EARLY TRADE NETWORKS IN THE CARIBBEAN

Miguel Rodríguez

Current research in the Caribbean has been addressing questions related to the sources of raw materials and finished artifacts, as well as possible trade routes and exchange networks between early ceramic age sites of Puerto Rico, the northern Lesser Antilles, and the South American mainland. The need for this approach has been made evident with the discovery and extensive excavations of complex archaeological sites such as La Hueca, Vieques, and Punta Candelero, Puerto Rico, two closely related sites, almost facing each other across the Vieques Sound. (Fig. 1).

La Hueca (Chanlatte 1983; Chanlatte and Narganes 1983) and Punta Candelero (Rodriguez and Rivera, 1987; Rodriguez, 1989) have been identified as a manufacturing centers of pendants and beads carved on local and exotic semi-precious stone, "gem centers", following the classification used by Harrington (1924) in describing a site in the island of Montserrat, northern Lesser Antilles.

In 1987, based on preliminary information provided by Vescelious and Robinson (1979), Boomert (1987) also described the Prosperity site in St. Croix, U.S. Virgin Islands, as another early “saladoid manufacturing center” of ornaments (Fig. 1).

Based upon preliminary reports we surmise that with further field work, the Hope Estate site in St. Maarten (Haviser, 1989), the Pearls site in Grenada (Cody (1989) and other sites in Puerto Rico and the Lesser Antilles could eventually be added to this network of early ceramic age “gem centers”.

It is clear now that two thousands years ago the inhabitants of these sites, or more likely, specialised artisans, were involved in the procurement of raw semi-precious stones both local and exotic, and in the manufacture of elaborate zoomorphic and anthropomorphic ornaments. It is possible that they were also involved in the distribution or exchange of other raw materials from the islands (serpentine and pumice) and from the continent (fresh water shells), and finished ornaments, such as perforated peccari canine, throughout the other early ceramic sites of the region.

Based upon the data available from Punta Candelero, we want to present in this paper some ideas about the identification of the stone raw materials, their suspected sources, and the possible trade routes throughout the Caribbean.

Up to this moment a total of 234 stone amulets and 2,368 perforated stone and shell beads excavated in Punta Candelero have been catalogued. More than 90% of the ornaments are clearly associated to the Huecoid or Huecan Saladoid component, the earliest in the site. In addition, several thousands of unfinished pendants and beads at various stages of manufacturing have been identified.

Almost all of the amulets are carved on stones that could be considered semi-precious (Table 1). The exception are a few amulets made of sea shells. However, with the beads we have a reverse situation. The majority, 85%, are carved of sea shells, and the remaining 15% are made of the same type of semi-precious stones as of the amulets (Table 2).
Shell beads and amulets, oliva beads and mother-of-pearl ornaments are out of the scope of this paper, since the raw materials could have very well been gathered in the vicinity of the site or even among the food remains of the village.

Geologists and other specialists (J.C. Moya, 1989) have been able to identify the raw materials and their possible sources in Puerto Rico. Regarding the amulets, 51% of the sample were carved on relatively soft and soapy serpentine or serpentinite stone, of various shades of yellow, green, black and gray. Another 29% were manufactured on a local variety of melted jadeite in shades of blue, green, and black. Also 54% of the 360 stone beads are made of soapy serpentine or serpentinite or jadeite.

Serpentine and jadeite are available in the south western region of Puerto Rico, one hundred and fifth kilometers west of Punta Candelero, in the Mona Passage area (Fig. 2). This is also the source of the flint tools worked by the Punta Candelero artisans to cut, carve and drill the stone ornaments. But the best carved amulets, 16% of them, are made from translucent and milky quartz, citrine or yellow quartz, aventurine, malachite, turquoise and nephrite. Also 156 or 43% of the stone beads are made of quartz, citrine quartz, amethyst, aventurine, malachite, turquoise and possibly nephrite. All of these stones could be considered exotic since there are no known sources in the northeastern Caribbean. Even though possible sources of amethyst and malachite have been identified in Puerto Rico they are of poor quality and do not reflect the size or the level of purity found in the samples. (J.C. Moya, 1989).

