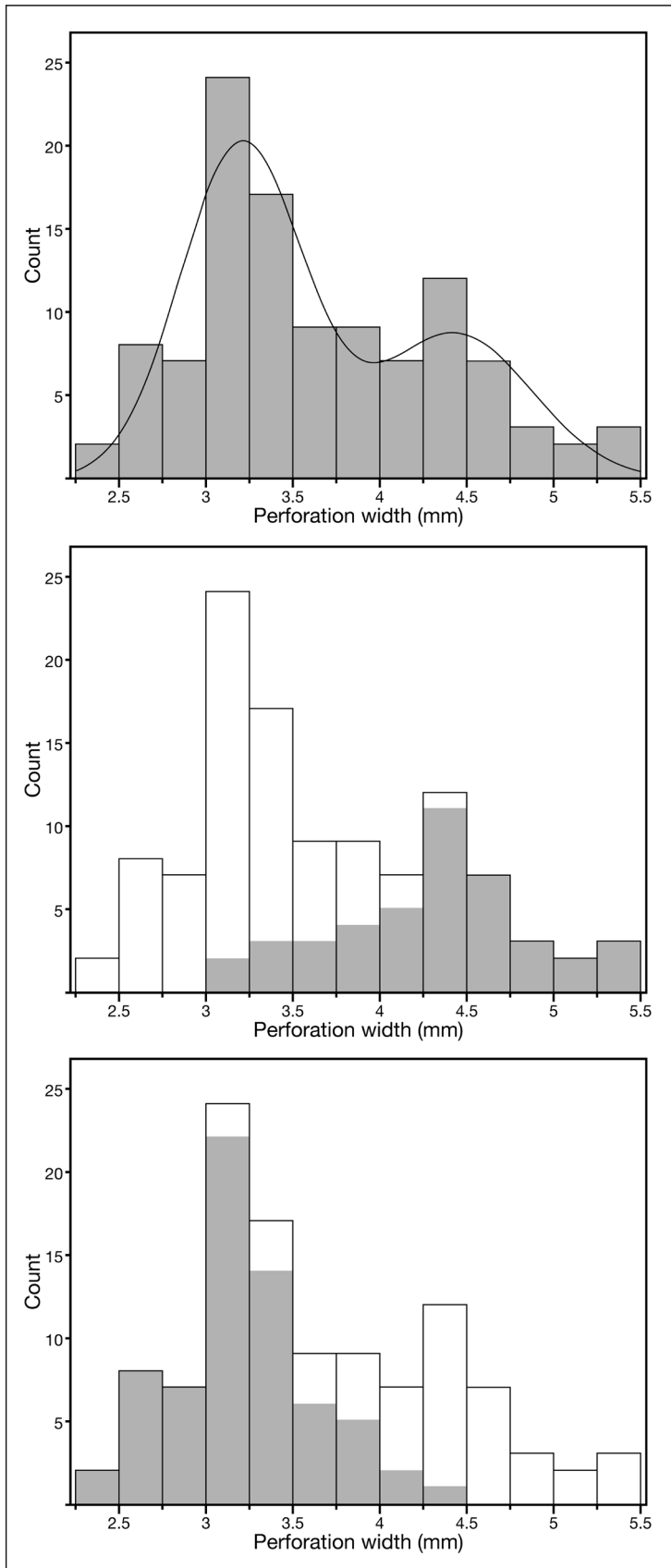


Figure B.8. Distributions of perforation diameter for Type 1 and Type 2 beads. The two types have normal but overlapping distributions. The two different modes suggest intentional manufacture for two different size leather cords.

a (top). Type 1 and 2 beads by perforation width with a best fit line for the mixture of two normal distributions.

b (middle). Type 1 beads by perforation width (highlighted in gray).

c (bottom). Type 2 beads by perforation width (highlighted in gray).

Among the UMMAA collections, 168 of the 178 shell beads came from known mortuary contexts. The rest were found in surface contexts and likely were from disturbed graves. (The CMH beads were omitted from this analysis because they lack detailed contextual information.) One bead was tentatively associated with Burial 6 in field notes because it came from the topsoil near the burial. This bead may or may not be associated with Burial 6.

The distribution of shell beads by type in the burials at Killarney Bay can be found in Table B.2. Shell beads were found in five of the ten burials at the site (50 percent). Burial 2, an adult female, was interred with 102 Type 2 beads. Burial 3, a child, was interred with 2 Type 1 beads. Burial 7, an infant, was interred with 16 Type 3 and 27 Type 4 beads. Burial 8, an adult male, was buried with 17 Type 1 and 4 Type 2 shell beads. Burial 10, an adolescent female, contained a cluster of Type 2 beads that has been cemented by nearby copper objects. Type 1 beads were found in Burial 8 and Burial 3. Type 2 beads were found in Burial 2, Burial 8, and Burial 10 (all adults or adolescents, mostly associated with females). Type 3 and Type 4 beads were only found in Burial 7.

The bead types are unequally distributed in burials. Additionally, the distribution pattern of shell beads can be compared with the distribution of copper beads (see Anselmi, Chapter 12, this volume). Burial 8 is rich in both Type 1 and copper beads, and Burial 2 and Burial 10 have a mix of copper and shell beads. Burials 4 and 6, both adult males, have significant quantities of copper beads, but no directly associated shell beads. Burial 7, an infant buried with the only *Dentalium* and *Marginella* beads at the site, did not contain copper beads. This unequal distribution indicates that the types identified through morphological analysis are chronologically or socially meaningful. The different bead types may contain information about the buried individual and the group of people who buried them.

With only five burials having shell beads, and with only a small quantity of burials, the data are not robust enough to allow us to draw more conclusions from the initial patterns. For example, Type 3 and Type 4 beads were only found in the infant burial and not in any of the adult burials. It is impossible to determine if Type 3 and Type 4 beads are associated with any specific identity or social role, such as an age class, based on a singular case. Additionally, chronological variation between burials may have had an impact on the presence or abundance of certain types of shell beads. Exchange systems, social obligations, and ritual fashions are all dynamic and can shift very rapidly. Together, the patterns of shell bead distribution at this site are suggestive of an important role played by shell beads in the construction, marking, and maintenance of social identities within a ritual context, even if the specific information associated with different types of beads remains unknown.

Discussion

In sum, the shell beads from Killarney Bay are evidence of long-distance exchange networks, material representation of social identities, and variable mortuary practices. The marine shells used to make the beads (and possibly the finished beads themselves) were acquired through long-distance exchange systems. Even as part of this larger economic system, the production types and stringing of beads suggests that beads played an important role in adornment and materialization of social identities. The burial of shell beads in mortuary contexts, and especially the restriction of shell beads and shell bead types to certain burials, also suggests that shell beads played a key role within the mortuary ritual activities.