In order to trace the sources of raw materials not available locally, Harrington suggested in 1924 a South American connection. In reviewing the Montserrat "gem center" he identified northern Colombia, particularly the Tairona territory and the coastal region of Santa Marta as the most probable source. He went as far as to suggest that a colony of specialized Colombian artisans from this region, known for its well developed lapidary industry, had settled in Montserrat.

Some years later Sydney H. Hall (n.d.), following Harrington's lead, compared the Montserrat settlers with Mayan or Aztec merchants and suggested other South American sources for the reported ornaments. For the source of quartz, including citrine, amethyst and aventurine he suggested Colombia, British Guiana or Brazil; for the jadeite Guatemala or Costa Rica; the nephrite from Brazil or British Guiana; for the malachite the Andean region and for the turquoise and lapis lazuli the central and southern Andean region as far as Chile. However, both authors relate the trade of these raw materials to the Caribs during late prehistoric and early historic times. The Caribs had developed an extensive trade network between the Leeward Islands, and the northern coast of the South American mainland, from Brazil to Panama.

In 1948, during his excavations at Hacienda Grande, Puerto Rico, Ricardo Alegria was able to establish for the first time the direct association of quartz, chalcedony and amethyst beads with the early Saladoid component of the site (Alegria, 1965; Rouse and Alegria, 1990). Alegria sent his samples to F.H. Pough, then Curator of Geology and Mineralogy of the American Museum of Natural History, who identified the specimens and linked them to pre columbian Mexico (Alegria, Pers. Comm. 1990). He further suggested trade routes as a possible explanation for the findings in Puerto Rico.

Sued Badillo (1978) confirms the Saladoid association of this semi-precious lapidary stonework and suggests the Intermediate Area of Costa Rica, Panama and Colombia, as the possible origin. Recently Boomert (1987) points to the so called "green stones" exchange or trade network during two different periods in West Indian prehistory. The earlier, involving Saladoid settlers, connecting the northeastern Caribbean islands with the eastern coast of Venezuela. And the most recent one, during late prehistory and the European contact period, comprising the Windward Islands, the coast of the Guianas and the Amazonian Region.
Summarising, our review leads to six regions as possible source of raw materials for the lapidary industry of Punta Candelero and other sites through the northeastern Caribbean. 1) The Mona Passage region, particularly the coastal and interior mountains of the south west corner of Puerto Rico; 2) the Guianan Shield, an ancient mountain region well known for a great variety of mineral deposits as well as precious and semi-precious stones. (This region includes parts of British Guiana, Venezuela and Brazil); 3) the north-eastern section of Colombia, including the Santa Marta coastal region and the Oriental Andes, also close to Venezuela; 4) The Central American region, particularly Costa Rica, which has an important tradition of carved stone ornaments and beads; 5) The Central and Southern Andes between Ecuador, Peru and Chile; and 6) Mexico and northern Central America. (Fig. 3).

The Mona Passage area is without question the source of soft serpentine or serpentinite and the harder jadeite, as well as the flint for drilling and carving the ornaments. Nevertheless, the specific route from Punta Candelero to this source is not quite clear. The shortest and safest canoe route would be along the southern coast of Puerto Rico. However, the early ceramic sites with evidence of lapidary work and raw materials, such as Hacienda Grande and El Convento, are more numerous along the north coast (Fig. 2).

With the sources of exotic stones the evidence is less conclusive. Because of its proximity, the obvious choice seems to be the Guianan Shield. However, the data available suggests that the discovery and exploitation of the petrological resources of this region by amerindian groups is a much later development, not corresponding to the early dates of the aforementioned Caribbean sites, some of them having dates as early as 250 years B.C.

From an archaeological and petrological perspective north-eastern Colombia would be the next alternative. Resources from various neighbour regions, such as Central American and the Central and Southern Andes, could very well converge in this area. Although Tairona lapidary work is a late development (Reichal Dolmatoff, 1965; Cardoso, 1987; Legast, 1987), some evidences indicate that trade routes and exchange networks were present also in this continental region in earlier times, corresponding in dating to some of the northeastern Caribbean sites. Finally, an early Mesoamerican connection seems to be highly speculative at this time.

In terms of the navigation routes from the north-eastern Caribbean to the sources and back, there are also many possibilities. The presence of some raw materials and finished ornaments in many early ceramic sites such as Morel in Guadeloupe (Petitjean Roget, 1987); Vivé in Martinique (Mattioni, 1979) and Pearls in Grenada, provide further confirmation of a Lesser Antillean route.

Also a direct route between northeastern Colombia or western Venezuela to the northeastern Caribbean, through open waters of the Caribbean Sea should be considered. This possibility has been put forth before by Veloz Maggiolo (1974) for early ceramic migrations and by Zucchi (1982) for later times. In this instance it would be more sensible to consider a coastal route connecting Colombia and the Lesser Antilles through Venezuela. Still, the archaeological evidence is not yet very solid for both alternatives.

As with other on-going issues in Caribbean archaeology, we are presently unable to give conclusive evidence of one alternative over the others. Possible sources of origin or combination of possible sources of these exotic raw materials are given, but there is still no conclusive archaeological nor petrological evidence of the origins of some of the stones. The same holds true for the trade and navigation routes. Additional research in the area should be expanded to include specialised analysis of lapidary work: sources of raw materials, tools and techniques, as well as the distribution of finished artifacts in order to examine these issues in a larger regional context.
Nevertheless, we feel that the evidence presented is conclusive in terms of the presence of exotic raw materials for the manufacture of ornaments in a number of early ceramic age sites in the northeastern Caribbean region. These sites, considered as manufacturing centers, were part of a complex and extensive intra-island trade/exchange network that extended to far reaching areas of the continent. Because it is located closer than the other sites to one of the main sources of raw materials, Punta Candelera should be considered an important part of this network.

This type of research could also yield important data regarding the social structure and the technological level of the Cedrosan Saladoid and Huecan Saladoid societies, to which these trade networks are associated. Furthermore, the study should contribute to the ongoing debate regarding the origins, migratory routes, development and interaction between both groups.

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Figure 1: Map of the Eastern Caribbean and possible "Gem Centers" Sites.
Figure 2: Local sources and possible trade routes of Serpentine and Jadeite.

Figure 3: Possible sources of exotic stones found in Punta Candelero, Puerto Rico.
<table>
<thead>
<tr>
<th>&quot;Exotic&quot; Stones</th>
<th>Quantity</th>
<th>%</th>
<th>Known Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft Serpentine/Serpentineite</td>
<td>119</td>
<td>51%</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>(green, yellow, black and gray)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Jadeite</td>
<td>67</td>
<td>29%</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>(molten, green, blue and black)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aventurine</td>
<td>13</td>
<td>5%</td>
<td>Brazil</td>
</tr>
<tr>
<td>(green, gray)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cristal Quartz</td>
<td>12</td>
<td>5%</td>
<td>South Am.</td>
</tr>
<tr>
<td>(translucent, milky and citrine)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turquoise</td>
<td>7</td>
<td>3%</td>
<td>Brazil, Perú, others</td>
</tr>
<tr>
<td>Malachite</td>
<td>4</td>
<td>2%</td>
<td>South Am.</td>
</tr>
<tr>
<td>Marble</td>
<td>4</td>
<td>2%</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>Shell</td>
<td>2</td>
<td>5%</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>Nephrite</td>
<td>1</td>
<td>5%</td>
<td>South and Central America</td>
</tr>
<tr>
<td>Unidentified</td>
<td>5</td>
<td>2%</td>
<td>?</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>234</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Exotic stones amulets in Punta Candelero, Puerto Rico.
"Exotic" Stones | Quantity | % | Known Source
--- | --- | --- | ---
Soft Serpentine/Serpentinite (green, yellow, black and gray) | 138 | 38% | Puerto Rico
Local Jadeite (molten, green, blue and black) | 57 | 16% | Puerto Rico
Aventurine (green, gray) | 14 | 4% | Brazil
Cristal Quartz (translucent, milky and citrine) | 51 | 14% | South Am.
Turquoise | 17 | 5% | Brazil, Perú, others
Malachite | 71 | 20% | South Am.
Marble | 4 | 1% | Puerto Rico
Nephrite | 3 | 1% | South and Central America
Unidentified | 5 | 1% | ?
TOTAL | 360 | 100%

Table 2: Exotic stone beads in Punta Candelero, Puerto Rico.